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Women and heart disease

Do you really know who your competition is?

SPECIAL FEATURE

Marketing for pharmacists, Part 2

A natural advocate

AMY LAMB

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SAFE SPACES,
EQUAL OPPORTUNITIES
AND TRUE
HOLISTIC HEALTHCARE

INSIDE

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The science and impact of new innovations
in influenza vaccines (1.25 CEUs)

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CONTINUING EDUCATION

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1. Klein-Schwartz W. Toxicity of polysaccharide-iron complex exposures reported to poison control centers. Ann Pharmacother. 2000 Feb;34(2):165- 9

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BRAND MANAGEMENT
SVP, CANADA, HEALTHCARE
Donna Kerry
(416) 786-6315
dkerry@ensembleiq.com

EDITORIAL
EDITOR
Vicki Wood – vwood@ensembleiq.com

EDITOR, CANADIAN HEALTHCARE NETWORK
Martha Porado – mporado@ensembleiq.com

REPORTER
Marjo Johne – mjohne@ensembleiq.com

CLINICAL CONSULTING EDITOR
Lu-Ann Murdoch

CONTINUING EDUCATION/PROJECT MANAGER/PROOFREADER
Rosalind Stefanac

COLUMNISTS & CONTRIBUTING/CONSULTING EDITORS
Arden Barry, BSc, BScPharm, Pharm D, ACPR; Shelley Diamond, BScPhm;
Sherilyn Houle, BSP, PhD; Sandra Knowles, BScPhm; Nardine Nakhla, PharmD;
Amy Oliver, MBA, BScPh, RPh, PMP, CLC; Mathilda Prinsloo, BPharm, BCGP, CDE,
EPPH; Jillian Reardon, BSc(Pharm), ACPR, PharmD, RPh; Rosalind Stefanac;
Wade Thompson, PharmD, MSc, PhD; Dana Turcotte, BScPharm, PhD

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ADVERTISING SALES & BUSINESS
SENIOR ACCOUNT MANAGER

Norman Cook – (647) 290-3967 – ncook@ensembleiq.com

SENIOR ACCOUNT MANAGER
Scott Tweed – (416) 230-4315 – stweed@ensembleiq.com

ACCOUNT MANAGER
Nancy Dumont – (514) 557-6660 – ndumont@ensembleiq.com

ACCOUNT MANAGER
Samir Iggui – siggui@ensembleiq.com

BRAND DIRECTOR, PHARMACY U
Martin Rissin – (416) 508-4884 – mrisin@ensembleiq.com

SALES & BILLING COORDINATOR
Sylvie Graveson – (514) 805-0634 – sgraveson@ensembleiq.com

PROJECT COORDINATOR
Kalli Sagos – ksagos@ensembleiq.com

DESIGN/PRODUCTION/MARKETING
CREATIVE DIRECTOR

Nancy Peterman – npeterman@ensembleiq.com

PRODUCTION MANAGER
Lisette Pronovost – lpronovost@ensembleiq.com

SENIOR MARKETING MANAGER, HEALTHCARE
Nicola Tidbury – ntidbury@ensembleiq.com

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SUBSCRIPTION QUESTIONS
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Editor's Message



Need a perspective refresh?

As Amy Oliver notes in her Strategy column in this issue, pharmacists are often too busy just keeping the pharmacy running to assess who their competitors are or what's happening around them. It can be hard to find the time to stop and look around at the world outside of our own walls. What's going on out there in the pharmacy universe? What are other folks doing in their practice that's interesting? What's happening here or around the world that I should be worried or excited about or monitoring? How can I come up with some new ideas for my practice?

Even I struggle to keep up with all of the fascinating things happening in the world of pharmacy and learn which practitioners are changing the profession—and that's my full-time job!

In a surprising development, I find myself turning more and more towards social media to meet pharmacy dynamos. Surprising because I was an early social media cynic. As an editor and journalist, I value fact-checking, editing and the critical review of information. Who plays that role for social media content?

Yet despite those concerns, LinkedIn has become my daily way to 'meet' people in the profession, learn about new ideas and find fresh new voices. I've found the pharmacy LinkedIn community to be warm and supportive; an encouraging environment for those who want to share their ideas, perspectives and initiatives. I've become a faithful follower of a number of pharmacy professionals from Canada and elsewhere who consistently post thoughtful, fresh and creative content that is worth reading. The term "thought leaders" is over-used, but these bright minds are truly leading the way as they think and work their way through the profession's—and healthcare's—current challenges. Following them has changed my perspective on the state of pharmacy today. They remind me that outside of the spotlight, there are wise, innovative, hopeful people working to make the world better for all of us.

Could you use a perspective refresh? Some new ways of thinking about the same old issues? It might help to seek out some new virtual inspiration.

You could start by following the pharmacists who appear in this issue, including Amy Lamb, Lee Tuan, Lindsay Dixon, Anna Patrizio and Amy Oliver. Connect with a few people you admire and see who they follow. Or feel free to connect with me and steal some of my favourites. Here are just a few: Jaclyn Katelnikoff, James Morrison, Katrina Azer, Jim Danahy, Dr. Lisa Zaretsky, Kimberley Kallio, Jason Chenard, Tim Smith, Irith Lebovich, MD.

Even (especially!) when we are focused on just getting through each day, listening to and learning from some fresh voices is a powerful way to gain new perspectives.

Vicki Wood

VICKI WOOD

vwood@ensembleiq.com

Openers

AN AT-A-GLANCE LOOK AT WHAT'S HAPPENING IN PHARMACY

NEWS

New network connects patients to providers

The Black Healthcare Professionals Network, based in Toronto, has created a database to connect black patients with black healthcare providers. The digital directory, launched in September, aims to help black Canadians who struggle to find providers who understand their backgrounds.

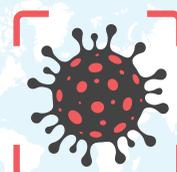
Network co-founder, Dr. Nikolai Whyte, says the creation of the directory was driven in large part by research showing that health outcomes among Black patients can be dependent on the race of their healthcare provider. It will also help providers connect with each other. "It helps to create an ecosystem within the Black healthcare space where other providers can find each other and start to collaborate," he says.

Getting listed in the directory is voluntary and all submissions are vetted to ensure licenses are in good standing.

Read the full story: www.canadianhealthcarenetwork.ca/new-database-launched-connect-black-patients-black-healthcare-providers



ANALYSIS



PREPARING FOR THE NEXT PANDEMIC

If we really want to be ready for the next pandemic, there are six vital areas we need to develop, according to a recent report on *Pandemic Preparedness, response and recovery: Lessons learnt for global pharmacy* (www.fip.org/file/5607) recently published by the International Pharmaceutical Federation (FIP).

These include: country leadership, system transformation, science and innovation, pharmaceutical practice, workforce and education, and life-course immunisation.

In addition to best practices and lessons learned via case studies from countries around the world, the report contains a digital supplement that collates key resources from the global health community and other health professionals.

"This report seeks to outline the valuable lessons learned from the challenges posed by COVID-19, and aims to provide pharmacists worldwide with essential insights for enhancing future pandemic preparedness, response and delivery," said FIP CEO Dr. Catherine Duggan in a statement.

AWARDS

Don't forget to enter our pharmacy awards!



The deadline for our annual *Pharmacy Practice + Business* awards is fast approaching. Nominate someone or enter yourself in this prestigious new awards program recognizing pharmacy professionals and teams. Winners will be awarded in eight business and practice categories, including Public Protector, Technician Initiative, Raise Your Voice, Practice Innovation, Business Innovation and Rising Star.

The awards focus on some of the important new roles and initiatives that have emerged for the profession throughout the pandemic and put a spotlight on those pharmacy team members who are paving the way forward.

Entry deadline is **September 30, 2023**, and winners will be profiled in a special feature to be published in the February 2023 of the magazine.

For details: <https://events.canadianhealthcarenetwork.ca/ppbawards23>

RESOURCES

LOVE LEARNING? At eCortex we are constantly updating our continuing education lessons and webinars to bring you key learnings to enhance your clinical practice and workplace. Be sure to check out a recent slew of lessons on topics ranging from the management of common skin conditions in adolescents to maximizing the effectiveness of influenza and other vaccines. **Go to eCortex.ca to find these and more.**

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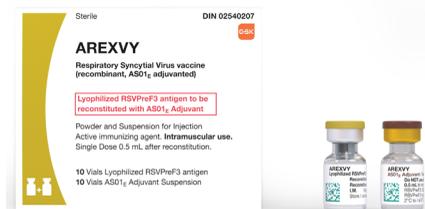




NEW PRODUCTS

Arexvy: first RSV vaccine for older adults

respiratory syncytial virus (RSV) vaccine (recombinant, AS01E adjuvanted), 120 µg RSV glycoprotein F (RSVPreF3) antigen per 0.5 mL; one vial of lyophilized antigen powder to be reconstituted with one vial of adjuvant suspension; reconstituted suspension for intramuscular (IM) injection, GlaxoSmithKline.



INDICATIONS Prevention of lower respiratory tract disease caused by RSV in adults ≥ 60 years of age.

DOSAGE A single dose of 0.5 mL of reconstituted vaccine.

ADMINISTRATION Give by IM injection, preferably in the deltoid muscle.

ADVERSE EFFECTS **MOST COMMON:** Injection site pain, erythema and/or swelling, fever, chills, fatigue, myalgia, arthralgia, headache, rhinorrhea. Most are mild to moderate and resolve within one to two days. **MOST SERIOUS:** One case of Guillain-Barré syndrome and one case of suspected acute disseminated encephalomyelitis, but relationship to vaccination is uncertain.

DRUG INTERACTIONS May be given concomitantly with inactivated quadrivalent seasonal influenza vaccine (standard dose, unadjuvanted), administered at different injection sites. Safety and efficacy of concomitant administration with other vaccines is unknown.

STORAGE Store in a refrigerator (2°C–8°C), in the original package to protect from light. After reconstitution, administer vaccine promptly or store in the refrigerator or at room temperature (up to 25°C) for a maximum of four hours.

Beyfortus for preventing RSV in young children

nirsevimab solution for injection; 50 mg/0.5 mL and 100 mg/1 mL single-use prefilled syringe, AstraZeneca/Sanofi Pasteur.



INDICATIONS 1. Prevention of RSV lower respiratory tract disease in neonates and infants during their first RSV season. 2. Prevention of RSV lower respiratory tract disease in children up to 24 months of age who remain vulnerable to severe RSV disease through their second RSV season. This would include (but is not limited to) children with chronic lung disease of prematurity, hemodynamically significant congenital heart disease, immunocompromised states, Down syndrome, cystic fibrosis, neuromuscular disease or congenital airway anomalies.

ACTION A passive immunization agent. A recombinant neutralizing human IgG1κ long-acting monoclonal antibody to the prefusion conformation of the RSV F protein. Has been modified with a triple amino acid substitution in the Fc region to extend serum half-life (terminal half-life is approximately 71 days). Inhibits the essential membrane fusion step in the viral entry process, neutralizing the virus and blocking cell-to-cell fusion. Minimum duration of protection offered by a single dose is at least five months.

DOSAGE *Neonates and infants entering their first RSV season:* A single 50 mg (0.5 mL) dose (purple plunger rod) for infants with body weight < 5 kg and a single 100 mg (1 mL) dose (light blue plunger rod) for infants with body weight ≥ 5 kg. Administer from birth for infants born during the RSV season. For infants born outside the season, administer (ideally) prior to the RSV season. *Children who remain vulnerable to severe RSV*

disease entering their second RSV season: A single dose of 200 mg, given as two 100 mg injections. (See product monograph for dosage instructions for children undergoing cardiac surgery with cardiopulmonary bypass.)

ADMINISTRATION Give by IM injection, preferably into the anterolateral aspect of the thigh. Use different injection sites for children who require two injections.

ADVERSE EFFECTS **MOST COMMON:** Rash (0.7%), pyrexia and injection site reactions (pain, induration, edema, swelling). **MOST SERIOUS:** Similar to placebo.

DRUG INTERACTIONS Not expected to have significant drug–drug interactions, as monoclonal antibodies do not directly affect cytochrome P450 enzymes and are not substrates of hepatic or renal transporters. Can be given concomitantly with childhood vaccines, at different injection sites.

STORAGE Store in a refrigerator (2°C–8°C), in the outer carton to protect from light. May be kept at room temperature (20°C–25°C) for a maximum of eight hours.

COMMENTS Beyfortus is the second monoclonal antibody to be approved for prevention of lower respiratory tract disease caused by RSV in children, following palivizumab (Synagis). Synagis is administered by IM injection, starting before the RSV season and monthly throughout the RSV season.

Eyezigan for superficial herpes simplex keratitis

ganciclovir 0.15% ophthalmic gel; 5 g tube, Thea Pharma.



INDICATIONS Treatment of superficial acute herpes simplex keratitis (dendritic ulcers) in adults.

ACTION A topical antiviral. Ganciclovir is a synthetic nucleoside analogue of guanine that inhibits the replication of herpes viruses.

DOSAGE One drop instilled five times daily

until complete corneal re-epithelialization, then one drop three times daily for seven days. Treatment duration usually does not exceed 21 days.

ADMINISTRATION Instill drops into the affected eye(s) about every three hours while awake.

ADVERSE EFFECTS MOST COMMON:

Blurred vision, eye irritation (burning and stinging), superficial punctate keratitis and conjunctival hyperemia. Dysgeusia has also been reported. **MOST SERIOUS:** Post-marketing reports of leukopenia, thrombocytopenia, eye irritation, eye pain, eye swelling, keratitis, blurred vision and corneal abrasion.

DRUG INTERACTIONS Interactions with systemically available drugs are unlikely because systemic absorption of ganciclovir from Eyezigan is very low or negligible. Administer at least 15 minutes apart from another topical ophthalmic drug, with Eyezigan instilled last. Contains benzalkonium chloride, which can discolour soft contact lenses; do not wear contact lenses during Eyezigan therapy.

STORAGE Store at 15°C–30°C. Use within 30 days after first opening the tube.

Omvo for ulcerative colitis

mirikizumab 100 mg/mL solution for subcutaneous (SC) injection (100 mg/1 mL prefilled syringe and prefilled pen) and 20 mg/mL solution for intravenous (IV) infusion (300 mg/15 mL vial), Eli Lilly.

INDICATIONS Treatment of adults with moderately to severely active ulcerative colitis. Intended for patients with an inadequate response, loss of response or intolerance to conventional therapy, a biologic treatment or a Janus kinase (JAK) inhibitor.

ACTION A humanized IgG4 monoclonal antibody that binds to human IL-23 cytokine and inhibits its interaction with the IL-23 receptor.

DOSEAGE *Induction dosing:* 300 mg infused IV over at least 30 minutes at Week 0, Week 4 and Week 8. Evaluate patients at 12 weeks; patients who have an adequate therapeutic response can be transitioned to maintenance dosing. If patients do not have an adequate therapeutic response at Week 12, consider extending induction dosing by administering 300 mg IV infusions at Weeks 12, 16 and 20. Discontinue drug if no response by Week 24. *Maintenance dosing:* 200 mg (given as two consecutive SC injections of 100 mg each) every four weeks after completion of induction dosing. Inject SC into the

abdomen, thigh or back of the upper arm. Rotate injection sites. Remove prefilled pen or syringe from the refrigerator and leave at room temperature for 30 minutes prior to injection.

ADVERSE EFFECTS MOST COMMON: Injection site reactions (8.7%, during maintenance period), upper respiratory tract infections (7.9%, frequently nasopharyngitis), headache (3.3%), arthralgia (2.1%) and rash (1.1%). Increases in hepatic enzymes (alanine aminotransferase, aspartate aminotransferase) have been reported. **MOST SERIOUS:** Infusion-related hypersensitivity reactions, including anaphylaxis. May increase the risk of infection. Potential for immunogenicity.

DRUG INTERACTIONS No specific drug interaction studies have been conducted. Has been administered concomitantly with 5-aminosalicylic acid, corticosteroids or oral immunomodulators (6-mercaptopurine, azathioprine, methotrexate) in patients with ulcerative colitis. Avoid use of live vaccines; if a live vaccine is necessary, give it at least four weeks before starting mirikizumab treatment.

STORAGE Store refrigerated at 2°C–8°C. Prefilled syringe/pen may be stored at temperatures ≤ 30°C for up to two weeks. Keep in original carton to protect from light until the time of use.

Winlevi: topical antiandrogen for acne

clascoterone 1% cream, Sun Pharma.

INDICATIONS Topical treatment of acne vulgaris in patients ≥ 12 years of age.

ACTION An androgen receptor inhibitor. Androgen receptor inhibitors may reduce sebaceous gland activity.

DOSEAGE Apply a thin uniform layer of cream twice daily (morning and evening), over the area prone to acne. Recommended dose per application is up to about 1 gram (2 fingertip units). Explain that a fingertip unit (approximately 0.5 g) is the amount of cream squeezed along the index finger from the tip to the first joint. For optimal efficacy, do not spot treat.

ADMINISTRATION Advise patients to wash their hands before and after applying the cream. Cleanse the entire area to be treated and dry it gently before application. Warn patients to avoid accidental transfer of cream into eyes, lips, mouth, corners of the nose or other mucous membranes; if this happens, rinse immediately and thoroughly with water.

ADVERSE EFFECTS MOST COMMON: Local

skin reactions (≥ 10%), including mild erythema and scaling/dryness. **MOST SERIOUS:** Potential for hypothalamic-pituitary-adrenal (HPA) axis suppression and hyperkalemia.

DRUG INTERACTIONS Has no clinically meaningful effect on the pharmacokinetics of drugs metabolized by CYP450 enzymes. Use cautiously with other drugs known to suppress the HPA axis (e.g., topical or inhaled corticosteroids).

STORAGE Before dispensing, store under refrigeration (2°C–8°C). On dispensing, instruct the patient to store at room temperature (20°C–25°C) while in use. Discard unused product 180 days after the date of dispensing or one month after first opening, whichever is sooner.

COMMENTS First topical androgen receptor inhibitor to be marketed for acne in Canada.

OTHER NEW PRODUCTS

Absorica LD

isotretinoin 8 mg, 16 mg, 24 mg and 32 mg capsules, micronized formulation, Sun Pharma.

INDICATIONS Topical retinoid for the treatment of severe nodular and/or inflammatory acne, acne conglobata or recalcitrant acne in persons ≥ 12 years of age. Due to significant adverse reactions, isotretinoin use should be reserved for patients who are unresponsive to conventional first-line therapies.

DOSEAGE 0.4–0.8 mg/kg body weight daily, taken with or without meals. Dosage may be adjusted according to response (maximum 1.6 mg/kg/day) and/or adverse reactions. Round dose to the nearest number of whole capsules, given either as a single dose or in two divided doses during the day. A normal course of treatment is 15–20 weeks.

ADMINISTRATION To reduce the risk of esophageal irritation, instruct patients to swallow the capsules with a full glass of liquid. Do not chew or open capsules.

COMMENTS Absorica LD is the first micronized formulation of isotretinoin available in Canada. It should not be substituted with other marketed formulations of isotretinoin, due to differences in bioavailability. The formulation provides a consistent rate and extent of absorption whether taken with or without food. Conditions of use (e.g., mandatory informed consent form, pregnancy testing, mandatory effective contraceptive measures) are similar to other oral isotretinoin products.

Imcivree

setmelanotide 10 mg/mL solution for SC injection (as setmelanotide acetate); 1 mL multidose vial, Rhythm Pharmaceuticals (US). Canadian distributor: Bay Shore Specialty Distribution (Imcivree@bayshore.ca or call Rhythm InTune at 1-833-654-2155).

INDICATIONS An antiobesity agent for weight management in adults and children ≥ 6 years of age with obesity due to Bardet-Biedl syndrome, or genetically confirmed biallelic pro-opiomelanocortin (POMC), proprotein convertase subtilisin/kexin type 1 (PCSK1) or leptin receptor (LEPR) deficiency due to variants interpreted as pathogenic, likely pathogenic or of uncertain significance.

DOSAGE *Adults:* Start with 1 mg (0.1 mL) injected SC once daily for two weeks. Monitor patients for gastrointestinal adverse reactions to adjust dosage. Dose may be increased by 0.5 mg daily every two weeks, if tolerated, to a maximum of 3 mg daily. *Children 6–17 years of age:* Starting dose is 0.5 mg (0.05 mL) SC once daily for two weeks. Dose may be increased by 0.5 mg daily every two weeks, if tolerated, to a maximum of 2 mg daily.

ADMINISTRATION Remove from the refrigerator about 15 minutes prior to administration. Administer SC into the abdomen once daily, at the beginning of the day, without regard to meals.

NEW DOSAGE FORMS

• **Rinvoq** (upadacitinib extended-release tablets), AbbVie. A new 45 mg extended-release tablet joins the existing 15 mg and 30 mg extended-release tablets. The 45 mg strength is used for induction dosing in adults with ulcerative colitis (see also **New Indications**).

NEW INDICATIONS

Kyprolis

carfilzomib powder for solution for IV infusion, Amgen.

EXPANDED INDICATION Now indicated for the treatment of relapsed multiple myeloma in patients who have received one to three prior lines of therapy, in combination with isatuximab and dexamethasone. (Previously it was only approved for this indication in patients who had received one to three prior lines of therapy, in combination with dexamethasone, lenalidomide and

dexamethasone, or daratumumab and dexamethasone.)

DOSAGE Consult product monograph for details.

Pprevnar 20

pneumococcal 20-valent conjugate vaccine (diphtheria CRM₁₉₇ protein) suspension for IM injection, Pfizer.

NEW INDICATION Active immunization of infants, children and adolescents from age six weeks through 17 years of age (prior to their 18th birthday) for the prevention of invasive pneumococcal disease (including sepsis, meningitis, bacteremic pneumonia, pleural empyema and bacteremia) caused by *Streptococcus pneumoniae* serotypes 1, 3, 4, 5, 6A, 6B, 7F, 8, 9V, 10A, 11A, 12F, 14, 15B, 18C, 19A, 19F, 22F, 23F, and 33F. (Originally indicated for use in adults only.)

DOSAGE *Routine vaccination schedule for infants and toddlers (6 weeks through 15 months of age):* Four-Dose Series—0.5 mL IM; start the three-dose primary series at two months of age (as early as 6 weeks of age), with an interval of four to eight weeks between doses. Give the fourth dose at 11–15 months of age (at least 2 months

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The role of oral antihistamines in allergic rhinitis and chronic spontaneous urticaria in adults and children

By Roger Tam BSc. Pharm. CDE CTE PM2 (he/him)

After completion of this continuing education lesson participants should:

1. Discuss the pathophysiology of allergic rhinitis (AR) and chronic spontaneous urticaria (CSU).
2. Compare and contrast the prescription antihistamines available for AR and CSU.
3. Recommend/Prescribe appropriate prescription antihistamine therapy for patients with AR and CSU based on Canadian and International guidelines in both pediatric patients and adults.
4. Provide appropriate education to improve patient self-efficacy in dealing with allergic rhinitis and chronic spontaneous urticaria.



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Maximizing influenza vaccination uptake in older adults

By Victor Wong, PharmD

After completion of this continuing education lesson, participants should be able to:

1. Explain the cause of the highest influenza burden of disease in the 65+ population.
2. Review the changing epidemiology of influenza and vaccine cross-protection of B strains.
3. Discuss the relevance and evidence of real-world effectiveness of influenza vaccines in the ever-changing landscape of influenza.
4. Describe the recent global influenza guidelines in different countries around the world and public programs for older adults.



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after the third dose). Consult product monograph for details on catch-up vaccination schedules for unvaccinated children and adolescents seven months through 17 years of age, as well as for children previously or incompletely vaccinated with Prevna 13. Administer IM into the anterolateral aspect of the thigh in infants and the deltoid muscle of the upper arm in older children.

Rinvoq

upadacitinib extended-release tablets, AbbVie.



NEW INDICATION Treatment of moderately to severely active ulcerative colitis in adults with an inadequate response, loss of response or intolerance to at least one conventional and/or biologic therapy. (Also approved earlier for use in the treatment of rheumatoid arthritis, psoriatic arthritis, axial spondyloarthritis and atopic dermatitis.)
DOSAGE Moderately to severely active ulcerative colitis in adults: Induction dose—45 mg once daily for eight weeks (see **New Dosage Forms**). Maintenance

dose—15 mg once daily. For some patients (e.g., those with refractory, severe or extensive disease), a maintenance dosage of 30 mg once daily may be appropriate. Use the lowest effective dose needed to maintain response. Discontinue treatment if response is not maintained with the 30 mg dose. Note: The only recommended maintenance dose for patients \geq 65 years of age is 15 mg once daily.

Trodelyv

sacituzumab govitecan lyophilized powder for solution for injection, for IV use, Gilead Sciences.

NEW INDICATION Treatment of unresectable locally advanced or metastatic hormone receptor (HR)-positive, human epidermal growth factor receptor 2 (HER2)-negative (IHC 0, IHC 1+ or IHC 2+/ISH-) breast cancer in adults who have received endocrine-based therapy and at least two additional systemic therapies in the metastatic setting. (Originally indicated for use in unresectable locally advanced or metastatic triple-negative breast cancer only.)

DOSAGE 10 mg/kg administered as an IV infusion once weekly on Days 1 and 8 of 21-day treatment cycles. Continue treatment until disease progression or unacceptable toxicity occurs.

HEALTH CANADA ADVISORIES Keytruda and Tecentriq: risk of aplastic anemia

Keytruda (pembrolizumab) and Tecentriq (atezolizumab) are immune checkpoint

inhibitor (ICI) anticancer agents. A Health Canada safety review identified a link between the use of Keytruda or Tecentriq and the risk of aplastic anemia. The review also found that the risk applies to all members of the ICI drug class. Therefore, product safety information is being updated to include the risk of aplastic anemia in the Canadian product monographs for Keytruda and Tecentriq, as well as for the following other ICIs that are not currently labelled for this risk: Bavencio (avelumab), Imfinzi (durvalumab), Jemperli (dostarlimab) and Libtayo (cemiplimab).

Tagrisso: risk of rhabdomyolysis/myopathy

A Health Canada safety review found a possible link between the use of Tagrisso (osimertinib) and the risk of rhabdomyolysis and other myopathy-related events, including myositis and elevated creatine phosphokinase (CPK). A warning about reported cases of rhabdomyolysis, myositis and elevated CPK will be added to the Canadian product monograph for Tagrisso. 📌

Lu-Ann Murdoch, RPh, BScPhm, ACPR, is a consulting clinical editor for *Pharmacy Practice + Business* and drug information consultant for *Pharmacist's Letter*.

Further details about these advisories and safety reviews can be obtained from the MedEffect Canada website: <https://www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada.html> and https://dhpp.hpfb-dgpsa.ca/review-documents?%5B0%5D=content_type%3AAssr



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QUESTIONS+ANSWERS

ABOUT ^{Pr}BLEXTEN[®]

What is BLEXTEN indicated for?

^{Pr}BLEXTEN[®] (bilastine) is indicated for the symptomatic relief of nasal and non-nasal symptoms of seasonal allergic rhinitis (SAR) and for the relief of the symptoms associated with chronic spontaneous urticaria (CSU) (e.g. pruritus and hives), in patients 4 years of age and older with a body weight of at least 16 kg.¹

What are the pediatric formats?

BLEXTEN offers the flexibility of two pediatric dosage formats. The pediatric formats are suitable for children 4-11 years old with a body weight of at least 16 kg.¹

BLEXTEN Orodispersible Tablets (ODT)

- Grape flavour,
- 10 mg tablet once daily
- To be placed in the mouth where it disperses rapidly in saliva, so it can be easily swallowed
- Convenient tablet formulation that can be taken without water

BLEXTEN Oral Solution

- Raspberry flavour in a clear, colourless liquid
- 2.5 mg/mL oral solution; 4 ml equivalent to 10 mg bilastine per dose
- A convenient dosing cup is provided with a mark of 4 mL

Ages 12+

20 mg tablet once daily

- No dose adjustments needed for elderly patients, kidney disease or liver disease.

Administration¹

- BLEXTEN should be taken without food or grapefruit juice or other fruit juices, as these dietary compounds may decrease the effect of bilastine.
- The BLEXTEN ODT is to be placed in the mouth where it disperses rapidly in saliva, so it can be easily swallowed. Alternatively, the ODT may be dispersed in water before administration. Grapefruit juice or any other fruit juice should not be used for dispersion.

Counselling tips for parents

- If it is difficult to ensure that your child does not eat anything for one hour after taking BLEXTEN, try administering it before bedtime.

- Patients should be instructed to take BLEXTEN and wait for one hour before taking food or fruit juice; or if food or fruit juice has been taken to wait for two hours before taking the medication.
 - The maximum daily dose for pediatrics (ages 4-11) is 10 mg (1 orodispersible tablet or 4 mL oral solution); for ages ≥ 12 , the maximum daily dose is 20 mg (1 tablet).
- See the Product Monograph for complete dosing and administration information

Demonstrated efficacy data in adults and adolescents - Seasonal allergic rhinitis

Blexten 20 mg significantly reduced Total Symptom Score area under the curve (TSS AUC) from baseline to day 14 vs. placebo (98.4 vs. 118.4, $p < 0.001$), but did not differ from the active comparator.^{1‡}

BLEXTEN Tolerability Profile- Adults and Adolescents

BLEXTEN was generally well tolerated with treatment emergent adverse events equal to placebo.^{1‡}

Treatment-emergent adverse reactions reported in $\geq 1\%$ of subjects treated with BLEXTEN 20 mg in Phase 2 and 3 trials

Adverse Event	BLEXTEN n=931	Placebo n=950
Gastrointestinal disorders	28 (3.01%)	28 (2.95%)
Abdominal pain upper	10 (1.07%)	4 (0.42%)
Nervous system disorders	81 (8.70%)	55 (5.79%)
Dizziness	10 (1.07%)	4 (0.42%)
Headache	40 (4.30%)	28 (2.95%)
Somnolence	38 (4.08%)	25 (2.63%)

What is the worldwide patient exposure for BLEXTEN?^{*}

BLEXTEN 10 mg

- More than 2.2 million patients treated
- Available in 58 countries
- Pediatric formats available in Canada since February 2022

BLEXTEN 20 mg

- More than 213 million patients treated
- Available in 121 countries
- Available in Canada since December 2016

BLEXTEN is covered under most private insurance plans.

Clinical use:

BLEXTEN should not be administered to children below 4 years of age and under 16 kg due to limited data in this population.

Contraindication:

- History of QT prolongation and/or torsade de pointes, including congenital long QT syndromes.

Relevant warnings and precautions:

- QTc interval prolongation, which may increase the risk of torsade de pointes.
- Use with caution in patients with a history of cardiac arrhythmias; hypokalemia, hypomagnesaemia; significant bradycardia; family history of sudden cardiac death; concomitant use of other QT/QTc- prolonging drugs.
- P-glycoprotein inhibitors may increase plasma levels of BLEXTEN in patients with moderate or severe renal impairment; co-administration should be avoided.
- BLEXTEN should be avoided during pregnancy unless advised otherwise by a physician.
- A study was performed to assess the effects of BLEXTEN and bilastine 40 mg on real time driving performance compared to placebo. Bilastine did not affect driving performance differently than placebo following day one or after one week of treatment. However, patients should be informed that very rarely some people experience drowsiness, which may affect their ability to drive or use machines.

For more information:

Please consult the product monograph at www.miravohealthcare.com/wp-content/uploads/2021/08/Blexten-PM-ENG-Aug2021.pdf for important information relating to adverse reactions, drug interactions, and dosing information which have not been discussed in this piece. The product monograph is also available by calling 1-866-391-4503.

References

1. Blexten Product Monograph. Aralez Pharmaceuticals Canada Inc. 2021.

‡ Double-blind, placebo-controlled, randomized, active-controlled parallel-group trial of 720 patients with SAR, 12-70 years old. Patients were randomized to BLEXTEN 20 mg, desloratadine 5 mg or placebo once daily for 14 days. Primary endpoint was change in AUC of the TSS from baseline to day 14. TSS was comprised of the reflective total nasal symptom score (rTNSS) and the reflective total non- nasal symptom score (rTNNSS).

* As of August 31, 2021, the estimate from internal data of patient exposure is based on units sold of the defined daily dose of 10 mg (pediatric) and 20 mg (adult) bilastine and the mean treatment duration of 3 weeks.



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THERAPEUTIC ISSUES

Empowering pharmacists in the management of dry eye disease

KATELYN HALPAPE
BSP, ACPR, PharmD,
BCPP



A patient is refilling his prescription for quetiapine IR 25 mg po qhs and paroxetine 20 mg po daily. You notice that he also has two bottles of lubricating eye drops in his hand.

During a comprehensive medication review you identify that a patient is using multiple ophthalmic lubricants for persistent dry eyes, with minimal benefit.

Scenarios such as these should alert pharmacy staff to the possibility of patients with dry eye disease (DED). DED affects a substantial number of people worldwide.¹ About 21% of Canadians have DED, with increased prevalence in females and older adults.² DED is characterized by insufficient tear production and/or quality, and ocular surface inflammation. It leads to discomfort, redness, irritation, pain and fluctuating vision.^{1,3} DED can significantly affect quality of life by limiting activities such as driving and reading, and negatively impact workplace productivity.^{1,4}

DED can be problematic for patients, but can be effectively managed with the help of healthcare professionals, including pharmacists.³ However, a community pharmacy-based study found that only

42% of pharmacy staff correctly identified DED when interacting with a “mystery” patient simulating DED, and only 10% provided administration and dosage advice for treatments.⁵

Risk factors

A number of health conditions are associated with DED, including diabetes, anxiety, depression and a sedentary lifestyle.^{1,3} Any condition or exposure that leads to ocular-surface inflammation can trigger DED, including infection, immune-mediated conditions (e.g., rheumatoid arthritis, Sjögren’s syndrome) and environmental exposures (e.g., wind).¹ Additionally, any condition (e.g., Parkinson’s disease) or activity (e.g., screen viewing) that reduces blink frequency heightens vulnerability to DED.

Signs and symptoms

DED most often occurs bilaterally.³ Patients often present with ocular pain,

TABLE 1

Recommendations for the Staged* Management and Treatment of Dry Eye Disease⁶

STEP 1	<ul style="list-style-type: none"> • Education regarding DED, its management, treatment and prognosis • Local environment modifications • Education regarding potential dietary modification (including oral essential fatty acid supplementation) • Identification and modification/elimination of offending systemic and topical medications • Ocular lubricants (lipid-containing formulations recommended if meibomian gland dysfunction) • Lid hygiene and warm compresses
STEP 2	<ul style="list-style-type: none"> • Nonpreserved ocular lubricants • Tear conservation (punctal occlusion and/or moisture chamber goggles) • Overnight treatments (e.g., ocular lubricant ointments) • In-office treatments/procedures (e.g., heating and expression of meibomian glands, intense pulsed light therapy) • Prescription medications (tailored to individual patient) <ul style="list-style-type: none"> ▷ Topical antibiotic or antibiotic/steroid combination applied to lid margins for anterior blepharitis ▷ Topical corticosteroid (time-limited) (e.g., loteprednol) ▷ Topical nonglucocorticoid immunomodulator (e.g., cyclosporine) ▷ Topical lymphocyte function-associated antigen-1 (LFA-1) antagonist (e.g., lifitegrast) ▷ Oral macrolide or tetracycline antibiotic
STEP 3	<ul style="list-style-type: none"> • Oral secretagogues (e.g., pilocarpine) • Autologous/allogeneic serum eye drops** • Therapeutic contact lens options (e.g., soft bandage lenses or rigid scleral lenses)
STEP 4	<ul style="list-style-type: none"> • Topical corticosteroid for longer duration • Amniotic membrane grafts • Surgical punctal occlusion

*One or more options within each step can be tried concurrently and options within each step are not ranked

**Requires patient to have serum drawn at laboratory and compounding at specialty pharmacies

DED - Dry Eye Disease

When patients present with dry eye concerns, it is essential to conduct a medication review to identify medications that may contribute to or exacerbate DED.

which may be accompanied by light sensitivity, foreign-body sensation, dryness, irritation, and fluctuating or blurry vision.¹ Symptoms are commonly exacerbated by exposure to wind, light and extreme temperatures.¹

Approach to treatment

Treatment recommendations from an international expert panel are summarized in **Table 1**.⁶

Screening/assessment – An algorithm is available to guide the initial assessment of patients presenting with possible DED including when to refer to an eye specialist.⁷ Use of the Dry Eye Questionnaire-5 (DEQ-5) or Ocular Surface Disease Index (OSDI) is recommended to screen for symptoms of DED.^{6,8,9} Both the DEQ-5 and OSDI could be administered in pharmacy settings.

Medication review & management –

Several medications can exacerbate DED

(**Table 2**).^{1,7,10} When patients present with dry eye concerns, it is essential to conduct a medication review to identify medications that may contribute to or exacerbate DED.¹ If a culprit medication is identified, collaborate with the prescribing healthcare professional to explore alternate medications or dosage adjustments to alleviate dry eye symptoms.

Education and awareness – Pharmacists are well positioned to educate patients about DED symptoms, risk factors and available treatment strategies. They can empower patients to self-manage the condition, including the selection of appropriate treatment and lifestyle modifications.^{1,6,7}

OTC recommendations – The primary treatment goal is to establish and maintain tear film homeostasis.³ Pharmacists can guide patients in selecting appropriate ophthalmic

lubricants based on individual factors such as severity of symptoms. First-line treatments are ophthalmic lubricants (e.g., drops, sprays), which provide symptomatic relief.^{3,6,7} Preservative-free formulations (e.g., Systane Complete, Thealoz Duo, HydraSense) are preferred as they reduce the likelihood of causing toxic conjunctivitis, which can mimic and/or exacerbate DED.^{3,7} If an eye drop containing a preservative is used, use should be limited to no more than four to six times per day to minimize risk for toxic conjunctivitis.³ Products that contain a vasoconstrictor (e.g., tetrahydrozoline) should be avoided as rebound vasodilation can increase redness.³ Oil-containing formulations, which aim to replace the lipid component of the tear film, should be considered for patients with intermittent blurred vision that improves with blinking.³

It is important to ensure patients are familiar with the appropriate

technique for using ophthalmic products; observational data suggest that suboptimal eye drop technique is prevalent in real-world clinical practice.¹¹

Prescription treatments – When OTC remedies are insufficient, pharmacists can work with eye specialists to assist patients in understanding prescription treatment options (e.g., corticosteroids, cyclosporine).^{6,7} Pharmacists can provide suggestions based on medication coverage and cost, as several prescription DED treatments are not covered by provincial or private drug plans.⁷ They can also support patients by following up to assess the effectiveness and safety of treatment trials.^{1,3}

Lifestyle modifications – Pharmacists can provide valuable advice on lifestyle modifications to help alleviate DED. These include daily eyelid hygiene with warm water or commercial lid wipes, warm eye compresses, adequate sleep, optimal hydration, practising the 20-20-20 rule (every 20 minutes take a 20-second break from screen viewing to focus eyes on something at least 20 feet away), optimizing humidity levels, and managing exposure to irritants.^{1,3,7,12}

Case review

The patients introduced in this article both have red flags that should trigger pharmacists to screen for DED and provide patients with guidance on appropriate management. This would include optimal ophthalmic product selection and administration, as well as collaboration with other healthcare providers to discuss possible alterations to potentially contributing systemic medications (i.e., paroxetine and quetiapine). ☉

Katelyn Halpape, BSP, ACPR, PharmD, BCPP, is a clinical pharmacist at the Dube Centre for Mental Health in Saskatoon, SK, and an Assistant Professor in the College of Pharmacy and Nutrition at the University of Saskatchewan.

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TABLE 2

Select Medications Associated with Dry Eye Disorder^{1,7,10}

Medication Class	Examples
Antidepressants	<ul style="list-style-type: none"> • Tricyclic antidepressants (e.g., amitriptyline) • Selective serotonin reuptake inhibitors (e.g., sertraline, paroxetine) • Serotonin norepinephrine reuptake inhibitors (e.g., duloxetine) • Trazodone
Antihistamines	<ul style="list-style-type: none"> • Selective non-sedating H₁-receptor antagonists (e.g., cetirizine) • Nonselective H₁-receptor antagonists (e.g., diphenhydramine)
Antiparkinson drugs	<ul style="list-style-type: none"> • Benzotropine • Procyclidine • Trihexyphenidyl • Pramipexole • Levodopa
Antipsychotics	<ul style="list-style-type: none"> • Chlorpromazine • Loxapine • Quetiapine • Clozapine
Antiseizure medications	<ul style="list-style-type: none"> • Valproic acid • Lamotrigine • Phenobarbital
Beta-blockers	<ul style="list-style-type: none"> • Nonselective agents (e.g., labetalol, nadolol) • Beta-1 selective agents (e.g., atenolol, metoprolol)
Decongestants	<ul style="list-style-type: none"> • Pseudoephedrine
Diuretics	<ul style="list-style-type: none"> • Furosemide • Indapamide • Hydrochlorothiazide
Hormonal agents	<ul style="list-style-type: none"> • Oral contraceptives • Estrogen
Miscellaneous Medications	<ul style="list-style-type: none"> • Antispasmodics (e.g., oxybutynin, solifenacin) • Benzodiazepines • Clonidine • Cyclobenzaprine • Isotretinoin • Methocarbamol • Opioids • Prazosin
Ophthalmic Medications	<ul style="list-style-type: none"> • Benzalkonium chloride (preservative) • Beta-blockers (e.g., timolol) • Adrenergic agonists (e.g., brimonidine) • Carbonic anhydrase inhibitors (e.g., dorzolamide) • Nonsteroidal anti-inflammatories (e.g., diclofenac, ketorolac) • Olopatadine hydrochloride • Prostaglandins (e.g., travoprost, bimatoprost)

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☉ More Therapeutic Issues

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Engaging patients: your words matter

WADE THOMPSON
PharmD, MSc, PhD



Many of us have raised the issue of stopping a medication and been met with hesitance from a patient. Patients might be fearful of the negative effects of stopping a medication or be worried about missing out on perceived future benefits of the medication.¹ This is often justifiable as the option to back off in the future might not be discussed when a medication is started. When it comes to engaging patients in deprescribing, what we say, and how we say it, matters. In this column, we look at engaging patients in deprescribing decisions and planning.

Start a conversation

One of the first things to think about is how we introduce and frame the concept of “deprescribing.” We would rarely if ever use the term deprescribing when talking to a patient. If you have identified a possible deprescribing opportunity, one suggested approach is to introduce the idea of deprescribing simply as a “conversation about options.”² One option may be to continue a medication, whereas another option might be to stop a medication. The goal is to explore different aspects of the decision (e.g., pros and cons of stopping or reducing, cost/convenience), explore patient preferences, and find the best choice for the individual.³

Talk about why stopping or reducing a medication is an option

Patients need to understand the rationale

If you are raising stopping or reducing a medication as an option, explain why this is being considered.

for deprescribing.¹ If you are raising stopping or reducing a medication as an option, explain why this is being considered.¹ The specific rationale will depend on the individual patient, medication and context. For example, for a benzodiazepine, the central consideration may be concern about actual harm or risk of future harm. In contrast, for a potentially unnecessary long-term proton pump inhibitor (PPI), the main reason for stopping would be that the medication is no longer needed.

Researchers and clinicians have identified some helpful phrases and language to start or engage in a conversation (**Box 1**).⁴⁻⁶ Patient-directed resources from <https://deprescribing.org> and the Canadian Medication Appropriateness and Deprescribing Network (<https://www.deprescribingnetwork.ca>) can help to engage patients in a conversation.

Involve patients in decisions

Provide patients with an opportunity to ask questions about options and to share their preferences and priorities.^{5,6} For many deprescribing decisions the best choice for an individual depends on what is important to them.⁷ For example, a patient taking gabapentin for diabetic neuropathy may be bothered by dizziness and drowsiness caused by this medication, even though it is helping their pain. In this situation, the patient may be more concerned about side effects than any benefits in pain management, and discontinuation or dose reduction may be the best choice. Patients may need to time to think about their options. Deprescribing is a process; a decision can be revisited later if patients need more time.



Involve patients in the plan

Work together with patients to develop deprescribing plans that fit for them. This includes the method of deprescribing, the method of follow-up, and the frequency of follow-up.¹

Discuss the deprescribing methods available such as tapering (including the tapering rate and schedule) or abruptly stopping. The best plan will depend on the medication and the individual person. For example, a patient on trazodone 100 mg qhs for insomnia for 10 years may prefer a slow taper over several months, whereas a patient who has taken trazodone 50 mg qhs for one month may want to pursue a faster taper.

Explain to patients that a medication can always be restarted or increased back to its original dose if withdrawal symptoms occur or the underlying condition returns.¹ One suggested approach is to frame deprescribing as a “pause and monitor,” reminding patients that stopping or dose reduction is a trial, and they will be monitored closely throughout the process.²

Discuss what to expect upon stopping or reducing (e.g., what symptoms to watch out for) and have a plan for what to do if symptoms come back. For example, if dose reduction of a PPI is being considered, explain that rebound upper gastrointestinal symptoms may occur but are usually not serious and will go away after a few days or weeks.⁸ If rebound symptoms do occur, have a plan for treating them, such as taking an antacid as needed.⁸ It may also be helpful to agree on a threshold for when to restart the medication (e.g., for a PPI, if symptoms are so severe that they interfere with sleep or usual activities).⁸

Ask patients about their preferred frequency and method of follow-up. Patients value knowing they will be supported and monitored through the process.¹ The frequency and method of follow-up will depend on the individual medication and patient preferences. Communicate your conversation and plan with other relevant healthcare team members. Pharmacists are well-positioned to have conversations about medication options and to conduct follow-up and monitoring.⁹⁻¹¹ Ⓢ

Wade Thompson is a pharmacist and researcher working to ensure older persons are taking medications that are necessary, effective, safe, and consistent with their healthcare goals and treatment

BOX 1

Phrases to engage people in deprescribing decision-making⁴⁻⁶

Deprescribing-specific phrases	Engaging patients in shared decisions
<i>“Given your age and other health problems, I’m worried that you are at increased risk of side effects from this medicine.”</i>	<i>“I want to go over all the options so we can find a path that works for you.”</i>
<i>“I think it could be harmful for you to be on this many medicines.”</i>	<i>“Let’s work as a team to make a decision that suits you best.”</i>
<i>“I’m worried this medicine may cause you more harm than good.”</i>	<i>“Here are some choices we can consider.”</i>
<i>“This medicine is not good for you in the long run; let’s work together to slowly reduce the dose and get you off it over time.”</i>	<i>“Let me tell you what the research says about the benefits and risks of the options we are considering.”</i>
<i>“This medicine has been linked to side effects such as ... in older adults.”</i>	<i>“As you think about your options, what’s important to you?”</i>
<i>“People become more sensitive to side effects as they get older.”</i>	<i>“Tell me what matters most to you for this decision.”</i>
<i>“People handle and respond to drugs differently as they get older.”</i>	<i>“Which option fits best with the treatment goals we’ve discussed?”</i>
<i>“People change over time. Medications that worked well before, may not be as useful now.”</i>	<i>“What additional questions do you have for me to help you make your decision?”</i>
	<i>“It is fine to take more time to think about the choices. Would you like some more time, or are you ready to decide?”</i>

Phrases adapted from references 4-6 and from Dr. Barbara Farrell (used with permission)

preferences. He is an assistant professor in the Department of Anesthesiology, Pharmacology and Therapeutics in the Faculty of Medicine at the University of British Columbia. He is an investigator with deprescribing.org and a member of the Therapeutics Initiative, and works clinically as a pharmacist in long-term care.

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Benzodiazepine-related toxicity: Ontario study

SANDRA KNOWLES
BScPhm



Benzodiazepines are used for the treatment of many disorders, including anxiety, insomnia and seizures, as well as for the management of alcohol withdrawal and muscle relaxation. In Canada, the prevalence of benzodiazepine use is estimated between 5% and 10%. Overall, benzodiazepines are generally considered safe; however, benzodiazepine-related toxicity may result in central nervous system depression, including drowsiness, ataxia, slurred speech and, in some cases, a comatose state. Additionally, benzodiazepines are often taken with other central nervous system depressants such as opioids, which may result in respiratory depression. A study investigated the epidemiology of benzodiazepine-related toxicity over time among residents in Ontario.

Polysubstance involvement in benzodiazepine-related toxicity has increased.

A population-based, cross-sectional study identified 32,674 benzodiazepine-related toxicity encounters involving 25,979 patients during an eight-year study period (January 2013 to December 2020). The median age was 38 years; 60% of individuals were female. In the one-year period prior to the benzodiazepine-toxicity, 46% of individuals were admitted to an emergency department or hospital for a mental health or substance use disorder. The age-standardized rate of benzodiazepine-related toxicity per

100,000 population decreased from 27.8 to 26.4 between 2013 and 2020. However, in the same period, the rate increased among young adults aged 19–24 (39.9 to 66.6 per 100,000 population). A decline in the number of patients with an active benzodiazepine prescription was observed over the study period, from 61% in 2013 to 49% in 2020. The proportion of encounters that had opioid, stimulant or alcohol co-involvement increased from 22.1% to 28.8% over the study period. The authors suggest that this may be due to the increasing presence of nonpharmaceutical benzodiazepines as adulterants in the unregulated drug supply in Ontario.

Implications for pharmacists

Although the overall rate of benzodiazepine-related toxicity has declined in Ontario, the rates have increased substantially in young adults, particularly in those aged 19–24. Polysubstance involvement in benzodiazepine-related toxicity has increased, which may be due to the increasing adulteration of an unregulated drug supply. In order to reduce benzodiazepine-related harm, a multifaceted approach is needed, including education to promote the safe and appropriate use of prescription benzodiazepines and improved access to community-based mental health services.

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Hormone replacement therapy and risk of dementia

The effect of hormone replacement therapy (HRT) on the risk of dementia is unknown. Some early studies suggested that HRT may have a protective effect on the development of Alzheimer's disease. In contrast, the Women's Health Initiative Memory Study found that HRT was associated with a two-fold increased risk of dementia in women aged 65 years or older. In order to determine whether age of initiation or duration of menopausal hormone therapy affects health outcomes, a nested case-control study was completed between 2000 and 2018 using Danish national registries.

A total of 5,589 incident cases of dementia and 55,890 age-matched controls (i.e., those who did not develop dementia) were identified. Almost 18,000 participants in the study sample received combined HRT: 1,782 in the dementia group and 16,154 in the control group. Median age of initiation of HRT was 53 years, with a median duration of 3.8 years in the dementia group, and 3.6 years in the control group. Those who used HRT had a 24% increased risk of developing all-cause dementia compared to those who didn't. Longer durations of use were associated with increased risk, ranging from 21%

in those who used HRT for one year or less, to 74% in patients using HRT for 12 years or more. No difference was noted in patients taking continuous (estrogen and progestin taken daily) and cyclic (daily estrogen with progestin taken 10–14 days a month) treatment regimens. Progestin-only or vaginal-estrogen-only therapy was not associated with the development of dementia.

Implications for pharmacists

Although this study showed a relationship between HRT and development of dementia, other trials done in similar groups of women did not find a link between cognitive function and HRT. The authors caution that further studies are needed to determine whether their findings represent an actual effect of HRT on dementia risk, or whether other factors may contribute to this relationship. ●

Sandra Knowles, BScPhm, is a drug information pharmacist with Sunnybrook Health Sciences Centre in Toronto.

REFERENCE Pourhadi N, Morch LS, Holm EA, et al. Menopausal hormone therapy and dementia: nationwide, nested case-control study. *BMJ* 2023;381:e072770.

OCTOBER 2023 • Take this course at eCortex.ca

Learning objectives

After completion of this continuing education lesson, participants should be able to:

1. Define the role of neuraminidase in the immune response to influenza vaccines
2. Describe the potential impact of egg adaptation on influenza vaccine effectiveness
3. Describe the advantages and disadvantages of available technologies in influenza vaccine manufacturing
4. Apply real-world evidence on influenza vaccines to patient care

Instructions

1. After carefully reading this lesson, review the test questions. Answer online at eCortex.ca.
2. To pass the test and earn your continuing education credit(s), a grade of at least 70% (6 out of 8) is required.
3. Complete the required course feedback at eCortex.ca.

DISCLOSURES

The author and expert reviewers have each declared that there is no real or potential conflict of interest with the sponsor of this CE lesson. The author has served on an advisory board for and contributed to research performed by the sponsor of this CE lesson.



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The science and impact of new innovations in influenza vaccines

By Sherilyn Houle, BSP, PhD, CTH, AFTM RCPS(Glasg)



Following historically low influenza case counts in the 2020-2021 season, where only 69 positive detections of influenza were reported nationwide in Canada,⁽¹⁾ influenza circulation resumed in 2021. The 2022-2023 influenza season was marked by an early and sharp onset, peaking in late November and consisting almost entirely of influenza A, particularly influenza A(H3N2).⁽²⁾

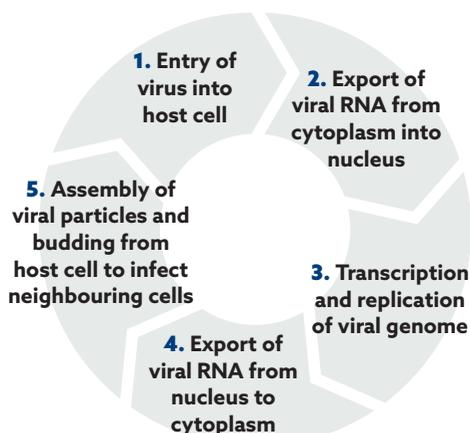
Over time, influenza vaccination rates have remained relatively stable and below Public Health Agency of Canada targets of $\geq 80\%$ for adults aged 18-64 with chronic medical conditions, and adults aged 65 years and older.⁽⁴⁾ Specifically, the 2022-2023 influenza season recorded vaccination rates of only 43.1% and 73.7% among these groups, respectively.⁽⁵⁾

Community pharmacies are the most frequently visited setting for influenza vaccination by Canadians,⁽⁵⁾ with evidence showing that those who receive an influenza vaccination at a pharmacy tend to continue to visit a pharmacy for future vaccinations.⁽⁶⁾ As the providers of over 20 million COVID-19 vaccines to date,⁽⁷⁾ Canadian community pharmacies have become trusted sources of vaccination services and advice.

Prior to 2019, options for influenza vaccination were limited as all products available were egg-based. Now, cell-based and recombinant vaccines are also available,⁽⁸⁾ and pharmacists should be knowledgeable on these options and their role in influenza prevention efforts. This lesson will provide an overview of factors impacting influenza vaccine effectiveness, compare and contrast manufacturing processes, and summarize real-world evidence specific to the cell-based influenza vaccine.

Neuraminidase and its impact on influenza illness, prevention, and treatment

Hemagglutinin (HA) and neuraminidase (NA) are glycoproteins present on the surface of the influenza virus.⁽⁹⁾ While influenza B viruses are classified by lineage (for example, B/Yamagata and B/Victoria),

FIGURE 1 Life cycle of the influenza virus

influenza A viruses are classified based on the combinations of HA and NA present, with A(H1N1) and A(H3N2) currently routinely circulating.⁽⁹⁾

The life cycle of the influenza virus can be broadly summarized in five stages as indicated in Figure 1.⁽¹⁰⁾

Both HA and NA interact with sialic acid on the host cell membrane during this life cycle, with HA playing an important role in initial attachment and entry of the virus into the host cell (stage 1) and NA playing an important role in the release of the viral particle from the plasma membrane (stage 5).

The importance of understanding the viral structure and life cycle of influenza is three-fold:

1. We produce different antibodies against HA and NA, which have complementary roles;
2. NA is the target of antiviral drugs used in the prevention and treatment of influenza; and
3. Vaccines differ in their HA and NA content.

While anti-HA antibodies provide protection against infection with influenza, anti-NA antibodies reduce disease severity by enhancing viral clearance.⁽¹¹⁻¹²⁾ In particular, higher levels of anti-NA antibodies have been associated with shorter duration of influenza symptoms and shorter duration of viral shedding, especially in adults.⁽¹³⁾ However, most evaluations of immune response to influenza illness or vaccination are focused on HA, using the hemagglutination

TABLE 1 Influenza vaccine products and contents⁽¹⁹⁾

Vaccine Type (abbreviation)	HA per Strain	NA	Adjuvant
Inactivated, quadrivalent, standard-dose, egg-based (IIV4-SD)	15 µg	Not quantified	None
Inactivated, quadrivalent, cell-based (IIV4-cc)	15 µg	Not quantified	None
Inactivated, quadrivalent, high-dose, egg-based (IIV4-HD)	60 µg	Not quantified	None
Inactivated, quadrivalent, recombinant (RIV4)	45 µg	None	None
Inactivated, trivalent, adjuvanted, egg-based (IIV3-Adj)	7.5 µg (pediatric) 15 µg (adult)	Not quantified	MF59
Live attenuated, quadrivalent, egg-based, nasal spray (LAIV4)	Not quantified*	Not quantified*	None

* Contents are measured in FFU (fluorescent focus units) of live attenuated virus reassortants

inhibition (HI) assay. Seroprotection (an antibody response capable of preventing infection)⁽¹⁴⁾ against influenza is defined as a titer $\geq 1:40$,⁽¹⁵⁾ however, it is important for pharmacists to know that titres of 1:30 to 1:40 represent the range at which approximately 50% of individuals will be protected from infection.⁽¹⁵⁾ While there is a positive correlation between titres and protection, there is no titer that can guarantee protection.⁽¹²⁾

Antiviral therapies used for the prophylaxis and treatment of influenza in Canada, oseltamivir and zanamivir, are both inhibitors of NA.⁽¹⁶⁾ Inactivated egg-based and cell-based vaccines and the live attenuated influenza vaccine contain both HA and NA. Among the inactivated vaccines, the quantity of HA is used to standardize doses, while the quantity of NA is not standardized and may vary across manufacturers and even across production lots.⁽¹²⁾ The recombinant vaccine contains only HA.⁽¹⁷⁾ A summary of available vaccines and their antigen content is provided in Table 1. The role of NA as a vaccine antigen, including establishing the optimal dose of NA that improves immunogenicity and effectiveness, has been identified as a goal in research and development efforts related to influenza vaccines.⁽¹⁸⁾

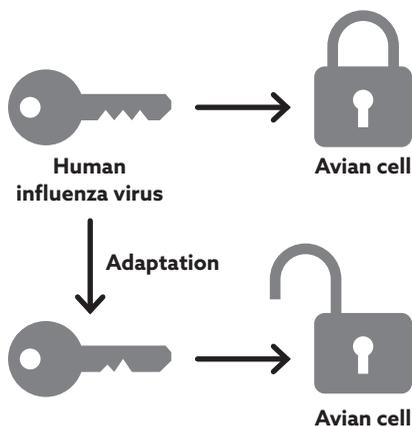
Egg adaptation and influenza vaccine effectiveness

For over 80 years, eggs have been used as a medium for the manufacturing of influenza vaccines.⁽²⁰⁾ In this process, the influenza virus is inoculated into

fertilized chicken eggs, where it replicates over 2-3 days and is then isolated, inactivated, and purified.⁽²¹⁾ While well established and cost-effective, this process not only requires the use of a large number of eggs to generate the nearly 12 million vaccine doses used in Canada annually,⁽²²⁾ it is also at risk of a phenomenon called egg adaptation.

As illustrated previously, the first stage in the life cycle of the influenza virus is attachment and entry into a host cell. This also applies to the infection of egg cells during vaccine production. However, avian (bird) cell receptors differ in shape from human receptors, and HA needs to fit the receptor to attach to the cell, much like how a key needs to fit a lock in order to open it (Figure 2). Without a match, attachment and infection cannot occur. As we are attempting to infect avian cells with human influenza virus, adaptation occurs at the head of the HA protein to allow it to attach to the avian cell receptors.^(23,24)

Recall that anti-HA antibodies are part of the immune response to influenza vaccination. These antibodies recognize future exposure to the HA protein and block the virus from infecting our cells. Depending on the degree of egg adaptation that occurs, the differences between the viruses selected by the World Health Organization (WHO) for inclusion in each year's vaccine and those our body forms antibodies against upon vaccination with an egg-based vaccine, may be clinically significant and result in decreased vaccine effectiveness.

FIGURE 2 Lock and key analogy of egg adaptation

Each year, the WHO selects the strains of influenza to be included in the upcoming season's vaccines for each hemisphere to align with those deemed to be most likely to circulate based on ongoing surveillance.⁽²⁵⁾ All vaccines marketed in Canada must target these strains. However, influenza viruses constantly evolve, creating the opportunity for a mismatch between predicted versus actual circulating viruses. In years of good match, influenza vaccine effectiveness (VE) has ranged from 48-60% over the 2010/11 to 2019/20 influenza seasons.⁽²⁶⁾ In comparison, seasons experiencing A(H3N2) drift (small changes in the genes of the virus between strain selection and circulation) saw VE of 19-47%, and seasons where A(H3N2) egg adaptation was noted saw VE of 38-50%.⁽²⁶⁾ Canadian data has also identified higher hospitalization and mortality rates among adults ≥ 65 years during the 2014/15 influenza season when there was a mismatch with the circulating A(H3N2) strain.⁽⁸⁾ While match is one factor influencing vaccine effectiveness each year (in addition to changes in circulating virus patterns and variations in individual immune response to vaccination),⁽²⁷⁾ it is one that is potentially modifiable based on the vaccine production method used, as discussed below.

Advances in technologies for influenza vaccine production

Since 2011, new influenza vaccine products have been added to the Canadian market aiming to address some of the

limitations of existing options. These include adjuvanted and high-dose vaccines for older adults, and cell-based and recombinant vaccines to address longer lead-times in manufacturing,⁽²⁸⁾ poor replication of some influenza A viruses in eggs that can impact yield,⁽²⁹⁾ and egg adaptation. As neither cell-based nor recombinant technologies utilize eggs, the potential for egg adaptation in vaccine manufacturing is avoided.

- **Cell-based vaccine** propagates the influenza virus using Madin-Darby Canine Kidney (MDCK) cells within a closed and sterile bioreactor system before isolating and purifying the antigens to create the final vaccine product.⁽³⁰⁾ Given the sterile process, antibiotics and preservatives are not required during manufacturing and are not present in pre-filled syringes of the vaccine, although thimerosal is added to multi-dose vials to allow for multiple punctures. MDCK cells are derived from a self-replicating continuous cell line harvested in the 1950s;⁽³¹⁾ therefore, no dogs are harmed in obtaining the cell-based influenza virus.
- **Recombinant vaccine** is created synthetically by first inserting the gene that encodes the production of HA into a baculovirus, which is an insect virus that can accommodate multiple additional foreign genes and is non-pathogenic to humans.⁽³²⁾ This baculovirus then infects cells from the fall armyworm where it produces high quantities of HA that are then extracted and purified.⁽³³⁾ Available as a pre-filled syringe, it also does not contain antibiotics or preservatives.

The significance of avoiding the risk of egg adaptation varies by year and by virus type. For example, research examined the antigenic similarity of egg-propagated and cell-propagated influenza viruses compared to circulating viruses for the 2002/03 through 2017/18 influenza seasons. It found that both the egg- and cell-propagated viruses were well matched against circulating viruses for A(H1N1) and B/Yamagata; however, egg adaptation was observed among the A(H3N2) and B/Victoria strains each year over the study period at varying levels of magnitude.⁽³⁴⁾ Considering that

in the 2022/23 influenza season, 99% of infections were comprised of influenza A, of which 92% of detections for subtyped influenza A were A(H3N2),⁽²⁾ this propensity for egg adaptation by A(H3N2) may have vaccine effectiveness implications for our patients.

While cell-based and recombinant influenza vaccines offer benefits over egg-based vaccines related to faster production (allowing for faster scale-up in the event of a pandemic or other surge in demand) and avoidance of egg adaptation, they are at a higher price point and publicly funded influenza immunization programs may not include these products; however, coverage through third-party insurance plans can be explored. Finally, while the National Advisory Committee on Immunization (NACI) recommends influenza immunization to all individuals aged 6 months and older without contraindications, the recombinant vaccine is currently only indicated for use in adults aged 18 years and older, while the egg-based and cell-based vaccines are indicated for those aged 6 months and older.⁽⁸⁾

Real-world evidence on influenza vaccine options

Real-world evidence is comprised of data commonly sourced from electronic health records, medical claims or billing data, or insurance data.⁽³⁵⁾ As such, it reports on the effectiveness of treatment under real-world use, in contrast to efficacy which captures outcomes under controlled conditions such as clinical trials.⁽³⁶⁾ Given their complementary perspectives, regulatory and funding decisions are increasingly considering evidence from both clinical trials and real-world studies.⁽³⁷⁾

The availability of real-world evidence on newer products is often a function of their time on the market and usage rates. For example, a vaccine effectiveness study conducted in the United States in 2018/19 reported that 2% of Medicare beneficiaries aged ≥ 65 years who were vaccinated against influenza that year received the recombinant vaccine, causing the study to lack the statistical power for it to be included in the all-vaccine comparison analysis.⁽³⁸⁾

A study on absolute VE (aVE) of cell- and egg-based vaccines in the 2017/18

influenza season⁽³⁹⁾ with inclusion criteria in alignment with the current Canadian landscape (quadrivalent cell- and egg-based vaccines and use in individuals aged ≥ 6 months)⁽¹⁹⁾ reported lower aVE for IIV4-cc than IIV4-SD against lab-confirmed influenza A (50% vs. 54%) and B (40% vs. 53%). However, in addition to preventing infection, another aim of vaccination is the prevention of severe disease should infection occur. To study this, relative VE (rVE) on outcomes such as hospitalization and emergency department visits has also been examined, as summarized in Table 3. Outcomes that were statistically significant in favor of cell-based vaccines are in bold text. While the rVE was lower in older adults across all three seasons, these differences were not statistically significant. Note also that influenza-related encounters for the study by Boikos *et al.* included outpatient visits, while the remaining studies only considered influenza-related emergency room (ER) visits or hospitalizations.

More recently, an interim estimate of 2022-23 seasonal influenza vaccine effectiveness in Wisconsin among individuals aged 6 months to 64 years reported VE of 54% (95%CI 23-73) against laboratory-confirmed influenza A and 60% (95%CI 25-79) for A(H3N2) specifically.⁽⁴⁴⁾ Among children, VE was 71% (95%CI 31-90) for the prevention of influenza A. Of note, 84% of vaccinated participants in this study cohort received the cell-based vaccine.⁽⁴⁴⁾

rVE has also been examined specifically among those at high risk of complications, including those with underlying comorbidities such as respiratory disease, cardiovascular disease, diabetes, and malignancy. Of three studies that looked at rVE on hospitalizations or ER

visits across all high-risk conditions as a composite, all three reported statistically significant benefits in favor of cell-based vaccine for encounters due to asthma, COPD, or other bronchial causes,⁽⁴¹⁻⁴³⁾ two reported benefit for influenza-related causes,⁽⁴¹⁻⁴²⁾ and one reported benefit for pneumonia.⁽⁴²⁾ Looking at high-risk conditions individually,⁽⁴⁰⁾ one study reported statistically significant benefits in favor of cell-based vaccine among those with any chronic pulmonary disease, asthma, and rheumatic disease, with no differences observed for subjects with myocardial infarction or chronic heart failure, cerebrovascular or peripheral vascular disease, renal disease, diabetes, any malignancy/metastatic tumors, HIV/AIDS, or liver disease.

Putting it into practice with patients Raj and Arun

Raj (age 46) and his son Arun (age 15) visit the pharmacy for their annual flu shots. Raj has no medical conditions, while Arun has a history of asthma that has required hospitalization as a younger child. While it is currently controlled, the family is committed to vaccination to protect Arun from respiratory illness. Raj has learned about the available influenza vaccine products online and is asking your opinion on which they should receive. Cost and coverage are not an issue, as Raj has a health spending account through work that can cover vaccine costs.

NACI advises that any of the age-appropriate influenza vaccines can be provided to patients, with a preference only stated for high-dose egg-based vaccine over standard-dose egg-based vaccine among adults aged ≥ 65 years.⁽¹⁹⁾ Options for Arun therefore include IIV4-SD, IIV4-cc, or LAIV4, while

options for Raj include the same vaccines as for Arun but with the addition of RIV4 as he is over 18 years of age.⁽¹⁹⁾ Given Arun's history of severe asthma, they opt for him to not receive the intranasal live attenuated vaccine. Raj has an anaphylactic allergy to egg and, despite reassurance that this is not a contraindication for receiving an egg-based influenza vaccine,⁽⁸⁾ expresses a preference for an injectable non-egg-based vaccine. To support their decision-making, you also discuss the real-world evidence around available options, including evidence of benefit of IIV4-cc over egg-based vaccine specifically among those with asthma, and that similar evidence is not yet available for RIV4. Similar rates of adverse effects can be expected across all influenza vaccine products indicated for them,^(17,45) with the most common being local injection site reactions such as pain and redness.

Conclusion

Cell-based and recombinant influenza vaccines may offer benefits over egg-based vaccines by avoiding the consequences of egg adaptation and facilitating faster manufacturing of vaccine in the event of a pandemic or other surge in demand. Pharmacists should be aware of potential differences in vaccine effectiveness according to patient circumstances and differing age indications across vaccine products when making recommendations to patients. ●

Table 3 and references are online at eCortex.ca.

Find and answer the questions for this CE lesson online at eCortex.ca.

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FACULTY | The science and impact of new innovations in influenza vaccines

ABOUT THE AUTHOR

Sherilyn Houle is an Associate Professor at the University of Waterloo School of Pharmacy, holding a Bachelor of Science in Pharmacy from the University of Saskatchewan, PhD from the University of Alberta, and Certificate in Travel Health from the International Society of Travel Medicine. She has practice experience spanning hospital, home care, community, and travel and immunization clinic settings, with research, teaching,

and practice interests including immunizations, travel medicine, and pharmacy practice to full scope.

REVIEWERS

All lessons are reviewed by pharmacists for accuracy, currency and relevance to current pharmacy practice.

CE Project Manager: Rosalind Stefanac
CE Designer: Shawn Samson

This lesson is published by EnsembleIQ:
20 Eglinton Ave. West, Suite 1800
Toronto, ON M4R 1K8
Phone: 877.687.7321
Fax: 888.889.9522
CE queries: email
ecortex@canadianhealthcarenetwork.ca

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Educating patients and managing risk factors to prevent stroke

By Jacqui Herbert, BScPhm, ACPR, RPh

Stroke is a leading cause of death and disability globally, with approximately 100,000 individuals experiencing an acute stroke in Canada each year.^{1,2} Nine in 10 Canadians have at least one risk factor for stroke or cardiovascular disease—many of which are modifiable.³ Early intervention can significantly improve patient outcomes, but many patients continue to endure neurological deficits after a stroke.⁴ Pharmacists can play a key role in both primary and secondary prevention of stroke for their patients, by following these five practical tips.



1

Educate patients on the signs and symptoms of stroke

The importance of early intervention for patients experiencing acute ischemic stroke cannot be overstated: “time is brain.” In the event of a stroke, outcomes are greatly improved when patients receive timely care, which may include thrombolysis and/or mechanical thrombectomy.⁴

For individuals to seek prompt treatment in the event of a stroke, they must be able to recognize the signs and symptoms. Pharmacists can teach patients to recognize stroke symptoms, and to call 911 immediately if they or someone they are with is experiencing these symptoms. Commonly, the easy to recall acronym **FAST** is used to educate patients: **F**acial drooping, **A**rm weakness, **S**peech diffi-

culties and **T**ime to call emergency services.⁴ By ensuring that more individuals are aware of the signs and symptoms of stroke and the importance of quick action, pharmacists contribute to early intervention that ultimately can save lives and improve outcomes.

2

Monitor and manage blood pressure

Hypertension is the single most important modifiable risk factor for stroke.⁵ Pharmacists can ensure patients are appropriately screened for hypertension. They can also ensure that patients with a diagnosis of hypertension are well-educated on the potential sequelae of uncontrolled hypertension, and are monitored and treated to meet guideline-based targets.

Treatment for hypertension includes lifestyle modification

interventions and medication therapy. In patients with a history of stroke, the results of the PROGRESS trial support the use of an angiotensin-converting enzyme (ACE) inhibitor and thiazide/thiazide-like diuretic combination.⁶ By conducting medication reviews with patients, pharmacists can assess antihypertensive therapy, and may recommend medication adjustments for patients who are not meeting their blood pressure targets.

3

Recommend appropriate antithrombotic therapy for secondary prevention

Appropriate antithrombotic therapy is one component of medication therapy for secondary prevention of ischemic stroke. It is important for pharmacists to assess the agents and duration of

therapy to ensure patients are appropriately treated.

Unless there is an indication for anticoagulation, long-term antiplatelet therapy for secondary ischemic stroke prevention is recommended with any of:

- acetylsalicylic acid (ASA) 80–325 mg daily
- clopidogrel 75 mg daily
- combined ASA and extended-release dipyridamole (25 mg/200 mg twice daily).⁷

Patients may be prescribed short-term dual antiplatelet therapy (DAPT) for secondary stroke prevention. **Table 1** outlines the various DAPT protocols that may be prescribed in the context of secondary stroke prevention.^{9–11} Note that certain patients with high bleed risk were excluded from these trials. Patient factors and estimated bleed risk should always be considered when prescribing DAPT.

It is rare for a patient to be

Hypertension is the single most important modifiable risk factor for stroke.

on DAPT for longer than three months for the purpose of secondary stroke prevention, and pharmacists should investigate the indication in these circumstances. In all cases, patients should be stepped down to antiplatelet monotherapy once the DAPT period ends.

Oral anticoagulation (OAC) is recommended for patients with a diagnosis of atrial fibrillation who have experienced an ischemic stroke.⁷ Pharmacists have an important role in ensuring the selection and dosing of OAC is best suited for each patient; screening for and managing drug interactions; and providing education on oral anticoagulant administration, monitoring and adverse effects.

If a patient is already prescribed an antiplatelet agent at the time OAC is started, pharmacists should reassess the indication for antiplatelet therapy, as the risk of bleeding with the combination of OAC and antiplatelets is well-established.^{12,13} In many cases, the antiplatelet agent can be discontinued when OAC is started, and pharmacists should confirm this with the appropriate prescribers.

For all patients on antithrombotic therapy for secondary prevention of ischemic stroke, pharmacists should support medication adherence and reinforce its importance.

4

Engage with patients about lifestyle factors such as diet and exercise

Lifestyle factors, such as diet and exercise, are modifiable risk factors for stroke.

Lifestyle modification can play an important role in both primary and secondary stroke prevention. Pharmacists can engage with patients using shared decision-making and offer guidance to help patients achieve and maintain a healthy lifestyle. This may include:

- Educating patients on healthy food choices. Resources include Canada's Food Guide and specific diets such as the Mediterranean-type or DASH (Dietary Approach to Stop Hypertension) diet.^{7,14}
- Providing information about alcohol consumption and risk, as outlined in Canada's Guidance on Alcohol and Health. By limiting to two standard drinks or less per week, individuals are likely to avoid alcohol-related consequences.¹⁵
- Encouraging patients to engage in physical activity four to seven days a week. Guidelines recommend to accumulate at least 150 minutes of aerobic exercise per week, with intensity individualized to fitness level and functional limitations.⁷
- Providing resources for stress management, such as mindfulness techniques, deep breathing exercises and relaxation techniques.

5

Help patients stop smoking

Smoking is a major risk factor for stroke and one of the most important lifestyle factors that pharmacists can help patients modify.⁵ Pharmacists are

TABLE 1

Summary of Key DAPT Trials in Stroke

Trial	Stroke type and severity; patient population	DAPT agents ^a	Appropriate duration of DAPT based on trial results
CHANCE, ⁸ POINT ⁹	Noncardioembolic high-risk TIA and minor ischemic stroke (NIHSS ^b 3 or less); excluded patients who were candidates for thrombolysis or thrombectomy	ASA 81 mg daily + clopidogrel 75 mg daily	21 days
SAMMPRIS ¹⁰	TIA or ischemic stroke attributed to intracranial stenosis (70%–99%)	ASA 325 mg daily ^c + clopidogrel 75 mg daily	90 days
THALES ¹¹	Noncardioembolic TIA and minor-to-moderate ischemic stroke (NIHSS ^b 5 or less); excluded patients who were candidates for thrombolysis or thrombectomy	ASA 75–100 mg daily + ticagrelor 90 mg twice daily	30 days

ASA—acetylsalicylic acid; DAPT—dual antiplatelet therapy; TIA—transient ischemic attack

a. Specified doses are AFTER the loading dose, which may vary

b. National Institutes of Health Stroke Scale (scores range from 0–42; higher scores indicate greater deficits)

c. While the 325 mg dose of ASA was studied in the SAMMPRIS trial, the Canadian Stroke Best Practice Guidelines for Secondary Stroke Prevention do not indicate a dose of ASA in their recommendation, and the 81 mg/day dose may be used in clinical practice.

uniquely positioned to support patients to quit smoking, and in some provinces, are able to prescribe medications for this indication. Pharmacists should regularly assess patients' readiness to quit and provide nonjudgmental education and advice, counselling support, referral to appropriate resources, and medication therapy to help support smoking cessation.

A combination of pharmacotherapy and behavioural therapy should be considered in all smoking cessation programs. First-line therapy options include nicotine replacement therapy, varenicline and bupropion.⁷ Pharmacists may evaluate these options for individual patients and prescribe therapy, where appropriate and when able.

Summary

Stroke remains a significant source of morbidity, mortality and disability in Canada and around the world. There is reason for optimism, however, as evidence shows that early intervention, lifestyle modification, and appropriate medication therapy can help prevent and manage stroke. Pharmacists can play a vital role in reducing stroke risk for their patients, given pharmacists' accessibility in their communities and unique expertise in pharmacotherapy and patient care. ☪

Jacqui Herbert (jacqui.herbert@uhn.ca) is a pharmacist at the University Health Network in Toronto, ON, and an adjunct lecturer at the Leslie Dan Faculty of Pharmacy, University of Toronto. She has several years of experience working with patients and interprofessional teams in stroke care, across both acute care and rehabilitation settings.

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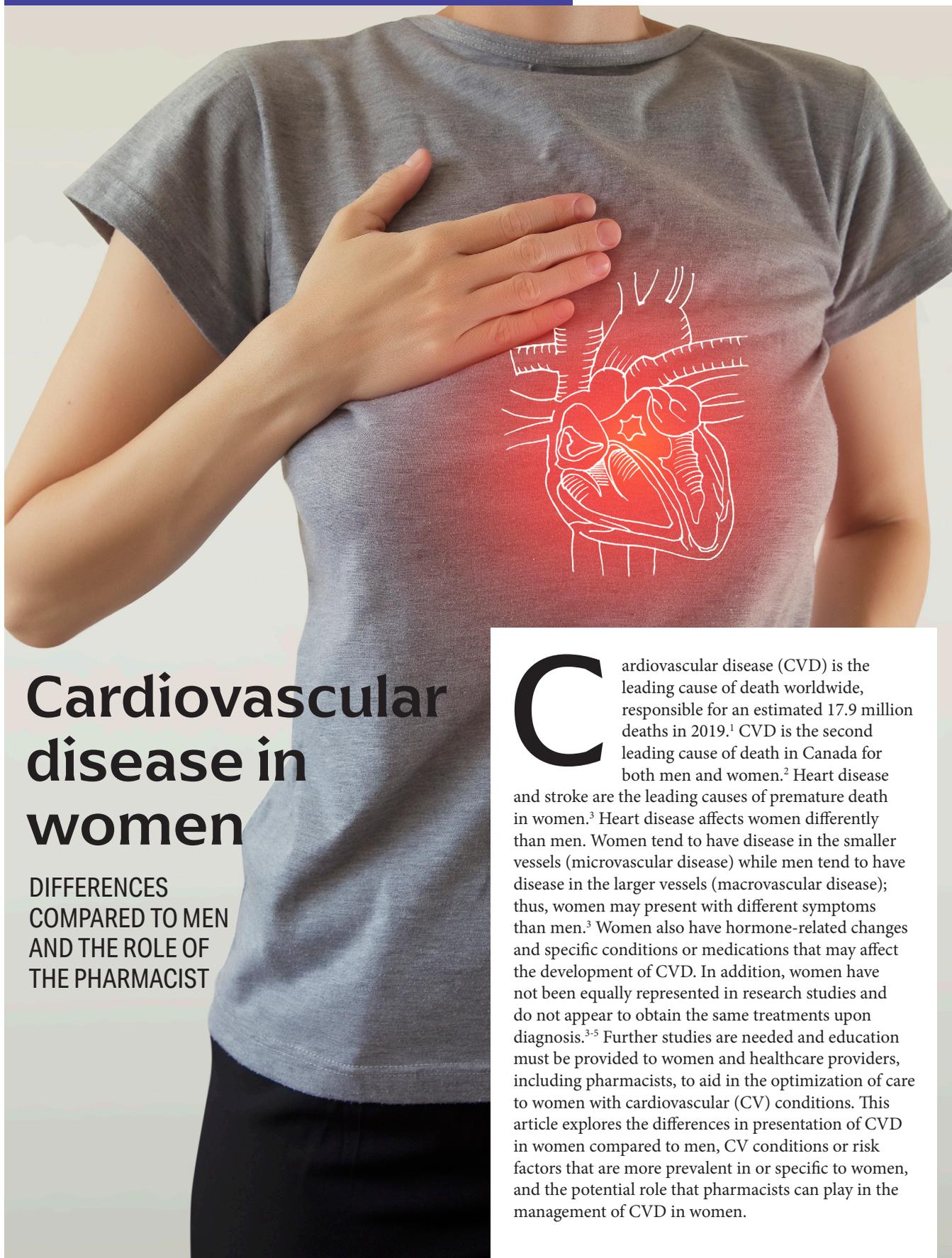


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Cardiovascular disease in women

DIFFERENCES
COMPARED TO MEN
AND THE ROLE OF
THE PHARMACIST

Cardiovascular disease (CVD) is the leading cause of death worldwide, responsible for an estimated 17.9 million deaths in 2019.¹ CVD is the second leading cause of death in Canada for both men and women.² Heart disease and stroke are the leading causes of premature death in women.³ Heart disease affects women differently than men. Women tend to have disease in the smaller vessels (microvascular disease) while men tend to have disease in the larger vessels (macrovascular disease); thus, women may present with different symptoms than men.³ Women also have hormone-related changes and specific conditions or medications that may affect the development of CVD. In addition, women have not been equally represented in research studies and do not appear to obtain the same treatments upon diagnosis.³⁻⁵ Further studies are needed and education must be provided to women and healthcare providers, including pharmacists, to aid in the optimization of care to women with cardiovascular (CV) conditions. This article explores the differences in presentation of CVD in women compared to men, CV conditions or risk factors that are more prevalent in or specific to women, and the potential role that pharmacists can play in the management of CVD in women.

Differences between men and women in cardiovascular conditions or risk factors

ACUTE CORONARY SYNDROME (ACS) OR ISCHEMIC HEART DISEASE

Women tend to present with ACS at an older age than men.^{4,5} Both women and men present with chest pressure or pain, but women tend to have more atypical symptoms such as fatigue, shortness of breath, palpitations, anxiety or dizziness.^{4,6,7} Women also tend to seek treatment later than men after having an event.⁴ Women have a higher risk of heart failure (HF) and cardiogenic shock after ST elevation myocardial infarction (STEMI).⁸ Women are also more likely to have underlying coronary microvascular dysfunction with less plaque, resulting in ischemia or myocardial infarction (MI) with nonobstructive coronary artery disease (INOCA or MINOCA).^{5,9} Women are less likely to receive reperfusion therapy after an MI or are delayed in receiving this therapy, despite good outcomes achieved with these therapies.^{6,8,10} Women are less likely to attend or complete cardiac rehabilitation.⁴ One study demonstrated that women are less likely to be receiving 75% or more of the indicated medications at 12 months post ACS, although this did not result in an increase in major adverse CV events or all-cause death.⁴ Other studies indicate that women are prescribed fewer evidence-based medications such as acetylsalicylic acid (ASA) and statins than men.^{5,7,11,12}

HEART FAILURE

Hypertension and diabetes are the more prominent risk factors in women for the development of HF.^{13,14} Women tend to have more HF with preserved ejection fraction (HFpEF), whereas males have a higher incidence of HF with reduced ejection fraction (HFrEF).^{8,13,14} Women may get peripartum cardiomyopathy (CMO), which then may lead to chronic HF (nonischemic CMO).^{8,13} Stress cardiomyopathy (Takotsubo CMO), discussed below, is also more common in women.^{14,15} Women with HF have a decreased quality of life and higher depression rates than men.^{8,14}

Women are underrepresented in many of the HF randomized controlled trials (RCTs); a systematic review reported that females represented only a quarter of trial participants, with no change over time.¹³ Females are also underrepresented in HFpEF trials despite the fact that HFpEF is more common in females.¹³ Some sex-based subanalyses of HFrEF trials suggest only a trend to benefit or no benefit in women compared to men while others show similar significant benefit in both men and women.^{13,16} In HFpEF trials, there is a signal that women may benefit more from medications than their male counterparts.^{13,16,17} For instance, in the PARAGON-HF and TOPCAT trials, women appeared to have a greater reduction in HF hospitalization with sacubitril/valsartan and spironolactone, respectively, compared with men.^{16,17}

A post hoc analysis of the DIG trial revealed that females treated with digoxin had a 5.8-fold higher absolute risk of all-cause death when compared to males.¹⁶ A cohort study also suggested that there is benefit at 50% of the recommended target doses of HF medications for women and this benefit does not increase if higher doses are used.^{8,15} In some HF studies, beta-blockers showed greater pharmacodynamic effects in women leading to larger reductions in heart rate and blood pressure

Women with AF appear to have a 20%-30% higher risk of stroke than men, even after adjusting for stroke risk factors and treatment with oral anticoagulants.

compared with men on similar doses.⁸ In addition, some evidence suggests that females experience adverse events with CV medications more commonly than males.¹³ Further studies in females would be useful to determine if there are sex-specific differences in efficacy and safety of HF medications.

Women also appear to be offered device therapy for HF less often than men; they receive less implantable cardioverter-defibrillator (ICD) or cardiac resynchronization therapy (CRT).¹³ Pooled analysis suggests that women may obtain less benefit from an ICD than males.¹⁵ In contrast, CRT appears to provide more benefit in women than men.¹⁵ In addition, compared to men, women receive fewer heart transplantations, die more often while waiting for a heart transplant, or get delisted from the transplant list due to worsening clinical status.¹⁵ Until more research is performed with a more proportionate sex-specific distribution, HF guideline recommendations based on available evidence should be used for both males and females.¹³

ATRIAL FIBRILLATION (AF)

Studies have shown that women have a greater risk for AF-related stroke than men.^{8,13} Women with AF appear to have a 20%–30% higher risk of stroke than men, even after adjusting for stroke risk factors and treatment with oral anticoagulants.¹³ Because of this increased risk, female sex is utilized in the CHA₂DS₂-VASc score (<https://www.mdcalc.com/calc/801/cha2ds2-vasc-score-atrial-fibrillation-stroke-risk>) to predict risk of stroke in patients with nonvalvular AF.

Women with AF also have worse outcomes in terms of stroke severity and more disability after stroke.^{13,18} Studies have found that morbidity and mortality associated with AF are higher in women compared to men.^{8,17} Women with AF have more symptoms, but are more commonly treated with rate control rather than rhythm control, likely due to the possibility of women experiencing more severe effects of antiarrhythmic medications.^{18,19} Trials with catheter ablation showed a reduction in all-cause and CV mortality when compared to medical therapy and no significant difference was found between women and men.¹⁹ However, ablation use has been lower in women than men and used at a higher age than in men.^{8,18} In addition, women obtained less anticoagulation than men in some studies, suggesting that women may receive less optimal therapy.¹⁹

HYPERTENSION

The prevalence of hypertension is lower in premenopausal women than men of similar age; however, hypertension increases in women after menopause.²⁰ Hypertension is also an important risk factor for stroke in women.⁸ The SPRINT trial included only about 30% women; thus, it is uncertain if the benefits of tighter blood pressure control are applicable to women.^{13,20} Women who have hypertension appear to have a higher risk of MI than hypertensive men, as shown in the INTERHEART study.^{8,21} Some data suggest that hypertension is undertreated in women.²²

DYSLIPIDEMIA

Women with elevated cholesterol levels have an increased risk for MI.⁸ Total cholesterol and low-density lipoprotein (LDL) levels increase within one year of the final menstrual period and are associated with increased risk of carotid plaque.⁸ Statin therapy has been proven to reduce CV events in both women and men with coronary artery disease, although some reports indicate that statin use is lower in women after having a MI.^{8,9} Some evidence also suggests that women experience more adverse effects such as myalgias with statins.⁹

DIABETES

Studies have shown that the risk of coronary heart disease is higher in women with diabetes compared to men with diabetes.^{6,8,13,22} Evidence also indicates that women with diabetes who have had a STEMI have higher rates of mortality and major adverse cardiac or cerebrovascular events than men with diabetes.¹³ Women who have high fasting glucose during

pregnancy have an increased risk of developing diabetes and CVD later in life.⁸ Women with diabetes have poorer control of blood pressure, lipids and diabetes compared with men.¹³ Glucagon-like peptide-1 receptor agonists result in better glycemic control among men than women; however, women have more weight loss.¹³ Thiazolidinediones lead to better glycemic reduction in women, whereas sulfonylureas lead to a better response in men.¹³ Studies have shown that women with diabetes are underdiagnosed and undertreated compared to men.¹³

STROKE

Women have a higher lifetime risk of stroke than men due to their increased life expectancy.²³ Women have higher age-specific stroke mortality, increased stroke severity, increased stroke-related disability, decreased quality of life and higher likelihood of needing to be institutionalized after having a stroke.^{23,24} Stroke risk factors (hypertension and AF) are more common in women.²³ Women may experience a delay in stroke diagnosis and may be provided with less antiplatelet or anticoagulant treatment, again suggestive of suboptimal treatment.^{23,24}

OTHER RISK FACTORS

Smoking is the most important preventable CVD risk factor, with a seven-fold increase in CVD for women age < 55 who smoke.⁸ Obesity is also a CVD risk factor of concern for women and its prevalence increases with age.⁸ In addition, women are generally less active than men, which increases CVD risk.⁸ Depression and anxiety are associated with increased risk of CVD.⁸ Depression is an independent risk factor for coronary artery disease in women.⁸ It is also associated with a two- to four-fold higher risk of adverse cardiac events after an acute MI.^{6,8} One study found that women had higher perceived stress than men after an MI.⁸ Psychosocial factors, such as insufficient social support, chronic stress or unemployment, are more common in women, which contribute to increases in depression and anxiety.⁸

Table 1 summarizes the differences between men and women in CV conditions and risk factors.

Conditions or risk factors that are more prevalent in or specific to women

SPONTANEOUS CORONARY ARTERY DISSECTION (SCAD)

SCAD is defined as a separation of layers of the epicardial wall by intramural hemorrhage, with or without an intimal tear.²⁵ It is a cause of MI and happens mainly in women, with 90% of cases occurring in women 47–53 years of age.²⁵ SCAD is the most common cause (up to 43%) of MI associated with pregnancy, occurring in the third trimester or post-partum.⁸ One cohort study revealed that the risk of recurrent CV events after SCAD is high; thus, these patients should be monitored.⁸

TAKOTSUBO SYNDROME

Takotsubo syndrome, also known as Takotsubo cardiomyopathy, is a condition characterized by transient regional left ventricular systolic dysfunction that is typically triggered by emotional or physical stress.²⁶ It mimics ACS as it can lead to electrocardiogram changes, a rise in troponin and symptoms of chest pain.²⁶ Globally, it affects women nine times more often than men.^{26,27} The majority (> 80%) of patients are ≥ 50 years of

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TABLE 1

Differences between men and women in heart conditions and risk factors⁴⁻²⁴

Risk Factor or Condition	Differences in Presentation	Observed Differences in Management
Acute coronary syndrome (ACS)	<ul style="list-style-type: none"> • Women have chest pressure and accompanying atypical symptoms (shortness of breath, dizziness, nausea, vomiting, fatigue) • Women have more small vessel vs large vessel disease (ischemia with nonobstructive coronary artery disease or myocardial infarction with nonobstructive coronary artery disease) 	<ul style="list-style-type: none"> • Women receive less than 75% of secondary prevention medications (ASA and statins are prescribed less frequently) • PCI received less frequently and may be delay in diagnosis • Women less likely to be referred or attend cardiac rehabilitation programs
Heart failure	<ul style="list-style-type: none"> • Women tend to have more diabetes and hypertension, which lead to greater prevalence of HFpEF • Women tend to have a greater decrease in quality of life and more depression 	<ul style="list-style-type: none"> • Digoxin may confer increase risk of death in women • Women may have benefit from only 50% of target HF medications • Possibility of drug-specific differences in efficacy in HFpEF (e.g., sacubitril/valsartan may reduce HF hospitalizations) • Cardiac resynchronization therapy appears more beneficial in women, but is not offered as often as in men • Implantable cardioverter-defibrillator is also provided less frequently to women • Heart transplantation less frequently provided to women
Atrial fibrillation	<ul style="list-style-type: none"> • Women with AF have greater risk of stroke than men • Morbidity and mortality higher in women with AF 	<ul style="list-style-type: none"> • Women provided with less anticoagulant treatment • Use of ablation is lower in women despite evidence suggesting equal benefit
Hypertension	<ul style="list-style-type: none"> • Increase in blood pressure after menopause in women • Women with hypertension (HTN) have higher risk of myocardial infarction; HTN is a risk factor for stroke in women 	<ul style="list-style-type: none"> • Hypertension less controlled than in men and appears to be undertreated
Dyslipidemia	<ul style="list-style-type: none"> • Increase in lipids within 1 year of final menstrual period 	<ul style="list-style-type: none"> • Statins appear to be used less frequently in women than men • Women may experience more myalgias with statins
Diabetes	<ul style="list-style-type: none"> • Increased CVD compared to men 	<ul style="list-style-type: none"> • Women appear to be underdiagnosed and undertreated • May have different responses to medications (e.g., glucagon-like peptide-1 agonists appear to provide better glycemic control in men and more weight loss in women)
Stroke	<ul style="list-style-type: none"> • Increased morbidity in women with stroke (decrease quality of life, more disability) 	<ul style="list-style-type: none"> • Use of antiplatelets and anticoagulants is lower in women compared to men
Other risk factors	<ul style="list-style-type: none"> • Smoking less prevalent in women, although still the most important risk factor for CVD • Obesity more common in women • Depression more common in women and is an independent risk factor for CVD 	

AF—atrial fibrillation; ASA—acetylsalicylic acid; CV—cardiovascular; CVD—cardiovascular disease; HF—heart failure; HFpEF—heart failure with preserved ejection fraction; PCI—percutaneous coronary intervention

age when diagnosed.²⁶ Women > 55 years of age are five times more likely to develop this condition than younger women; it is hypothesized that lower estrogen levels after menopause may contribute.²⁶

POLYCYSTIC OVARIAN SYNDROME (PCOS)

Women with PCOS are at increased risk for developing metabolic syndrome (diabetes, dyslipidemia, obesity and hypertension as components).¹³ International guidelines recommend that all women with PCOS be screened for CVD risk every six to 12 months, including weight changes, blood pressure check (at least annually), fasting lipid panel, glycemic control screen and assessment of smoking and physical activity.¹³ Other factors such as anxiety, depression and eating disorders are also prevalent in PCOS and need to be considered when addressing lifestyle-based interventions.^{13,28}

PREGNANCY/MENARCHE

Early or late menarche confers an increased risk of CVD in women.²⁹ Pregnancy with adverse outcomes is associated with a 1.8- to four-fold increase in risk of future CVD.²⁹ Risk increases

with more severe adverse outcomes and if there is more than one pregnancy with an adverse outcome.²⁹ Pre-eclampsia and hypertension during pregnancy can increase risk for CVD.²⁹ A meta-analysis showed that pre-eclampsia leads to a 3.7-fold increased risk of hypertension, a 2.2-fold increased risk of ischemic heart disease, a 1.8-fold increased risk of stroke and a 1.5-fold increase in overall mortality after 10–15 years.¹³ Gestational diabetes increases the risk of diabetes by 1.4- to 20-fold, the risk for hypertension and stroke by two-fold, and the risk of ischemic heart disease by 2.8-fold.¹³ Preterm birth is associated with a two-fold increased risk of CVD and death caused by coronary heart disease.¹³ Women with prior pregnancy loss have about a two-fold increased risk of MI, stroke and hypertension.¹³ In addition, women may get peripartum cardiomyopathy, which may then lead to chronic HF.^{8,13}

MENOPAUSE

Premature menopause (i.e., at < 40 years of age) was shown in observational studies to increase the risk of nonfatal CVD.⁸ Women who have early menopause (age 40–44) or relatively early menopause (age 45–49) have some increased risk of

TABLE 2

Women-specific CV conditions or high-prevalence conditions that confer CV risk in women^{8,13,14,22,25,27-29}

Condition/Risk Factor	Prevalence	Risks of Condition/Risk Factor
Spontaneous coronary artery dissection	~90% in women	<ul style="list-style-type: none"> Causes MI-like symptoms; high risk of recurrence warrants monitoring
Takotsubo syndrome	~90% in women	<ul style="list-style-type: none"> Causes symptoms similar to ACS/MI and may lead to transient heart failure (decrease in left ventricular function)
Polycystic ovary syndrome	Women-specific	<ul style="list-style-type: none"> Increase in development of CV risk factors; should be screened for CVD risk
Menarche	Women-specific	<ul style="list-style-type: none"> Early or late start of menses leads to increased risk of CVD
Menopause	Women-specific	<ul style="list-style-type: none"> Premature menopause (natural or surgical) leads to increase CVD risk Increase in low-density lipoprotein cholesterol within a year of last menses
Pregnancy	Women-specific	<ul style="list-style-type: none"> Increased risk of CVD in women with adverse pregnancy outcomes Increased risk of CVD in women with pre-eclampsia and hypertension Increased risk of diabetes and CVD in women with gestational diabetes Can lead to development of peripartum cardiomyopathy
Hormone therapies (estrogen/progestin contraceptives, hormone replacement therapy)	Women-specific (also may be relevant to transgender)	<ul style="list-style-type: none"> Increased risk of arterial or venous thrombosis
Breast cancer therapy (anthracycline-based therapy, trastuzumab, radiation)	Women-specific	<ul style="list-style-type: none"> Increased risk of CVD or heart failure
Autoimmune disorders (e.g., SLE, RA)	More common in women	<ul style="list-style-type: none"> Leads to an increase risk of CVD; RA confers increase in risk similar to diabetes

ACS—acute coronary syndrome; CV—cardiovascular; CVD—cardiovascular disease; MI—myocardial infarction; RA—rheumatoid arthritis; SLE—systemic lupus erythematosus

nonfatal CVD.⁸ Premature surgically-induced menopause also increases the risk of CVD.^{8,28} Risk of CVD increases significantly after menopause and one study found an increase in LDL-cholesterol during the year after the final menstrual period.⁸

INFLUENCE OF SPECIFIC MEDICATIONS ON CVD IN WOMEN

Women who take estrogen–progestin hormonal contraceptives are at increased risk for arterial or venous thrombosis.²⁹ Patients with specific risk factors associated with venous thromboembolism (VTE) or MI (e.g., age ≥ 35 years, smoker, history of VTE) may have an unacceptable increased CV risk, which would suggest they should use a progestin-only or nonhormonal mode of contraception.⁸

BOX 1

Pharmacist’s role in management of cardiovascular health in women

- Educate women about cardiovascular health
- Assess for cardiovascular disease risk factors and consider management of risk factors (diabetes, hypertension, smoking, dyslipidemia, heart failure, depression)
- Encourage nondrug measures to improve cardiovascular health (e.g., increased physical activity, healthy diet, adequate sleep, avoidance of smoking, reduced stress)
- Ensure women understand the possible differences in cardiovascular disease symptoms compared to men. For example, in acute coronary syndrome, women have chest pressure, but also atypical symptoms (shortness of breath, dizziness, nausea, vomiting, fatigue)
- Encourage use of evidence-based medications and procedures through discussion with the patient and collaboration with the patient’s primary healthcare provider or in-hospital provider
- Assess adherence barriers and improve adherence to medications
- Discuss risks and benefits with patients who are on estrogen-progestin contraceptives or hormone replacement therapy

BOX 2

Useful resources to help educate women about cardiovascular disease

Heart Disease Across Her Lifespan

cwhhc-infographic-lifespan.pdf (ottawaheart.ca)

Heart Disease and Women; What’s At Stake?

cwhhc-infographic-whats-at-stake.pdf (ottawaheart.ca)

Although observational studies have suggested that hormone replacement therapy in postmenopausal women may be beneficial in lowering CV risk, larger randomized trials have not confirmed this benefit; the Women’s Health Initiative (WHI) study found that estrogen use was associated with a small but statistically significant increased risk of CV events compared with placebo.^{8,30} Other secondary analyses suggest that the highest CV risk is in women who initiate hormone replacement therapy 20 years or more since menopause.²⁹ Women with breast cancer who receive anthracycline-based therapies, trastuzumab or radiation may have higher risk of CVD disease and heart failure.^{14,29}

AUTOIMMUNE DISEASE AND INFLAMMATORY DISEASES

Women are more likely to have underlying autoimmune and inflammatory conditions that may contribute to an increase in CVD risk.¹³ For example, women tend to have a higher incidence of systemic lupus erythematosus and rheumatoid arthritis, which are associated with atherosclerosis progression and microvascular dysfunction.¹³ Women may also be receiving corticosteroid therapy for these conditions, which may worsen dyslipidemia and hyperglycemia.^{13,22}

Table 2 summarizes the conditions or CVD risk factors that are more prevalent in or specific to women.

Pharmacist's Role

Pharmacists can provide education for patients to increase awareness of risk factors and signs and symptoms of CVD, management of risk factors and treatment of CV conditions in women. They can educate on nondrug measures, such as increased physical activity, healthy diet, adequate sleep, reduced stress and avoidance of smoking, which aid in reducing CV risk. Pharmacists can play a key role in management of CVD risk factors, such as diabetes and hypertension, and help patients reach blood glucose/A1C and blood pressure targets.³¹ They can also help to manage patients with HF. Pharmacists have been shown to reduce HF hospitalizations when they work within a multidisciplinary HF team.³¹ Studies have shown that pharmacist involvement has positive outcomes for diabetes, hypertension, smoking cessation, adherence in CHD and HF, and CV mortality in HF.³² **Box 1** summarizes the potential roles for pharmacists in the management of CVD in women. **Box 2** provides links to two infographics that may be helpful in educating women about CVD.

Cardiovascular Health in Women: Initiatives

Global initiatives are underway to disseminate evidence-based information and strategies for prevention and management of CVD in women.^{8,33,34} The Canadian Women's Heart Health Alliance has been established to transform clinical practice and improve CV health for women in Canada.³³ This group has created an ATLAS (<https://cwhhc.ottawaheart.ca/>

national-alliance/projects-and-initiatives/cwhha-atlas) on the epidemiology, diagnosis and management of CVD in women; it is a "living document" that will help the public and healthcare providers to recognize the unique aspects of CVD in women. In addition, Women's Heart Health centres have been established in Vancouver, Toronto, Ottawa, Montreal and Halifax.

Summary

A growing body of evidence suggests that CVD in women can manifest differently than in men, and that opportunities exist to improve management of CVD in women. Initiatives are in place to increase awareness and provide clinicians and patients with the information they need to improve CVD care in women. Pharmacists can play a key role in this shift to improve patient care. 🍎

Susan Buchkowsky (Susan.Buchkowsky@vch.ca) is a Clinical Pharmacy Specialist in the Emergency Department at Richmond Hospital in Richmond, BC, and a clinical instructor at the University of British Columbia. Previously, for more than 10 years, she was a Clinical Pharmacy Specialist in cardiology at the Jim Pattison Outpatient Care and Surgery Centre, with a practice focus in the Heart Function Clinic.

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By Michael Boivin, BSc. Pharm, Dan Tam Vu, B. Pharm and Melinda Gooderham, MD, FRCPC

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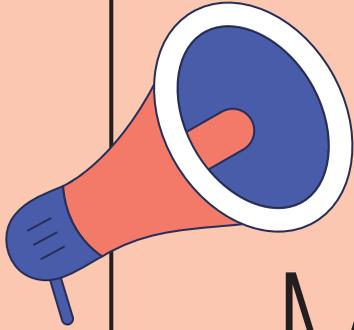


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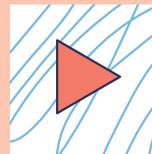


HOW TO MAKE YOUR **MARK** WITH MARKETING **PART 2**



*In the second of a **two-part series**, we talk to pharmacists who have found innovative ways to stand out from the competition*

By Anne Bokma



For some pharmacists, marketing is almost a dirty word. They want to focus on professional clinical services, not social media or outreach tactics to woo more customers to their drugstore. Besides, many pharmacists identify as introverts—they'd much rather toil behind the counter than “shamelessly” seek attention. And yet, in order to be successful, their communities need to understand who they are and the type of expert services they can provide.

Here's how three pharmacists have seen their practices flourish by stepping into the spotlight.

A reluctant video star: Harnessing the power of YouTube

LINDSAY DIXON will tell you she's shy. Like a lot of pharmacists, she's an introvert and has always tended to avoid the limelight. People will tell you she's humble.

So exactly how did she become a sensation as Canada's most popular pharmacist on YouTube with almost 35,000 subscribers (and more than 3.2 million views) who tune in to her weekly "Friendly Pharmacy 5" videos? It was all because of COVID-19.

Increasingly frustrated by the rampant misinformation that began to emerge at the start of the pandemic (i.e., the supposed ivermectin "miracle cure" and conspiracy theories about the long-term effects of vaccinations), she wanted to counteract the outlandish claims that were being bandied about. She decided YouTube was the best forum in which to do that.

"In the beginning the videos were PowerPoints with my voiceover because I didn't want to be on camera," she says. As the videos began to gather a following they also caught the attention of Heart Pharmacy, an independent chain of six pharmacies on Vancouver Island. She was hired by the company, which now sponsors the videos, as a continuing education lead and public health advocate. She gained on-air training, learned how to use a teleprompter and became an expert in using a variety of social media tools to produce her polished videos (see sidebar: *Digital marketing tips from a pro*).

Dixon has produced more than 165 videos (which take between 5 and 20 hours to create) and, thanks to her large following, she earns more than \$10,000 a year through the platform's monetization program. The videos cover the gamut of healthcare topics, educate viewers on healthcare research and innovation, medications and supplements, and the healthy lifestyle choices that can lead to living a longer life. She's also conducted interviews with dozens of healthcare experts and regularly promotes the profession of pharmacy by highlighting the wide-ranging services and expertise of pharmacists.

"You couldn't have convinced me five years ago that I would ever do something like this," says Dixon. "Having the ability to communicate with a global audience about the value pharmacists bring to the table and how we can help our patients...it's changed my life."

Her YouTube status has resulted in frequent media appearances, consulting opportunities for start-ups, speaking engagements and guest spots on podcasts (she is currently planning to launch a podcast of her own). She's giving back to her peers with CreateRX, an online design hub for healthcare professionals to share ideas in digital innovation. (Last year her efforts were recognized with a Raise Your Voice Award from this magazine.)

"The world is digital—and the opportunities for pharmacists are truly limitless," says Dixon. "Begin with writing something on LinkedIn, or start a blog or post about a health topic on Instagram. Start expressing yourself."

"More pharmacists need to realise we are not just a degree and a licence number," she says. "We are highly skilled, creative and unique individuals who have so much to offer."



Who is at risk of vitamin K deficiency ?



Self-professed introvert Lindsay Dixon attracts an audience of almost 35,000 subscribers weekly for her Friendly Pharmacy 5 YouTube videos, which raise both her profile and that of the pharmacy profession.

Partner with influencers to amplify your message

When **LEE TUAN** opened his All About Health RemedysRx drugstore in Woodstock, Ontario, 13 years ago, he mostly relied on traditional advertising to attract new customers—including spending about \$15,000 a year on ads in the local paper. Today he'll tell you his marketing budget is "absolutely nothing"—and yet his outreach efforts are more effective than ever before.

He credits social media for a great deal of the growth of his business, which has become a destination for natural health and sports nutrition products. With 1,500 followers on Instagram and another 1,000 followers on Facebook, Tuan regularly posts health tips, contests and product information. Most significantly, he's been able to expand his online reach through collaborations with about 10 local fitness influencers (including athletes and trainers) who serve as content creators and ambassadors for his pharmacy by promoting his drugstore's products online to their followers. He created an incentive program for these influencers who receive sports products (he negotiated an arrangement for them to receive free merchandise from his suppliers) in return for their promotional services. He's also partnered with local gyms whose members receive a discount on the pharmacy's regularly priced items.

"This kind of collaboration helps you reach more potential customers," he says. "These influencers have helped drive a lot more business."

The biggest marketing mistake pharmacists make? In his view it's not utilizing social media. "It's the most effective and inexpensive marketing method and yet so many pharmacists aren't doing it. They think it's too time consuming and complicated,



Digital marketing tips from the frontlines

The average consumer receives between **4,000 and 10,000 marketing messages** a day. Here are six tips from Victoria, B.C. community pharmacist and health content creator, Lindsay Dixon, on how you can stand out from the crowd online.

1. REMEMBER, MARKETING IS

STORYTELLING: What story are you telling as a pharmacist/pharmacy owner about yourself or your business? What do you want to be known for? Who are you trying to serve? What problem are you trying to solve? "Strategic marketing is an opportunity to re-train the patient on what to expect from us when they come to our pharmacy—just as we did with vaccinations and now minor ailments," says Dixon. "A clear narrative informs your ideal customers as to what you do and what problem you help them solve."

2. ACCEPT THAT IT'S A DIGITAL

WORLD: In today's digital landscape, we are competing with everyone from Amazon to virtual health clinics. "Your marketing strategy may need to evolve even with your elderly patients because they are more tech savvy than we might think; they are online consuming information and developing trust with other brands and other companies every single day." On the other hand, contrary to the type of personalized service pharmacists prided themselves on in the past, younger patients might not care if you know their name, nor want to come into the physical drugstore to pick up their medications. "So how will you reach them and differentiate yourself from the competition? Strategic digital marketing allows you to meet them where they are searching for answers to their problems — and that's usually online."

3. DECIDE WHAT YOU ARE GOING TO BE GREAT AT ONLINE:

BE GREAT AT ONLINE: When creating content for any brand, you can't be everything to everybody. "The more we 'niche down' and speak to a specific group of people who are looking to solve a specific problem, the more impact we'll have," says Dixon. Consider Dr. Andrea Furlan, a Toronto-based pain specialist who has almost 600,000 subscribers on her YouTube channel, which has grown at a phenomenal rate. "She knows exactly who she is talking to and the problems she is helping people solve."

4. GET YOUR STAFF INVOLVED:

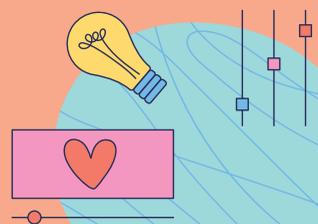
As a pharmacy owner or pharmacy manager, you'll quickly burn out if you try to take on all digital marketing responsibilities yourself. Consider the strengths, interests and skills of your team and whether they could help developing a marketing strategy or even create content in-store for your business. Encourage them to develop and execute their ideas—and pay them for the extra work they do. If this is not possible, consider hiring an agency or virtual assistant to help you do this—this can often cost less than you expect, and be very effective.

5. JUST DO IT:

Having trouble getting started? There are so many ways you can reach out to current and potential customers; here are just a few ideas: You could collect emails from your customers (with their consent!) and create a digital newsletter for them. Make sure your website is easy to navigate and up to date. Use bag stuffers with QR codes to direct customers to your website for more information on particular topics or services. Create posts on social media that answer the questions your patients ask most often, or even run Facebook ads promoting your products and services. You could also consider creating content addressing current issues in health care and tag local media outlets to get their attention. The possibilities are endless.

6. UTILIZE DIGITAL TOOLS:

Familiarize yourself with the marketing and social media tools that will help you create winning content. Some of Dixon's favourites include: Descript for video editing and transcribing, Answer The Public to discover the questions your customers are asking online, Capcut to create short form videos, Canva for graphic design and ChatGPT for idea generation.



but it doesn't have to be." They also don't realize how profitable it can be, he says. "Out of all the content we post, pretty much all product-related posts have generated sales."

Tuan says he spends only about 10 minutes a day on the pharmacy's social media channels. "I just make time to do this. I'll steal a couple of minutes here and there to post something."

His advice to pharmacists: "Be genuine. Post at least three times a week. Make it relatable and personal, not generic." The posts he creates are as simple as a photo of a new shipment of products that have come into the drugstore, a selfie of him on the treadmill or saluting his staff for a job well done. In a post that featured a photo of him packing capsules in the compounding area of the pharmacy, he noted that he has been compounding for more than two decades. "It was our most liked post on Instagram —and it helped people see what we can do."

"We are in a pivot point in independent pharmacy. We are all looking for ways to gain ground to compete with big chains," he says. "Social media is free and it's the best way to market ourselves. It's time to jump in if you haven't already. Don't wait."



Lee Tuan reinforces his image as a sports specialty pharmacist with visuals and social media posts that have a sport and fitness theme.

Know your demographics and build relationships

ANNA PATRIZIO took only one pharmacy marketing course 20 years ago as a Canadian international pharmacy student from the Philippines. After becoming co-owner of Schomburg Village Pharmacy, located in a small town in Ontario, four years ago, she says, "I wish I had paid more attention in class."

Her marketing know-how is a combination of "seminars, trial-and-error experience, reading articles, learning from mentors, and being aware of market trends." Most important is understanding that "data is king," she says, explaining that she carefully considered the patient needs in her town by tapping into demographic information provided by the local Chamber of Commerce, Business Improvement Association, the local paper's circulation lists and Canada Post's postal code targeting. "I encourage every pharmacist to be obsessed with data. Know how many seniors are in your community, how many young families. The data should drive your marketing strategies," she says. "It's by really knowing your market that you can tailor your offerings and advertising. It's outdated to just cast a wide net and hope for the best."

Her research helped identify gaps in service, including compounding, addiction treatment and weight-loss management programs, all of which were added to the pharmacy's offerings.

As a new pharmacy in town Patrizio looked for other ways to stand out from the competition, which included community involvement (participating in health information fairs, sponsoring a minor hockey team and a horticultural association, and having a booth at community events and a float in the annual holiday parade, for example). She also reached out to the local community newspaper by writing articles and providing expert input on pharmacy issues such as minor ailment prescribing. "This strengthened credibility for our brand and doesn't cost us any money."

Most significantly, the pharmacy established itself as a community leader early in the pandemic with a successful mass

Anna Patrizio has raised her profile within both her physical and ethnic communities by offering her expertise and support.



vaccination drive, rapid testing, early procurement of PPE supplies, sourcing continuous supplies of sanitizers and masks and managing prescription drug supply shortages.

These efforts resulted in high-profile recognition, including an "Excellence in COVID Community Support" award from the local Chamber of Commerce, as well as being selected as one of four Filipino-Canadian trailblazers who received the "Most Influential Filipino Woman in the World" award, coordinated by the Filipino Leadership Global Summit in recognition of the positive impact she made in her community in navigating the challenges of the pandemic.

"I've come to realize that as a pharmacist, my work and my name is a brand. As soon as I understood this, I became more comfortable being the face of the pharmacy," she says. "I am very much an introvert, but I realize that it's the people behind the pharmacy who make for good pharmacy business." ☕

Anne Bokma is a journalist and author based in Hamilton, ON.



A natural advocate

Amy Lamb believes in pharmacy's role as a provider of safe spaces and true holistic care

By Rosalind Stefanac / Photography by Genelle Amber Studios

"I find myself reflecting more often on the robust healing practices found in Indigenous cultures throughout the world—practices that combine the holistic factors of health, mind, body, emotion and spirit, into community-wide rituals and standards."



W

here there is a health-care need, Amy Lamb will find a way to fill it, whether that's by advocating for pharmacy

issues through her extensive board and governance experience, mentoring pharmacy owners to improve efficiencies, or working with patients to tackle underlying healthcare issues or accessibility challenges.

As CEO of Indigenous Pharmacy Professionals of Canada (IPPC), her latest mission is to better connect and support indigenous pharmacists—and ensure that indigenous communities all across Canada can access preventative, holistic and culturally appropriate health care. As a Métis woman herself, she is applying the insights gleaned from her own health journey to help remove systematic barriers preventing holistic healthcare, which she deems essential to our well-being. And based on her track record to date, Lamb will likely find new areas of focus as new healthcare needs arise. It's just the way she operates.

How did you get involved in pharmacy?

I was the first person in my immediate family to finish university and the only one involved in a healthcare profession. I always considered myself a caregiver and I thought I wanted to be a doctor, but in working in a pharmacy before I started university, my perception of pharmacy changed. The profession is so interpersonal and very much founded on relationship-building, maybe even more so than many medical roles out there. That appealed to me.

I have had various roles in community pharmacies since 2012, specifically in supporting independent compounding pharmacies. I've also served on provincial and national pharmacy advocacy boards, starting when I was a pharmacy student.

In addition to my role as CEO, I am director of Northern Health at WillowGrove Pharmacy in Prince Albert, and founder of Lamb and Sage Personalized Health Solutions, a pharmacy practice and women's health consulting service. I'm also chairperson of the board for the YWCA Prince Albert, which operates programs to provide shelter, supportive housing and assistance to marginalized populations.

What those service providers are experiencing and having success with helps drive my intentions for creating an environment in pharmacy that can address current system disparities.

Why is leading the IPPC important to you?

I just coordinated my first member gathering of Indigenous professionals. Sitting in a room with

those truly engaged in changing and evolving healthcare systems is very powerful—there was such a tone of transformation from hopelessness to innovation and hope.

Whether we like it or not, there is a bit of Indigenous racism that occurs systematically and structurally in health care. We hope to create a safe space that empowers Indigenous practitioners to be leaders and non-Indigenous practitioners to better serve Indigenous populations. The Truth and Reconciliation Commission of Canada's Calls to Action and previous national reports indicate the requirement for Indigenous health practitioners to evolve the health systems that serve them. As such, our goal is to increase and empower Indigenous pharmacy professionals. We're doing this through scholarship programs, by creating a deeply connected and empowered community of IPPC members, and by engaging in community outreach to increase interest in this profession as a career path. Given that there are such prominent Indigenous health inequities, we're also looking at where pharmacists can lead change (i.e., drug plans that impact Indigenous patients, education for all pharmacists to better understand trauma-informed care and how to collaborate with traditional/cultural healing).

What inspired you to start your own consulting business?

Lamb and Sage came out of a need to help pharmacy owners who were feeling overwhelmed by new regulations around compounding practices. Most of my community practice has been heavily focused on compounding, so it's a niche I feel comfortable in. I started by providing training and educational tools to pharmacists that would make applying these new standards within their practices safer. But my consulting services continue to evolve.

Based on my own personal journey, I also recognized there was a need to help pharmacists who wanted to better understand issues surrounding women's and Indigenous health care. From that work arose a need to work with patients who are seeking to better understand why they are sick. They want to know what modifiable factors will help them create healthy rituals and what environmental barriers caused issues in the first place.

Do clients pay you for these services?

For patient consultations, I charge \$200-\$300 for the meeting, comprehensive health plan and three months of follow-up. For the pharmacy clients, who are primarily seeking compounding packages and regulatory reviews, I charge \$1,500

How have your personal passions impacted your work?

After years of developing person-directed comprehensive health programs, I found myself reflecting on the foundations of health: lifestyle changes that are sustainable, affordable and motivating. I find myself reflecting on the robust healing practices found in Indigenous cultures throughout the world—practices that combine the holistic factors of health, mind, body, emotion and spirit into community-wide rituals and standards. I knew that if I was going to truly make a difference to my patients, I would need to support the mechanisms of community-based and cultural healing. Medicines are a tool used within the process of healing, and pharmacists have an important role in better connecting and empowering the holistic aspects of healing. Advocacy seems to be an important requirement for transforming healthcare, and Indigenous-led healthcare evolution means advocacy for accessible and holistic health.

As CEO of IPPC, my role is to understand the major levers that drive pharmacy practice, and the gaps and barriers facing Indigenous patients in Canada. Equally as important is gathering the perspectives of our members, the foundations of intergenerational Indigenous wisdom, and translating these concepts into the current health landscape.

How do you balance all of your roles?

Being CEO takes up most of my time. In my consulting practice, I focus on only two to three patients a week. This gives me adequate time with patients to create health programs and recommendations that are accessible and sustainable, especially if they're part of populations that face health inequities. I feel that I connect with my patients and that I'm making a difference and that's so rewarding.

At WillowGrove, I help coordinate and distribute medical supplies to our Indigenous communities—as well as working to my full scope, which includes supporting patients seeking advice on compounded and complimentary medications, supplements, pharmacogenomics and point-of-care testing. I usually work two days a week in the pharmacy and one day travelling to Indigenous communities. But I'm currently taking a break from front-line pharmacy since the birth of my daughter in January, which is time I now dedicate to running IPPC.

Holistic health care is ideal, but how do we make that sustainable across pharmacies?

That's where advocacy fits in. I think many pharmacy colleagues feel trapped in a space and don't have the freedom to be able to innovate within it. Both with

IPPC and WillowGrove, I am continually advocating for diversity in roles and funding models so we can weave more personalized care into practice. I think our healthcare crisis is due in part to the transactional nature of funding for disease states and diagnosis, not outcomes. I encourage those who are innovators to find ways to personalize health care, which really does have the potential for incredible outcomes. And to partner with non-profits outside of health care to develop new funding streams.

Tell us about your own health journey.

The first person I treated holistically was myself, and although I consider myself acutely recovered, my healing journey is a lifetime one. My health started to decline rapidly during university due to stress, maladapted coping mechanisms, and lack of supports for healing. By the time I was working in my first pharmacy job, my hair was falling out and I was experiencing chronic fatigue, depression and anxiety. Fortunately, the pharmacy clinician I was working with was a hormone expert who helped me make incremental changes, including holistic health and lifestyle supports and targeted supplementation to balance hormones, reduce the physiologic harm from stress and address nutritional deficiencies.

I remember waking up one morning months later feeling well, which gave me such hope. I began the process of deep clinical and personal study into holistic and culturally-based health interventions. I have found coaching tactics, which ultimately means helping patients determine their own environmental challenges/opportunities and motivating them to be compliant with new healthy rituals by immersing them into environmental elements that facilitate holistic health. I often ask patients to reflect on the important people, places, events, or memories in their lives, and try to replicate the sounds, tastes, smells, motivations or visuals around their new healthy ritual. Even with robust evidence that stress reduction techniques work, they are difficult for most people to implement. For me, it was about immersing these techniques in environments that reminded me that I was safe: the smell of lavender, which reminded me of my nana, feeling the sun like those easy summer days with family and the sound of an acoustic guitar, which my father plays.

If you've experienced burnout, you have to reform your relationship with it. The recovery makes you a stronger person. I take a moment every day to be thankful for my job and role in life. The healing journey never ends but I'm in a good spot right now and all I want to do is give that back. ☺

Rosalind Stefanac is a Toronto writer specializing in pharmacy and retail journalism.

The Closer

CREATIVE THOUGHTS AND SMART IDEAS FOR PHARMACY OWNERS AND MANAGERS

A DOSE OF STRATEGY

Competitive forces in pharmacy practice



AMY OLIVER
MBA, BScPh, RPh,
PMP, CLC

New extraordinary options for great patient care will require us to navigate the impact to pharmacy business models.

Long-term sustainability of independent businesses, including pharmacies, requires tuning in and acting on the shifting dynamics in your external environment. Most owners have a sense of major trends and shifts in the market; however, many are simply trying to keep their head above the water and struggle to put any real time and thought into strategizing around external threats.

Many external factors impact pharmacies, including regulatory changes, social patterns, political environments and more. But one of the most critical external factors to monitor closely is competition of all kinds, and the threats it poses to your business. Yet while pharmacy owners tend to be well aware of the service offerings and differentiators of the pharmacy down the road, few are evaluating the competitive landscape more broadly than that.

Michael Porter, one of the most influential thinkers in modern strategy, has described five competitive forces that can help us think about competition as it relates to the sustainability of community pharmacy:

- 1. Threat of new entrants:** Passionate pharmacists looking for autonomy in practice, increased scopes of practice allowing for niche services, growing and aging populations, business diversification and strategic partnerships are all factors driving a continuous flow of new entrants into the market. Pharmacy owners need to be able to clearly communicate why a patient should choose their pharmacy over another.
- 2. Bargaining power of suppliers:** Independent pharmacies should constantly review the terms, pricing and drug availability through wholesalers and manufacturers. The bargaining power of banner groups can help negotiate favourable terms and pricing. Reviewing your banner agreements and your banner's purchasing power every few years could serve you well.



- 3. Bargaining power of customers:** While community pharmacies see patients as their main 'customers,' we can't forget that the government and third-party payers have a lot of influence over pharmacy practice. Their substantial leverage when it comes to reimbursement and formularies has a significant impact on the profitability and viability of community pharmacies.
- 4. Threat of substitute products:** The world is moving to more proactive health approaches and shifts to preventative care and healthy lifestyles, yet much of pharmacy practice is centered around medication and reactive treatments. And at a more immediate and nuanced level, we can anticipate clinical shifts, such as the emergence of injectable extended-release buprenorphine replacing the need for daily dosing. New extraordinary options for great patient care will require us to navigate the impact to pharmacy business models.
- 5. Intensity of rivalry among competing firms:** Between the re-emergence of online pharmacies and the large resources of chain pharmacies, innovation and technology will continue to change the competitive landscape for community pharmacy. Consider how you are embracing social and technological innovation in your practice.

With a changing economic landscape and evolving scopes of practice across the country, the status quo is not a strategy at all. ☹

Amy Oliver is an experienced pharmacy executive and the founder of Amy Oliver + Co (www.amyoliver.ca) and host of The Healthy Business Series. She offers business training, advisory services, and certified professional coaching to practice owners looking to master their strategy, management, and leadership on their journey to excellence.



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