

# In the Clinic with PEER



Drs. Jessica Kirkwood & Jennifer Young

# Objectives:

- 1) Employ practical evidence-based approaches to common medical presentations that can be implemented in everyday family practice.
- 2) Engage in shared decision-making by using real-life cases to explore patient-centered care strategies and tools for effective communication.
- 3) Develop clear, actionable management plans for each case, ensuring that participants can confidently implement solutions tailored to individual patient needs.

# Conflict of Interest Disclosure

## Presenter / Faculty: Dr. Jess Kirkwood MD CCFP (AM)

- Speakers Bureau/Honoraria: PEIP/PEER, ACFP, Rx Files
- Consulting Fees: None
- Grants/Research Support: None
- Patents: None
- Other: Salaried Associate Professor at the University of Alberta



# Conflict of Interest Disclosure

## Presenter / Faculty: Dr. Jennifer Young MD CCFP

- Speakers Bureau/Honoraria: PEER, OCFP
- Consulting Fees: none
- Grants/Research Support: none
- Patents: none
- Other: Part time Physician Advisor CFPC



THE COLLEGE OF  
FAMILY PHYSICIANS  
OF CANADA



LE COLLÈGE DES  
MÉDECINS DE FAMILLE  
DU CANADA

# Clinic Schedule - Thursday Nov 6, 2025

Time	Patient	Issue
11:00	Tina Mosjov	Weight loss
11:15	Mr. Ramakanta	CHF (dx &) management
11:30	Brea Salter	Pediatric asthma
Break		
1:00	Per Colate	LUTS male
1:15	Micti Colate	LUTS female
1:30	Xiao Yun	Smoking cessation

# Time to Vote!



- You have been following Mr. Ramakanta since his heart attack 5 years ago. He had been taking ASA, Atorvastatin 80mg and Amlodipine 5mg. He has never smoked.

4 weeks ago, you had seen him in the office and diagnosed heart failure clinically.

For more details: see “In the Clinic” podcast 36!



## Diagnosis congestive heart failure: Initial clinical judgement LR+ = 4.4

- There is no single element of the history and physical examination (example history of MI, orthopnea, peripheral edema) that will lead to a diagnosis of heart failure with great certainty.

You started him on furosemide 40 mg and sent him for a CXR, ordered bloodwork that included BNP and ordered an ECHO.

• Hobbs et al. Heart. 2010 Nov;96(21):1773-7

- King et al., 2012 Jun 15;85(12):1161-8.

Unfortunately, he was admitted with increasing dyspnea 3 weeks ago and congestive heart failure was confirmed. His ECG showed n

Well, you were right - I have heart failure. I am starting to feel better but I sure have to pee alot!

ECHO: Eje

### POST DISCHARGE MEDS:

ASA 81mg PO daily

Atorvastatin 80mg PO daily

Furosemide 40mg PO **BID increased**

**Candesartan 8mg PO daily**

**Bisoprolol 2.5mg PO daily added**



Gee, sorry you ended up there but you seem a lot better today!

Your blood pressure is 120/80, pulse 70. Your lungs are clear and the leg swelling is much better.

Mr. Ramakanta's ejection fraction is 35-40%. Which of the following is true?

- a) Spironolactone is prescribed as commonly as ACEi/ARB
- b) Spironolactone provides a similar mortality benefit as ACEi/ARB
- c) The relative mortality benefit from Spironolactone is ~5%
- d) Gynecomastia is an uncommon side-effect



- Relative reductions in mortality (no head-to-head trials)
  - Aldosterone antagonist ~25%
  - B-blockers ~19%
  - ACE inhibitors ~23%
- E.g.: For someone with a baseline mortality risk of 10% over 5 years, the risk would be decreased to ~7.5% (using a 25% relative risk reduction).

Mr. Ramakanta's ejection fraction is 35-40%. He has mild symptoms. Which of the following is true?

- a) Spironolactone is prescribed as commonly as ACEi/ARB
- b) Spironolactone provides a similar mortality benefit as ACEi/ARB**
- c) The relative mortality benefit from Spironolactone is ~5%
- d) Gynecomastia is an uncommon side-effect



- Aldosterone antagonists are less commonly prescribed than other agents despite their similar effect on mortality.
- Spironolactone (12\$ per month) should be used first line, if gynecomastia / breast pain (10% vs 1% in the placebo group), patients can be switched to eplerenone (100\$/month).

Mr. Ramakanta's ejection fraction is 35-40%. He has mild symptoms. Which of the following is true?

- a) Spironolactone is prescribed as commonly as ACEi/ARB
- b) Spironolactone provides a similar mortality benefit as ACEi/ARB**
- c) The relative mortality benefit from Spironolactone is ~5%
- d) Gynecomastia is an uncommon side-effect



Oh, and I know that we had talked about reducing salt - the hospital dietician gave me a bunch of info. I had to get my wife in to learn as well!



## How much sodium should he have?

- For the general population, guidelines vary from recommending 2-3 g/d (Health Canada) to avoiding very high sodium intake (for eg >5g/d, European Guidelines)
- For patient with heart failure, the Canadian CV Guidelines state that it is “controversial”, with no specific recommendations.

• In European and Northern American countries, sodium comes mostly from processed foods, especially cereals and baked goods. All processed food have higher sodium content.

• Na/100g food:

Unprocessed	Processed
Bran, wheat: ~28mg	Bran flakes: ~1g
Hard cheese: ~640mg	Processed cheese: ~1.3g

Oh, and I know that we had talked about reducing salt - the hospital dietician gave me a bunch of info. I had to get my wife in to learn as well!

Which of the following would be reasonable? Pick all that apply

- a) Start spironolactone and book a follow-up appointment in 1 month
- b) Start spironolactone and book a follow-up appointment in 1 week
- c) Start spironolactone and empagliflozin, follow-up in 1 week
- d) Increase candesartan to 32mg and bisoprolol to 10mg, follow-up 2 weeks



- Standard pharmacological care for HFrEF include: an ACEi/ARB or sacubitril/valsartan (ARNI, more on that at the next clinic), a beta-blocker, a mineralocorticoid receptor antagonist (MRA, eg spironolactone), a sodium glucose transport 2 inhibitor (SGLT2i, eg empagliflozin).

Which of the following would be reasonable? Pick all that apply

- a) Start spironolactone and book a follow-up appointment in 1 month
- b) Start spironolactone and book a follow-up appointment in 1 week**
- c) Start spironolactone and empagliflozin, follow-up in 1 week**
- d) Increase candesartan to 32mg and bisoprolol to 10mg, follow-up 2 weeks

2 large RCTs, symptomatic patients randomized to SGLT 2 inhibitors versus placebo for ~1.5 years. Relative reduction:

- Mortality: ~13% (vs ~20-25% with other agents)
- Heart failure hospitalizations: ~30% (similar to other agents)
- No significant hypotension or Acute Kidney Injury, no electrolyte disturbance.
- Increased genital infections (1.7% versus 0.6% on placebo)
- Similar efficacy in those with and without diabetes.

Which of the following would be reasonable? Pick all that apply

- a) Start spironolactone and book a follow-up appointment in 1 month
- b) Start spironolactone and book a follow-up appointment in 1 week**
- c) Start spironolactone and empagliflozin, follow-up in 1 week**
- d) Increase candesartan to 32mg and bisoprolol to 10mg, follow-up
- e) 2 weeks



## Let's Recap

Intervention	Relative Reduction, All cause mortality
ACEi/ARB	~20-25%
Beta-blocker	~20-25%
Spironolactone (MRA)	~20-25%
Added to the above:	
SGLT2 inhibitors	~10-15%, cost ~ 3-4 dollars per day (once a day)
Sacubitril/Valsartan (switching from ACEi/ARB)	~10-15%, cost ~\$9-10/day (BID) Hypotension can be an issue

## 1. Choose display

Individualized predictions

Population-level estimates

Estimate patient risk *(click to expand/collapse)*<https://decisionaid.ca/share-hf/>

Diabetes

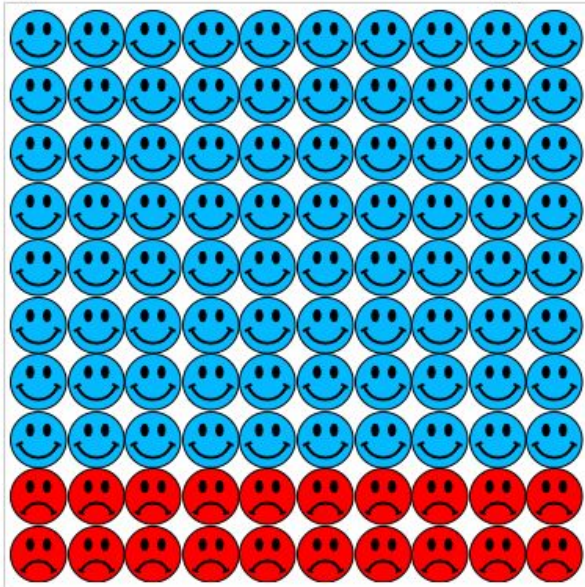
 No  Yes

Prior stroke or peripheral artery disease

 No  Yes MRA SGLT2i

## 2. Know the risks of heart failure:

5-year survival with current medication(s):



80 Alive

20 Not alive

## 3. Choose additional medication(s) to discuss

 What are typical medication combinations? Specific medications?

Print

EMR Note/Share Link

**A. Heart failure shortens life expectancy.** Your life expectancy:  
With *no* medication: Age 83 years

Estimate patient risk *(click to expand/collapse)*

Your current location

North America

Sex

Male  FemaleNYHA functional class <sup>?</sup> 1 or 2  3 or 4

Prior heart failure hospitalization

 No  Yes

Diabetes

 No  Yes

Prior stroke or peripheral artery disease

 No  Yes

Age (years)

70

Systolic BP (mmHg)

120

NT-proBNP (ng/L) <sup>?</sup>

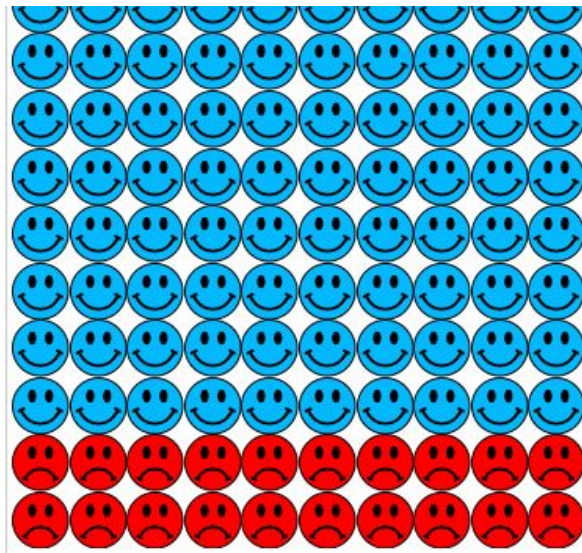
1300

Ejection fraction (%)

35

eGFR (mL/min/1.73<sup>2</sup>)

40



80 Alive

20 Not alive

**A. Heart failure shortens life expectancy.** Your life expectancy:  
With *no* medication: Age 83 years

is?

Specific medications?

Print EMR Note/Share Link

## 1. Choose display

Individualized predictions

Population-level estimates

Estimate patient risk (click to expand/collapse)

Your current location

Sex  Male  Female

NYHA functional class  1 or 2  3 or 4

Prior heart failure hospitalization  No  Yes

Diabetes  No  Yes

Prior stroke or peripheral artery disease  No  Yes

Age (years)

Systolic BP

NT-proBNP

Ejection fra

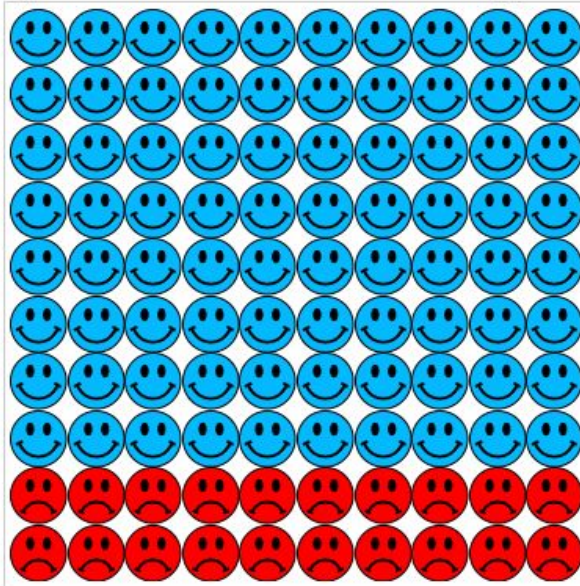
eGFR (mL/r

## Current heart failure medications ?

 ACEI/ARB ? ARNI ? Beta-blocker ? MRA ? SGLT2i ?

## 2. Know the risks of heart failure:

5-year survival with current medication(s):



80 Alive

20 Not alive

**A. Heart failure shortens life expectancy.** Your life expectancy:  
With no medication: Age 83 years

• Pl-

WOW.

That is a lotta pills. I guess I will get a pill organizer.

• To

- ASA 81mg PO daily
  - Atorvastatin 80mg PO daily
  - Furosemide 40mg PO BID
  - Candesartan 8mg PO daily
  - Bisoprolol 2.5mg PO daily
- You start
- Spironolactone 12.5mg PO daily
  - Empagliflozin 10 mg od
- You book a follow-up appointment in 2 weeks. You give him a requisition for Cr, K, Na



- Sacubitril/Valsartan (Entresto®)

- CCS 2021:

- If new diagnosis and hospitalized, start Sacubitril/Valsartan instead of ACE/ARB
- If on ACEi/ARB and symptomatic switch to Sacubitril/Valsartan
- If switching from an ACEi, there needs to be a washout period of 2-3 days to decrease the risk of angioedema

- RCT: ~8,000 symptomatic patients with Ejection Fraction ~30%, switching from ACEi to sacubitril/valsartan versus staying on ACEi. At ~2 years, relative reduction of all-cause mortality was ~15%.

- Caused more symptomatic hypotension (14% versus 9%)
- Cost ~250\$ per month

- Match the medications with the appropriate statement: **(Matched)**

ACEi/ARB

An increase of eGFR of up to 30% can happen. There is no need to decrease the dose. Cannot be prescribed at the same time as an ARNI.

Beta-Blockers

Slow titration may be needed, transient fluid retention with exacerbation of heart failure is possible. May need to increase diuretic dose.

Spironolactone  
(MRA)

Should be avoided if eGFR<30. Despite its use for patients with resistant hypertension, it has minimal effect on BP when used for heart failure.

Sacubitril/Valsartan  
(ARNI)

Can cause hypotension and decrease diuretic requirement. ACEi need to be discontinued/changed for an ARB for 2-3days prior to starting it.

SGLT2i

Reduction of eGFR possible, can promote diuresis (diuretics may need to be decreased / stopped), may reduce the incidence of hyperkalemia.

## Additional Notes

Mr Ramakanta, 75

### Spironolactone (MRA)

Should be avoided if  $eGFR < 30$ . Despite its use for patients with resistant hypertension, it has minimal effect on BP when used for heart failure.

- Patients with HFrEF randomized to MRA or placebo. Mean Systolic Blood Pressure change at 6 months 2.6mmHg difference between the groups. Hypotension: 4.6% versus 3.9% (placebo). Low Systolic Blood Pressure is not a reason to withhold MRAs.

### SGLT2i

Reduction of  $eGFR$  possible, can promote diuresis (diuretics may need to be decreased / stopped), may reduce the incidence of hyperkalemia.

- Subgroup analysis of RCT. Empagliflozin reduced the incidence of hyperkalemia (6.5% versus 7.7% with placebo).

## References

- McCormack J and Kolber M Target/higher dosing of medications in heart failure—is it necessary? Tools for practice # 174
- Sehn E et al., Sacubitril/Valsartan: Getting to the Heart of This Novel Therapy Tools for practice # 191
- Falk J et al., Should a ‘flozin be chosen to play a part for a failing heart? Tools for practice # 285
- McDonald et al., CCS/CHFS Heart Failure Guidelines Update: Defining a New Pharmacologic Standard of Care for Heart Failure With Reduced Ejection Fraction. Can J Cardiol. 2021 Apr;37(4):531-546
- Bibbins-Domingo K, Fernandez A. [BiDil for heart failure in black patients: implications of the U.S. Food and Drug Administration approval.](#) Ann Intern Med. 2007 Jan 2;146(1):52-6.
- Krimsky S. [The short life of a race drug.](#) Lancet. 2012 Jan 14;379(9811):114-5.
- Elison GTH et al., Flaws in the U.S. Food and Drug Administration's rationale for supporting the development and approval of BiDil as a treatment for heart failure only in black patients. J Law Med Ethics. 2008 Fall;36(3):449-57.
- Ferreira et al., Empagliflozin and serum potassium in heart failure: an analysis from EMPEROR-Pooled. European Heart Journal, Volume 43, Issue 31, 14 August 2022, Pages 2984–2993
- Serenelli M et al., Mineralocorticoid Receptor Antagonists, Blood Pressure, and Outcomes in Heart Failure With Reduced Ejection Fraction. [JACC Heart Fail.](#) 2020 Mar; 8(3): 188–198.
- Tavazzi L et al. Should we revise our approach to 'optimal medical therapy'? The case of chronic heart failure. Eur Heart J. 2013 Sep;34(36):2792-4.

# Brea Salter

Asthma Treatment



Brea Salter returns with her dad in November with two days of wheeziness where she has used salbutamol about 8 times. It started with a runny nose and a slight cough .

The diary you had asked them to keep shows that prior to this episode she had used salbutamol 7 times in two months, a number of times associated with exercise.

Her eczema has been mild.

I think you are right.  
Brea, how does the puffer  
make you feel?

Well it looks like  
she has asthma  
like I do,  
unfortunately.

It's good.

It helps. With  
soccer!



On examination, she is alert and hydrated with coryza. She is able to speak in phrases with an occasional dry cough.

Chest examination shows suprasternal notch retractions and she is using her neck muscles (scalene). She had good air entry and bilateral high-pitched expiratory wheezes.

Which of the following are true:

- a. Inhaled corticosteroids (ICS) should be started only if she needs  $\geq 2$  times short acting beta agonist per week
- b. ICS should be started because she has atopic/allergic disease
- c. She should be started on budesonide/formoterol as reliever and maintainer



# Acronym update!!

## Puffers:






- SABA= Short Acting Beta Agonist (salbutamol/albuterol (Ventolin@), terbutaline (Bricanyl@))
- ICS = budesonide (Pulmicort@), mometasone (Asmanex@), fluticasone (Flovent@), beclomethasone (Qvar@), ciclesonide (Alvesco@)
- LABA/ICS = Long Acting Beta Agonist/Inhaled Corticosteroid  
(**formoterol**/budesonide (Symbicort@), **formoterol**/mometasone (Zenhale), salmeterol/fluticasone (Advair@), vilanterol/fluticasone (Breo@), mometasone/
  - FABA = only “Fast Acting” Beta Agonist is **formoterol** (onset action same as SABA))

## Dosing Regimes of corticosteroids:

- Maintenance dosing = DAILY use of corticosteroid
- Intermittent dosing = use as needed for shortness of breath
- SMART = Single combination inhaler Maintenance and Reliever Therapy (FABA / ICS)

## Pictures of puffers



RELIEVERS	
Short-Acting Beta2-Agonist (SABA)	
 <b>Alromir™†††</b> (Salbutamol) (Valeant) Dose: 100mcg Capacity: 200 doses/ canister (100 doses for hospital pack)	 <b>Bricanyl®            Turbuhaler™†††</b> (Terbutaline) (AstraZeneca) Dose: 0.5mg Capacity: 100 or 200 doses/device
 <b>Ventolin® HFA †††</b> (Salbutamol) (GlaxoSmithKline) Dose: 100mcg Capacity: 200 doses/ canister	 <b>Ventolin® Diskus™†††</b> (Salbutamol) (GlaxoSmithKline) Dose: 200mcg Capacity: 60 doses/ device
<b>Salbutamol HFA            generic products such as:</b> Apo-Salvent® (Apotex), Salbutamol HFA (Sanis), Novo-Salbutamol HFA (Teva)	
Short-Acting Muscarinic Antagonist (SAMA) also known as: Short-Acting Anticholinergic (SAAC)	
 <b>Atrovent® HFA††</b> (Ipratropium) (Boehringer Ingelheim) Dose: 20mcg Capacity: 200 doses/canister	

CONTROLLERS/MAINTENANCE							
Inhaled Corticosteroids (ICS)	Long-Acting Bronchodilators		Combination ICS/LABA				
	Long-Acting Beta2-Agonist (LABA)						
 <b>Alvesco™†††</b> (Ciclesonide) (Takeda) Use: OD or BID Doses: 100mcg, 200mcg Capacity: 120 doses/ canister	 <b>Asmanex™ Twister™†††</b> (Mometasone) (Merck) Use: OD or BID Doses: 200mcg, 400mcg Capacity: 30 or 60 doses/ device	 <b>Foradil™†††</b> via Aerolizer® (device) (Formoterol) (Novartis) Use: BID Dose: 12mcg Capacity: 60 capsules/ device	 <b>Oxeze™Turbuhaler™†††</b> (Formoterol) (AstraZeneca) Use: BID Doses: 6mcg, 12mcg Capacity: 60 doses/ device	 <b>Onbrez® Breezhaler™†††</b> (Indacaterol) (Novartis) Use: OD Dose: 75mcg Capacity: 30 capsules/box	 <b>Advair® Diskus™†††</b> (Salmeterol/Fluticasone) (GlaxoSmithKline) Use: BID Doses: 50/100mcg, 50/250mcg, 50/500mcg Capacity: 28 or 60 doses/device	 <b>Advair™†††</b> (Salmeterol/Fluticasone) (GlaxoSmithKline) Use: BID Doses: 25/125mcg, 25/250mcg Capacity: 120 doses/ canister	 <b>Anoro™ Ellipta™†††</b> (Umeclidinium/Vilanterol) (GlaxoSmithKline) Use: OD Dose: 62.5/25mcg Capacity: 30 doses/device
 <b>Flovent® HFA ††</b> (Fluticasone) (GlaxoSmithKline) Use: BID Doses: 50mcg, 125mcg, 250mcg Capacity: 120 doses/ canister	 <b>Flovent® Diskus™†††</b> (Fluticasone) (GlaxoSmithKline) Use: BID Doses: 50mcg, 100mcg, 250mcg, 500mcg Capacity: 60 doses/ device	 <b>Serevent® Diskus™†††</b> (Salmeterol) (GlaxoSmithKline) Use: BID Dose: 50mcg Capacity: 60 doses/ device	 <b>Breo™ Ellipta™†††</b> (Fluticasone/Vilanterol) (GlaxoSmithKline) Use: OD Doses: 100/25mcg Capacity: 14 or 30 doses/ device	 <b>Symbicort®            Turbuhaler™†††</b> (Budesonide/Formoterol) (AstraZeneca) Use: OD or BID Doses: 100/6mcg, 200/6mcg Capacity: 120 doses/ device	 <b>Ultibro®Breezhaler™†††</b> (Indacaterol/Glycopyrronium) (Novartis) Use: OD Dose: 110mcg/50mcg Capacity: 30 capsules/box		
	Long-Acting Muscarinic Antagonist (LAMA) also known as: Long-Acting Anticholinergic (LAAC)						
 <b>Pulmicort®            Turbuhaler™†††</b> (Budesonide) (AstraZeneca) Use: BID Doses: 100mcg, 200mcg, 400mcg Capacity: 200 doses/ device	 <b>QVAR™†††</b> (Beclomethasone) (Valeant) Use: BID Doses: 50mcg, 100mcg Capacity: 200 doses/ canister	 <b>Seebri® Breezhaler™†††</b> (Glycopyrronium) (Novartis) Use: OD Dose: 50mcg Capacity: 30 doses/box	 <b>Spiriva™†††</b> via Handihaler® (device) (Tiotropium) (Boehringer Ingelheim) Use: OD Dose: 18mcg Capacity: 30 capsules/ box	 <b>Tudorza™ Genuair™ †††</b> (Acclidinium) (Almirall) Use: BID Dose: 400mcg Capacity: 30 or 60 doses/device	 <b>Zenhale™†††</b> (Mometasone/Formoterol) (Merck) Use: BID Doses: 50/5mcg, 100/5mcg, 200/5mcg Capacity: 120 doses/canister		
				<b>Additional Medications</b> <ul style="list-style-type: none"> <li>• <b>Leukotriene Receptor Antagonists (LTRA):</b> Accolate® (Zafirlukast) (AstraZeneca), Singulair® (Montelukast) (Merck)</li> <li>• <b>Anti-IgE:</b> Xolair® (Omalizumab) (Novartis)</li> <li>• <b>Oral Corticosteroid (OCS)††:</b> Prednisone (Apotex, Teva, Jaapharm, Pro Doc Ltée)</li> <li>• <b>Methylxanthines†:</b> (e.g., Theophylline, Oxtriphylline, etc.)</li> <li>• <b>Phosphodiesterase-4 inhibitor:</b> Daxas™†† (Roflumilast) (Takeda)</li> </ul>			
				 <small>(Note: The addition of a valved-holding chamber (spacer) with a pMDI is helpful in improving coordination, reducing side effects and increasing drug delivery and deposition [CTS 2010 Asthma Guidelines—www.respiratoryguidelines.ca])</small>			

## Children <12 yo

### The 2021 recommendation...

Inhaled corticosteroids (ICS) should be started with prn short acting beta agonists (SABA) **use  $\geq 2$  per week**, as in the updated (2021) Canadian Thoracic Society/Canadian Pediatric Society recommendation

#### Rationale:

- aligns with other international guidelines and research related to this criteria

Which of the following are true:

- Inhaled corticosteroids (ICS) should be started only if she needs  $\geq 2$  times short acting beta agonist per week**
- ICS should be started because she has atopic/allergic disease
- She should be started on budesonide/formoterol as reliever and maintainer



## Risk factors for exacerbations in children 5-12:

- Comorbid atopic/allergic disease **inconsistently** associated with increased risk of exacerbations
- **Consistent** associations include Previous exacerbations (Odds ratios 2.1-4.1) and poor control and/or persistent symptoms (OR 1.4-7.8)

This suggests that Brea's eczema alone would not prompt daily inhaled corticosteroids but her persistent respiratory symptoms would.

Which of the following are true:

- Inhaled corticosteroids (ICS) should be started only if she needs  $\geq 2$  times short acting beta agonist per week**
- ICS should be started because she has atopic/allergic disease
- She should be started on budesonide/formoterol as reliever and maintainer



## Well Controlled Asthma

Characteristic	Frequency
Daytime symptoms	$\leq 2$ days per week
Nighttime symptoms	$<1$ night/week and mild
Physical activity	Normal
Exacerbations	Mild and infrequent
Absence from work/school due to asthma	None
Need for reliever	$\leq 2$ per week

Adapted from 2021 Canadian Thoracic Society Guideline- Management of very mild and mild asthma

## NEWER EVIDENCE: Adolescents (children $\geq 12$ ) and adults with mild persistent asthma (few studies with this approach in children $<12$ ):

- Patients using Fast acting beta agonist (FABA ie formoterol) WITH ICS as needed had fewer severe exacerbations (5%) than FABA alone (11%)
- intermittent use of ICS or ICS/FABA is similar to daily ICS in preventing exacerbations but intermittent use is associated with  $\sim 5$  fewer weeks per year of well-controlled asthma.
- Canadian Thoracic Society and Global Initiative for Asthma (GINA) recommend using FABA with ICS as a reliever for adults / adolescent  $\geq 12$  (ie Symbicort@ / Zenhale@)

Which of the following are true:

- Inhaled corticosteroids (ICS) should be started only if she needs  $\geq 2$  times short acting beta agonist per week**
- ICS should be started because she has atopic/allergic disease
- She should be started on budesonide/formoterol as reliever and maintainer



It looks like we are going to have to use a regular preventer puffer for her. You know, like your steroid puffer.

I have heard that taking a daily steroid puffer will stunt her growth.



Which of the following statements are true:

- a. Daily ICS results in reduced height.
- b. Leukotriene receptor antagonists are a good option for asthma control in children.
- c. There is a role for Long Acting Beta Agonists in children <6.

## Cochrane review (2013) of different ICS (3 mo to 5 year) versus non-ICS (8471 children):

- mean reduction of 0.48 cm/y in linear growth velocity
- 0.61-cm change from baseline in height during a one-year treatment period in children with mild to moderate persistent asthma

## Cochrane review (2014) of daily versus intermittent ICS use (532 children):

- Mean difference in height over 44-52 weeks: 0.41 cm shorter with daily ICS

Which of the following statements are true:

- Daily ICS results in reduced height.**
- Leukotriene receptor antagonists are a good option for asthma control in children.
- There is a role for Long Acting Beta Agonists in children <6.

Chauhan et al Cochrane Database System Rev. 2013;2:CD009611

Zhang et al. *Cochrane Database Syst Rev.* 2014;2014(7):CD009471



Though popular because of perceived safety concerns with ICS, leukotriene receptor antagonists (very few children <5 included in trials) :

- Alone: inferior to inhaled steroids ( 1 more exacerbation per year in every 21 patients)
- Add on: to steroids no better than steroids alone for exacerbations

Which of the following statements are true:

- Daily ICS results in reduced height.**
- Leukotriene receptor antagonists are a good option for asthma control in children.
- There is a role for Long Acting Beta Agonists in children <6.



LABA's are not recommended for children <6 due to lack of evidence in both Canadian Thoracic Society and GINA recommendations.

- risk of asthma-related death, intubation or hospitalization with LABA alone (hopefully never used anymore!) increased with younger age

Low dose LABA-ICS is part of escalation of care in children age 6+ (CTS, GINA)

Which of the following statements are true:

- Daily ICS results in reduced height.**
- Leukotriene receptor antagonists are a good option for asthma control in children.
- There is a role for Long Acting Beta Agonists in children <6.



Brea Salter, 4 years

That sounds reasonable.  
But we need to treat Brea's  
flare-up wheeziness right  
now.

I know I feel more  
comfortable when I  
take my steroid puffer  
regularly, so I think  
we will try for taking  
this every day.



Criteria	Description	Score
O2 saturation	>95%	0
	92-94%	1
	<92%	2
Suprasternal retractions	No	0
	<b>Yes</b>	<b>2</b>
Scalene contractions	No	0
	<b>Yes</b>	<b>2</b>
Air Entry	Normal	0
	Decreased base	1
	Decreased base and apex	2
	Minimal or Absent	3
Wheezing	Absent	0
	<b>Expiratory only</b>	<b>1</b>
	Inspiratory (+- expiratory)	2
	Audible without stethoscope or	3

## PRAM (Pediatric Respiratory Assessment Measure) SCORE

Mild: 0-3

Moderate: 4-7

Severe: 7-12

Criteria	Description	Score
O2 saturation	>95%	0
	92-94%	1
	<92%	2
Suprasternal retractions	No	0
	<b>Yes</b>	<b>2</b>
Scalene contractions	No	0
	<b>Yes</b>	<b>2</b>
Air Entry	Normal	0
	Decreased base	1
	Decreased base and apex	2
	Minimal or Absent	3
Wheezing	Absent	0
	<b>Expiratory only</b>	<b>1</b>
	Inspiratory (+- expiratory)	2
	Audible without stethoscope or silent	3

## Brea's Score?

Chest examination shows suprasternal notch retractions (2) and scalene contraction (2), good air entry (0) and bilateral high-pitched expiratory wheezes (1).

**Score= 5 (Moderate)**

That sounds reasonable.

But we need to treat Brea's flare-up wheeziness right now.

I know I feel more comfortable when I take my steroid puffer regularly, so I think we will try for taking this every day.



What are some options for treatment of an exacerbation:

- Prednisone 0.5 mg/kg od for 3-5 days
- Dexamethasone 0.6 mg/kg per day for 1-2 days
- Quintuple daily ICS dose

Systemic corticosteroids (versus placebo) for asthma exacerbations within one hour of ED presentation decreases hospital admissions (NNT=8).

Which of the following statements are true:

What are some options for treatment of an exacerbation:

- a. **Prednisone 0.5 mg/kg od for 3-5 days**
- b. **Dexamethasone 0.6 mg/kg per day for 1-2 days**
- c. Quintuple daily ICS dose



Oral dexamethasone (the injectable form may be given orally) is more palatable than oral prednisone and is given as a 1-2 day treatment versus 3-5 typically used for prednisone.

- Dose: 0.6 mg/kg x 1-2 doses
- For every ~20 children treated with dexamethasone, there will be one less vomited dose.

Which of the following statements are true:

What are some options for treatment of an exacerbation:

- Prednisone 0.5 mg/kg od for 3-5 days**
- Dexamethasone 0.6 mg/kg per day for 1-2 days**
- Quintuple baseline ICS dose



Only 1 RCT of 254 children age 5-11 treating mild exacerbations with quintupling baseline daily ICS dose of fluticasone (88ug bid versus 440ug bid for 7d).

- Rate of severe exacerbations no different (0.37 exacerbations per year baseline dose versus 0.48 exacerbations per year quintupling)

Though increasing inhaled corticosteroids (FABA/ICS) for mild exacerbations is recommended as a first step age 12+, it is not recommended in children by either the Canadian Pediatric Society or the Canadian Thoracic Society. Oral steroids are the treatment of choice.

Which of the following statements are true:

What are some options for treatment of an exacerbation:

- Prednisone 0.5 mg/kg od for 3-5 days**
- Dexamethasone 0.6 mg/kg per day for 1-2 days**
- Quintuple baseline ICS dose



Brea Salter, 4 years

Plan:

- Because Brea has a moderate exacerbation (PRAM =5) she qualifies for oral corticosteroids. You prescribe dexamethasone 0.6 mg/kg for 2 doses.
- You start fluticasone 100ug bid as a maintenance puffer and as needed salbutamol.
- You advise her to go to the emergency room if she is worsening with her breathing efforts or not able to drink adequately.
- Follow-up in 3 months with a diary of symptoms.



# Tina Mosjov, 30

## Weight Loss

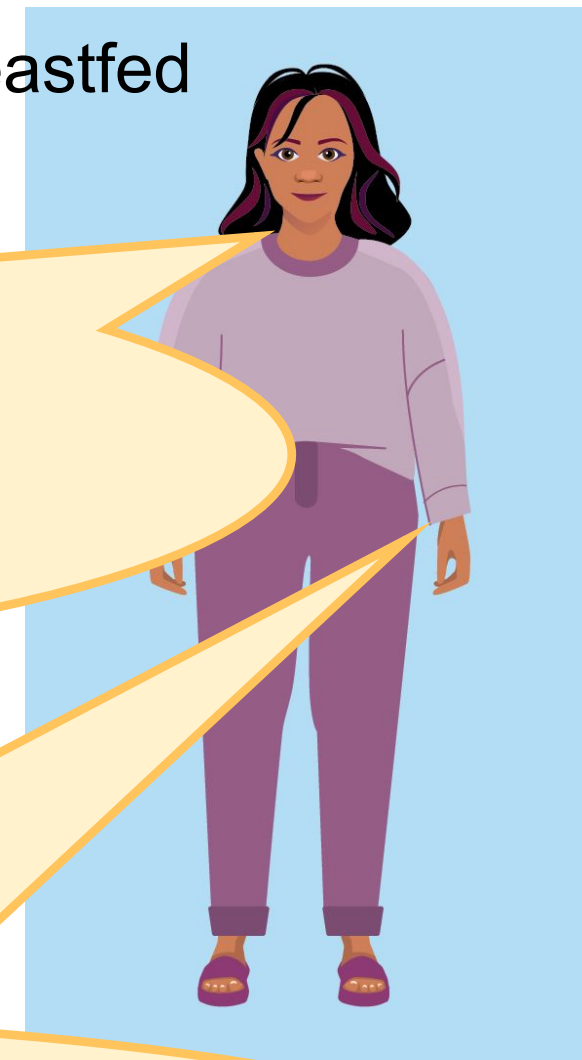


Leptin (Tina) gave birth to Svetlana 10 months ago. She breastfed until 6 months and both she and baby have been healthy.

Geez I had my baby 10 months ago and I still can't fit into my pre-baby pants.... I'd like to lose the extra 10 Kg I've gained and I was hoping for some tips from you.

I'm sorry to hear that. I get the feeling of wanting to regain control over your body...  
You're not alone.

So... what should I do? Diet? Exercise?  
Drugs?



**How effective are comprehensive weight loss treatment programs?**  
(example: eat **fewer calories**, a program to **increase physical activity**, behavioral intervention to facilitate **adherence**).

- mean weight loss of **8 kg in 6 months**.
- an individual's weight change can vary **-30 to +10 kg with any diet**.  
**Discontinuation** rates are high (>50%)

For weight loss, dietary intake of 1200-1500 kcal/day (women) or 1500-1800 kcal/day (men) is recommended.

I keep hearing about intermittent fasting? Is that good?



Intermittent fasting is a more successful way to lose weight.

True/False

Intermittent fasting can work—it's as effective as other diets for weight loss. But it's not magic. It works because it reduces your overall calorie intake. So, if you skip breakfast but then have double the lunch you would eat, well... you see the problem.

Although inconsistently defined, **intermittent fasting** (example reducing 500 kcal/day for 2 days/week) and continuous dieting (~25% reduction in caloric intake daily) result in similar weight loss, usually ~5-9kg at 6 months-1 year.

For example, 100 patients were randomized to alternate-day fasting, continuous dieting, or no intervention control for 6 months.

- After additional 6-month weight maintenance phase; weight loss between fasting and continuous dieting: no difference.
- Both diets lost ~6% of body weight more than no intervention.

I have never been great at sticking with exercise and I am pretty bagged with the baby  
- Is it worth it to try?



Systematic reviews show that just **initiating/increasing exercise** is **unlikely to lead to weight loss** (even though it improves other health outcomes, such as cardiovascular disease!).

However, exercise does play a role in comprehensive weight loss management programs and in the **maintenance of weight loss after 6 months** of caloric restriction.

Any exercise is better than no exercise, but it is important for patients to have realistic expectations.

In a large RCT of 439 women (BMI=31) comparing comprehensive lifestyle interventions, the average weight loss at 12 months was:

Hypocaloric diet	-8.5% (e.g., 84kg->77kg)
Exercise (225 min/week of brisk walking/bicycling)	-2.4% (e.g., 84kg->82kg)
Diet and exercise	-11% (e.g., 84kg->74kg)
Control	-0.8% (e.g., 84kg->84kg)

Okay, so you are saying I need to starve, exercise and look after the baby? It sounds insane. What's the magical medication all the TV commercials are talking about?



# GLP-1s...

Have you heard about them???

**EXCLUSIVE** Hollywood's 'Ozempic face'  
**crisis: Plastic surgeons reveal the celebs  
suffering from gauntness 'because of  
weight-loss drug'**

Well, these medications have really changed what we can prescribe for weight loss but they aren't perfect...

Once stopping GLP1 agonists, people regain about 20% of weight lost within a year.

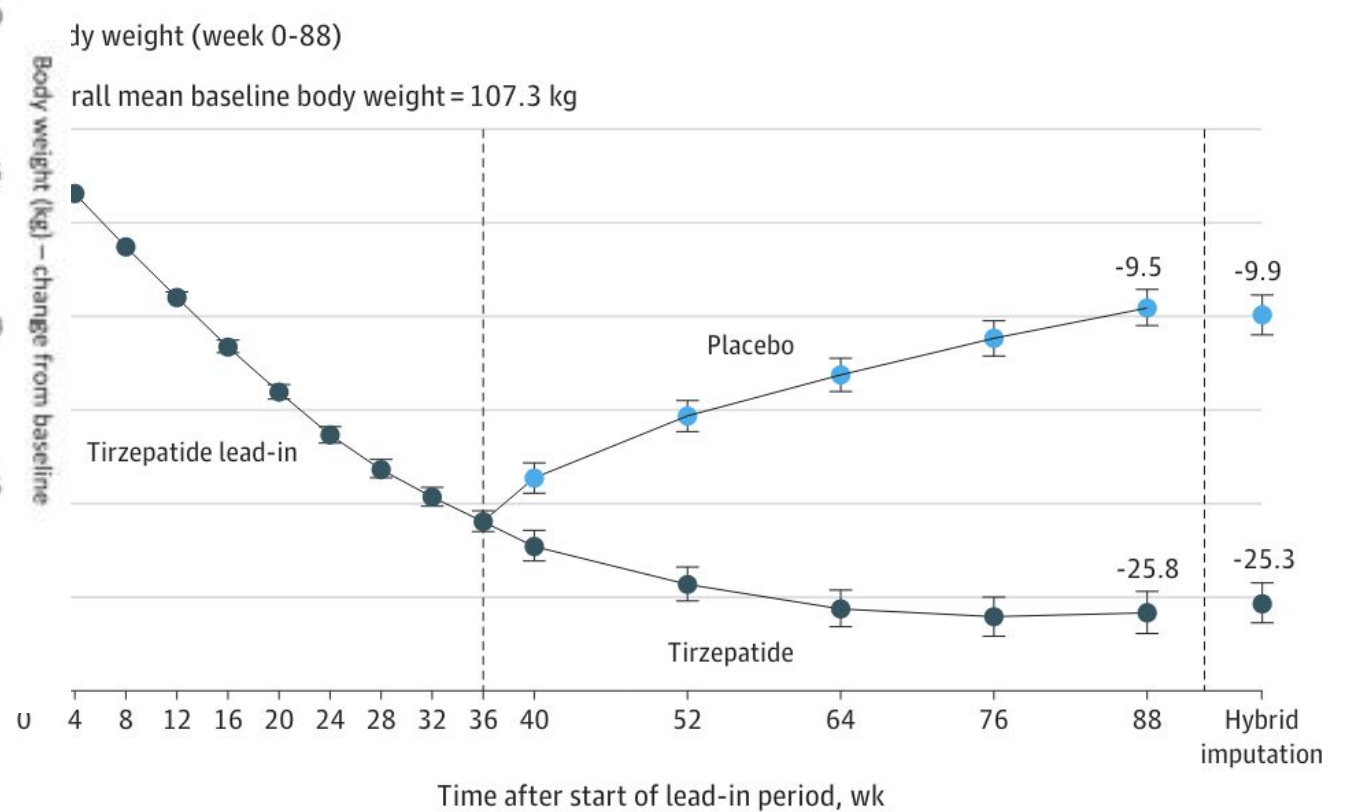
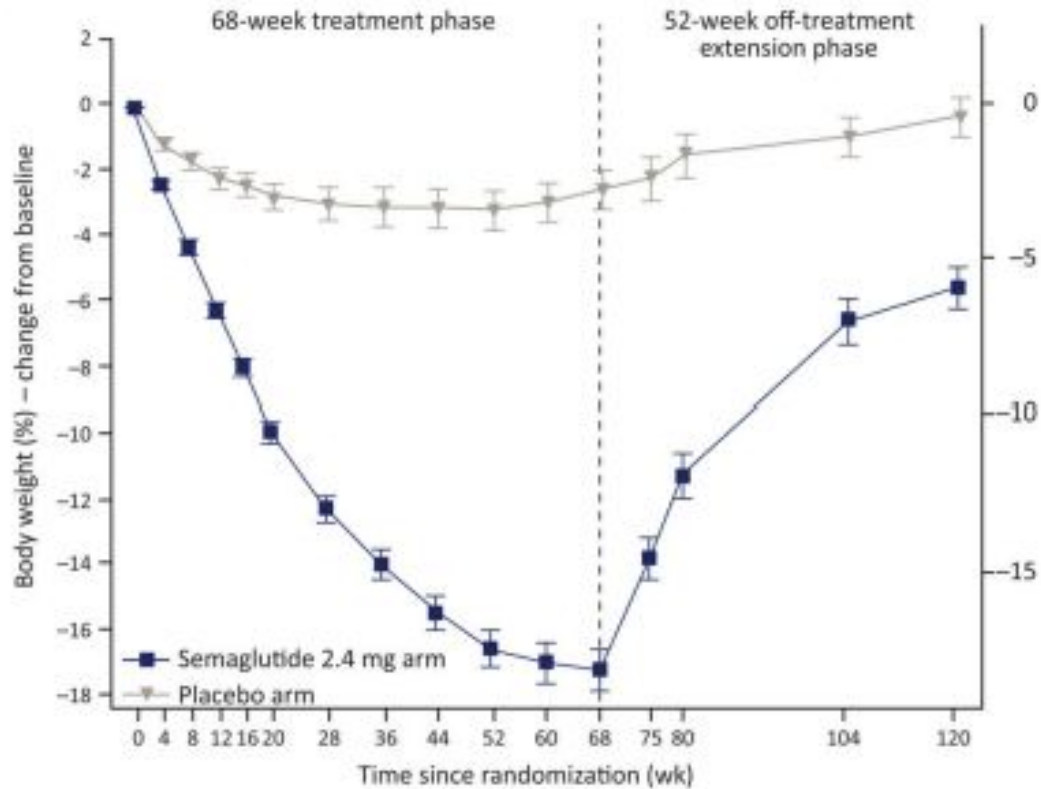
True/False

- **Most** of the weight is regained once the medication is stopped.
- RCT: 1961 adults (BMI>30) randomized to semaglutide 2.4mg weekly or placebo for ~1.5 years. The initial mean weight loss was 17% with semaglutide.
- Treatment was stopped after 1.5 years. Following treatment withdrawal, 70% weight lost was regained 1 year after stopping semaglutide.
- Overall mean weight loss (compared to initial weight) 5.6% with semaglutide and 0.1% on placebo.

Once stopping GLP1 agonists, people regain about 20% of weight lost within a year.

True/**False**

# Stopping GLP-1: Forever drug?



## Subcutaneous semaglutide:

- Used with lifestyle changes, 2.4mg weekly subcutaneous semaglutide resulted in an average 10-15% loss in weight (10-15kg) over ~1.5 years versus 2-3% (3-4kg) with placebo.
- Most (70-80%) semaglutide participants lost 5% or more of their body weight.
- About  $\frac{3}{4}$  of patients experienced gastrointestinal side effects, but few stop taking the medication.

## Oral semaglutide:

- The high-dose formulation of oral semaglutide (50mg daily; not available in Canada) can result in:
  - Mean weight loss of ~15% body weight at ~1.5 years (versus 2% placebo),
  - 69% of people losing at least 10% of their body weight (versus 12% placebo).
- The currently available 14mg formulation results in ~5% weight loss.

## Subcutaneous tirzepatide:

- Both semaglutide 2.4mg and tirzepatide 5-15mg are approved for obesity.
- There is an additional ~5% weight loss with tirzepatide when compared to semaglutide but it is more **expensive**.
- Gastrointestinal side effects are similar/less with tirzepatide (e.g., vomiting 18% with semaglutide 2.4mg versus 11% with tirzepatide 15mg).

# GLP-1s for weight loss: who would win?

- video of cats if I can make it work
-

# GLP-1s for weight loss: who would win?

- Semaglutide vs liraglutide:
  - 2 RCTs: semaglutide better: ~15% weight loss vs 6%
  - 10% weight loss: 71% vs 26% liraglutide
- Semaglutide vs tirzepatide, open-label RCT:
  - N=751, no DM. Using highest doses weight loss 20% vs 14% (sema)
  - Lost >10% weight: 82% vs 61% (sema), NNT=5
  - Stopping for GI AE: 2.7% vs 5.6% (sema)
- **Bottom Line: all 3 agents effective for weight loss; semaglutide better than liraglutide, but tirzepatide better than semaglutide.**

# Other semaglutide side effects you might not know about

Neoplasm: medullary thyroid cancer: not seeing

Gastrointestinal:

- Observational data: Increased risk of gastroparesis (and bowel obstruction): ~4-5 times over bu
  - Hold 2-3 weeks pre-op

Alopecia:

- PO semaglutide: 7% vs 3% (placebo)
- SC semaglutide: initially thought <1%, but 4% in recent RCT
- Tirzepatide: 5% vs 0.9% placebo, NNH=25

Dysesthesia:

- PO semaglutide: 5% on 25mg, 13% on 50mg
- SC semaglutide: 6% in recent RCT (23% if used 7.2mg!)
  - Not recovered: 8.3% (19% on high dose)

Lean body volume decreased ~7% with semaglutide (placebo~0.5%).

# Monthly Costs

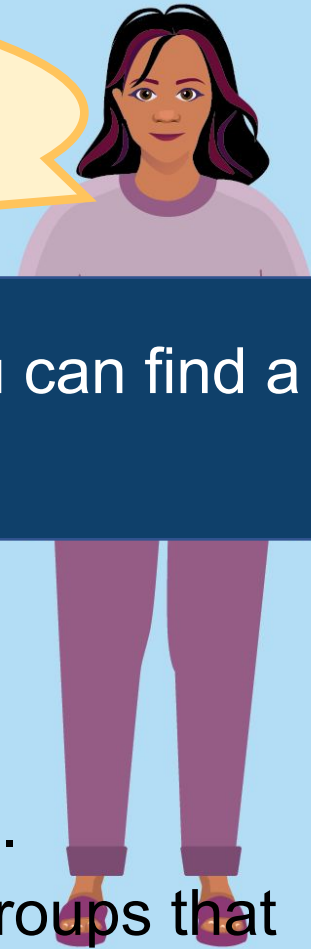
- Liraglutide pen: \$130 (initial 0.5mg), \$500 (3mg)
- Semaglutide pen: \$460 (all doses)
- Tirzepatide pen: \$440 (initial), \$600 (10mg), \$840 (15mg)



Ozempic and Wegovy off-patent January 4, 2026!

Hmmm That injection sounds really effective and I would appreciate the help. But I guess I will have to work on all the stuff - getting into better habits.

Okay, well let's start slow with the medication and I hope you can find a fun way to fit in exercise!



### Plan:

- Tina will have a look at the snacking patterns she has gotten into.
- She will get herself a running stroller and look into some social groups that have exercise built in.
- You prescribe semaglutide 0.25 mg weekly to increase to 0.5 mg in 4 weeks. You plan for follow-up in 6 weeks.

# GLP-1s for weight loss

## Dose-dependent weight loss (all GLP-1's), baseline weight ~100kg

### Liraglutide 3mg SC daily: 2 RCTs (n=4500)

- Weight loss: ~3-5% at 1 year
- Lost >10%: 33% vs 11% placebo, NNT 5 over 56 weeks
- Withdrawal due to AE: 10% vs 4% placebo, NNH 17

### Semaglutide 2.4mg weekly: 3 RCTs

- Weight loss: ~10-15% vs 5%
- Lost >10%: ~70% versus 12% (placebo), NNT 2 over 68 weeks

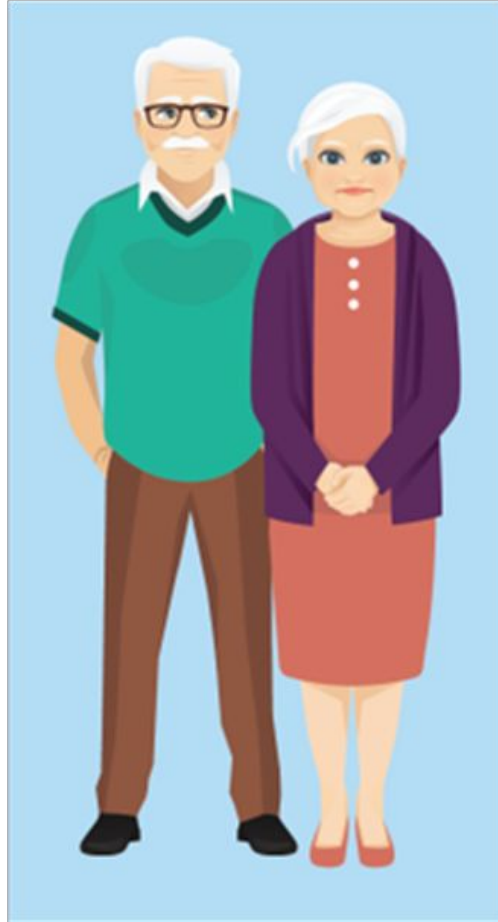
### Tirzepatide 10-15mg weekly: 3 RCTs

- Average weight loss: ~15-20% vs 3%
- Lost >10% ~65-80% vs 9% placebo, NNT 2 over 72 weeks

- Imagine that you are trying to hold back urine and try to squeeze your muscles without squeezing your buttock or stomach.
- If you want, you can put 1-2 fingers into your vagina to make sure that the right muscles are being tighten. You should feel the squeeze around your fingers.
- Try at least 8 contractions 3 times a day!

Hum... I'm not sure what to say...  
Any medications?

# Mr. Per Colate

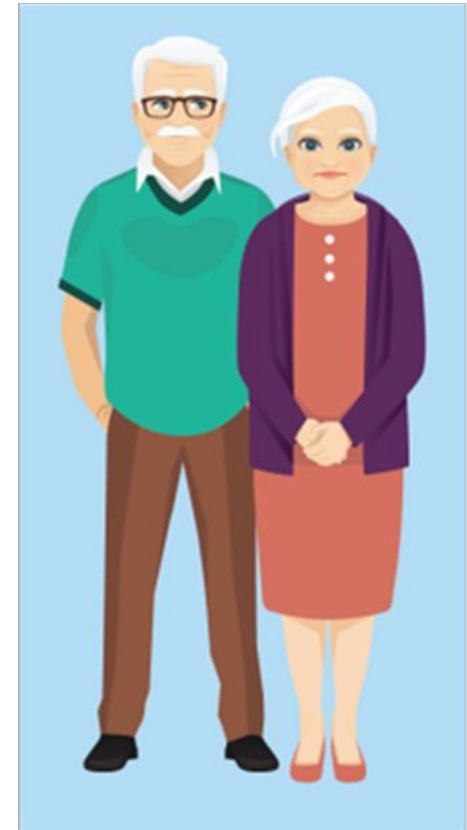


# Mr. Per Colate, 72

You had seen Per three months ago for bothersome nocturia and urinary frequency and diagnosed him with BPH following a normal DRE. He was started on tamsulosin 0.4mg. His symptoms have improved but he still finds that it is negatively impacting his self confidence and quality of life.

You had asked him to do some blood-work and to follow-up with you.

His PSA is 1.9 and urinalysis is normal.



## Adapted from the International Prostate Symptom Score

Over the past month:

Incomplete emptying	Less than half the time (2)
Intermittency	About half the time (3)
Weak stream	About half the time (3)
Straining	About half the time (3)
Frequency (urinating within 2 hours) (0-5)	About half the time (3)
Urgency (0-5)	Less than half the time (2)
Nocturia (0-5)	Almost always (5)

**Total score: 21**

0-7: mild symptoms

8-19: moderate symptoms

20-35: severe symptoms

# American Urological Association Symptom Index (AUA-SI)/International Prostate Symptom Score (IPSS)

Measures severity of benign prostatic hyperplasia (BPH) symptoms.

When to Use ▾

Pearls/Pitfalls ▾

Why Use ▾

Incomplete emptying: How often have you had the sensation of not emptying your bladder?

Not at all	0
Less than 1 in 5 times	+1
Less than half the time	+2
About half the time	+3
More than half the time	+4
Almost always	+5

Frequency: How often have you had to urinate less than every two hours?

Not at all	0
Less than 1 in 5 times	+1

**0** points

AUA-SI/IPSS Score

**Mild**

BPH symptom severity

Copy Results 📄

Next Steps >>>

Quality of Life Due to Urinary Symptoms (optional)

If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?

Delighted

Pleased

Mostly satisfied

Mixed

Mostly dissatisfied

Unhappy

Terrible

# Mr Per Colate, 72



Which of the following about the diagnosis of Benign Prostatic Hyperplasia (BPH) is **true**:

- a) Digital rectal examination (DRE) can help identify very large prostates
- b) Post Void Residual is not helpful to diagnose BPH
- c) PSA can be used as a surrogate for prostate volume
- d) All of the above

# Mr Per Colate, 72

## **DRE for prostate volume measurement:**

Systematic review (19 studies): good correlation if performed by urologist / physicians with focused urological practices (correlation coefficients 0.6-0.9). Weak – moderate correlation if performed by physicians with more general practices.

Largest cohort (1688 patients), DRE performed by urologist. It was best at “ruling in” very large prostates (>50cc) with a specificity of 99.8% (but a sensitivity of 9%).

- a) Digital rectal examination (DRE) can help identify very large prostate
- b) Post Void Residual is not helpful to diagnose BPH
- c) PSA can be used as a surrogate for prostate volume
- d) All of the above**

# Mr Per Colate, 72

## PSA for prostate volume approximation:

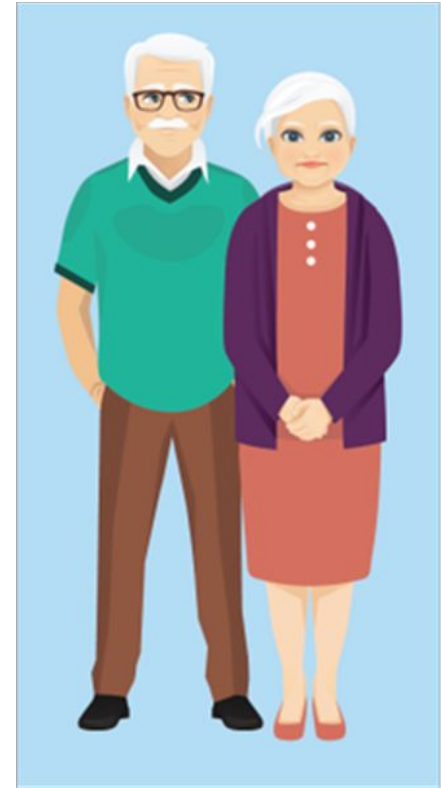
Population based cross-sectional study of 1,524 men for whom a diagnosis of prostate cancer has been excluded.

- The AUC for serum PSA was 0.79-0.92 for prostate volume 30mL-50mL.
- For DRE, it was 0.69-0.82. This indicates that PSA is a more reliable predictor of volume than DRE in most cases.
- AUC values: 0.7-0.8 acceptable and >0.80 good predictive values.

Which of the following about the diagnosis of Benign Prostatic Hyperplasia (BPH) is **true**:

- a) Digital rectal examination (DRE) can help identify very large prostate
- b) Post Void Residual is not helpful to diagnose BPH
- c) PSA can be used as a surrogate for prostate volume
- d) All of the above**

# Mr Per Colate, 72



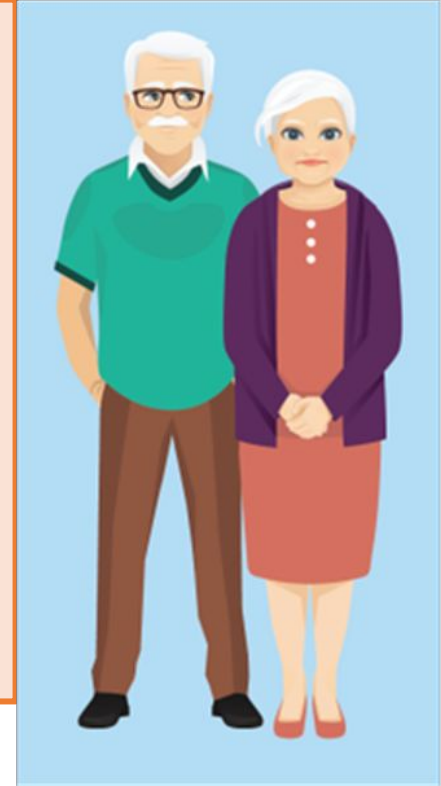
True / False: ~1% of men with BPH (on no treatment, PSA ~ 2.5) will experience urinary obstruction at 10 years (needing a catheter)

# Mr Per Colate, 72

RCT, ~60 year old men with BPH, PSA ~2.5 on placebo

- Clinical progression (>4 point increase on prostate symptom scale, which would be clinically noticeable): ~35% at 10 years
- Acute urinary obstruction (needing a catheter): ~6% at 10 years
- Invasive therapy due to BPH: ~13% at 10 years

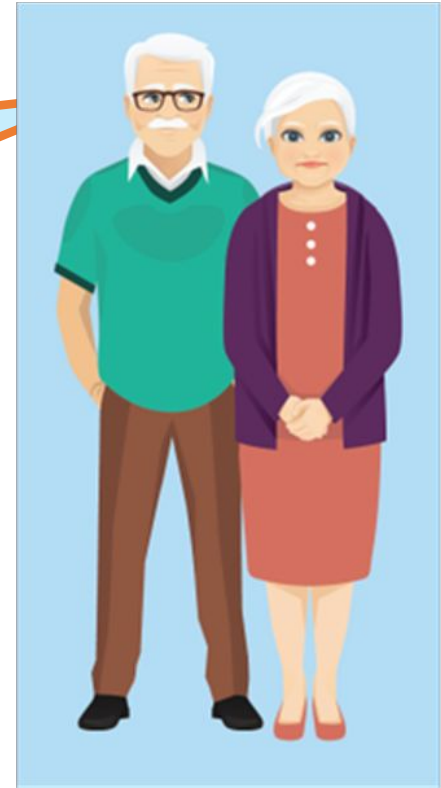
These numbers are higher for men with larger prostates (PSA~4 / prostate volume ~40 mL).



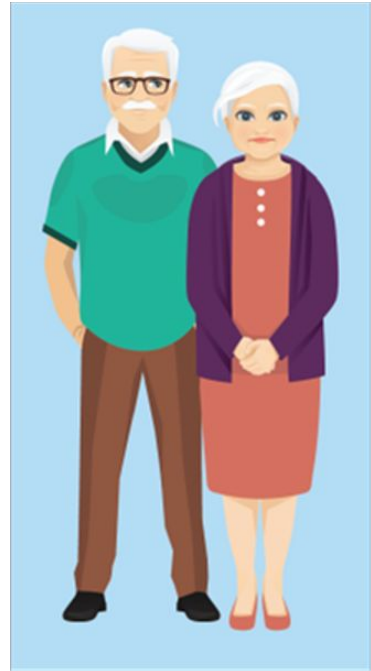
True / **False**: ~1% of men with BPH (on no treatment, PSA ~ 2.5) will experience urinary obstruction at 10 years (needing a catheter)

# Mr Per Colate, 72

I hope you have something else to offer me doc, it's just terrible. I can't go outside anymore. It really brings me down. My friend Gerry needed some kind of "apple core surgery"?



# Mr Per Colate, 72



Which of the following is **false**?

- a) 5 alpha reductase inhibitors decrease the chance of BPH surgery
- b) Alpha1-antagonists decrease the chance of BPH surgery
- c) 5 alpha reductase inhibitors are unlikely to benefit patients without BPH
- d) Erectile dysfunction is common with 5 alpha reductase inhibitors

# Mr Per Colate, 72

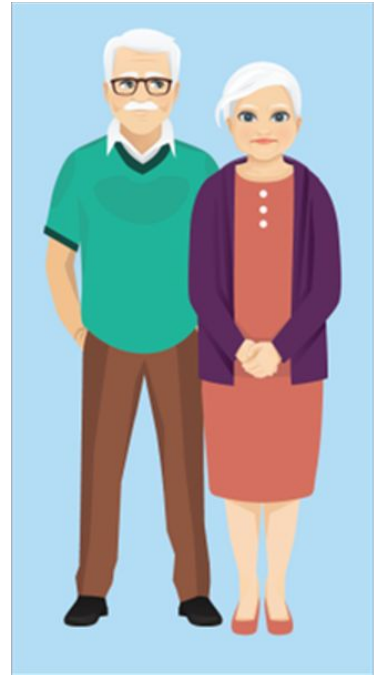
For men with BPH, **alpha-1 antagonists** improve symptoms but do not decrease the chance of BPH surgery or of acute urinary retention.

Most trials indicate  $\alpha$ 1-blockers likely more efficacious if small prostate (<40cc).

E.g. RCT, men with PSA ~2.5, at 4 years

- ~7% of men will have *worsening* of symptoms versus 14% on placebo.
- Mean reduction symptom score [0 (no symptoms) to 25 (severe symptoms)]:
  - Placebo: -4.9 versus Doxazosin: -6.6

Most common **side-effect**: dizziness (2-10%), ejaculatory disturbances (does not impact libido). Needs to be stopped if undergoing cataract surgery.



- c) 5 alpha reductase inhibitors are unlikely to benefit patients without BPH
- d) Erectile dysfunction are common with 5 alpha reductase inhibitors

# Mr Per Colate, 72

## 5 alpha reductase inhibitors (Finasteride, Dutasteride):

**BPH surgery:** 1% (4 years) versus 5% on placebo (can alter natural history of BPH)

**Symptom reduction** similar to alpha-blockers

Subgroup analysis: benefits only if prostate volume > 30cc (not known in primary care!) and/or **PSA >1.5**. It is likely that the bigger the prostate the higher the benefits.

**Side effects:** erectile dysfunction ~18% (4 years ) versus ~13% placebo

There is no consensus on what PSA is “high enough to start” a 5-alpha reductase inhibitor. Up to Date™ suggests PSA>1.5ng/dL (correlates with prostate volume of ~35 mL).

Which of the following

- a) 5 alpha reductase inhibitors are contraindicated in patients with BPH surgery
- b) Alpha1-antagonist are contraindicated in patients with BPH surgery**
- c) 5 alpha reductase inhibitors are contraindicated in patients without BPH
- d) Erectile dysfunction are common with 5 alpha reductase inhibitors

After starting 5 alpha-reductase inhibitors, PSA will decrease by ~50% (at 6-12 months).

If PSA does not decrease or if PSA starts to increase after reaching nadir, patients should be assessed for prostate cancer.

Which of the following

- a) 5 alpha reductase inhibitors are contraindicated in patients with BPH surgery
- b) Alpha1-antagonist are contraindicated in patients with BPH surgery**
- c) 5 alpha reductase inhibitors are contraindicated in patients without BPH
- d) Erectile dysfunction are common with 5 alpha reductase inhibitors

# Mr Per Colate, 72

## Adding 5 alpha reductase inhibitors to alpha-blockers:

- Less clinical deterioration: 5-13% combination versus 10-22% alpha blockers alone.
- Decreased need for surgery: 1-2% combination versus 3-8% alpha blockers
- BUT, get the side-effects of both medications!

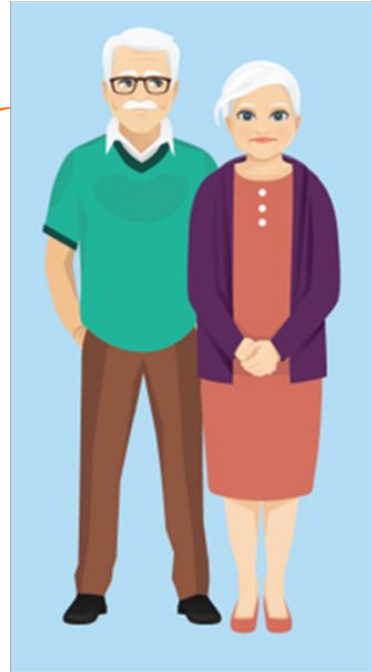
Which of the following is **false**?

- a) 5 alpha reductase inhibitors decrease the chance of BPH surgery
- b) Alpha1-antagonists decrease the chance of BP surgery**
- c) 5 alpha reductase inhibitors are unlikely to benefit patients without BPH
- d) Erectile dysfunction are common with 5 alpha reductase inhibitors

Your PSA is 1.9. We could start a medication to try to shrink your prostate but it may lead to some sexual side effects.

Mr Per Colate, 72

Why can't I just get some surgery to make my prostate smaller or something?



Which of the following is true (pick 2):

- a) Transurethral resection of the prostate (TURP) is more effective than medications
- b) TURP is an easy, ambulatory procedure
- c) Many minimally invasive treatments are available, but it is not clear how they compare to medications / TURP

- **Medications** provide an average reduction in prostate symptoms score of 3-6 (4 is considered clinically noticeable). For **TURP**, it is 10-18 points.
- It involves the **endoscopic removal** of the inner zones of the prostate with a heated probe.

- It requires **anesthesia** and carries a 5% risk of severe hemorrhage. Some patients will have ejaculatory dysfunction (% unclear).

Which of the following is true (pick 2):

- a) Transurethral resection of the prostate (TURP) is more effective than medications
- b) TURP is an easy, ambulatory procedure
- c) Many minimally invasive treatments are available, but it is not clear how they compare to medications / TURP

## Newer surgical treatments

- Some are similar to TURP but use different energy sources to remove tissue and cause less bleeding (eg: laser resection)
- Others are “**minimally invasive**” : they do not remove tissue but cause in situ coagulative necrosis using a heating source.
  - Can be carried out in **ambulatory** care (analgesia / sedation with minimal anesthesia)
  - Can result in prolonged bladder **catheterization**. Five-year **retreatment** rates 42-59% for some procedures (transurethral microwave therapy).

Which of the following is true (pick 2):

- a) Transurethral resection of the prostate (TURP) is more effective than medications
- b) TURP is an easy, ambulatory procedure
- c) Many minimally invasive treatments are available, but it is not clear how they compare to medications / TURP



## Mr Per Colate, 72

### Plan:

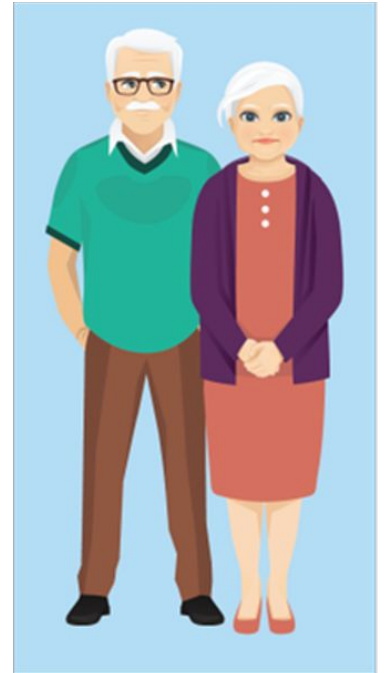
- Continue Tamsulosin 0.4mg PO qhs.
- Start Finasteride 5mg PO daily
- You give him a requisition to repeat the PSA in 6 months. You expect the PSA to decrease by 50%.
- If his symptoms do not improve or if his PSA does not decrease as anticipated, you will refer him to a urologist.

# References

- McConnell et al., The long-term effect of doxazosin, finasteride, and combination therapy on the clinical progression of benign prostatic hyperplasia. N Engl J Med. 2003 Dec 18;349(25):2387-98
- DRE: Bosch JLHR et al. Validity of Digital Rectal Examination and Serum Prostate Specific Antigen in the Estimation of Prostate Volume in Community-Based Men Aged 50 to 78 Years: The Krimpen Study. European Urology 46 (2004) 753–759
- DRE: Christie DRH. A systematic review of the accuracy of the digital rectal examination as a method of measuring prostate gland volume. Journal of Clinical Urology. 2019;12(5):361-370.
- PSA and DRE: Cheng Y et al., The diagnostic value of non-invasive methods for diagnosing bladder outlet obstruction in men with lower urinary tract symptoms: A meta-analysis. Front Surg. 2022 Sep 20;9:986679.
- PSA and DRE: Bohnen AM et al. Serum Prostate-Specific Antigen as a Predictor of Prostate Volume in the Community: The Krimpen Study. Eur Urol. 2007 Jun;51(6):1645-52
- [Clinical manifestations and diagnostic evaluation of benign prostatic hyperplasia – UpToDate](https://www.uptodate.com/contents/clinical-manifestations-and-diagnostic-evaluation-of-benign-prostatic-hyperplasia?search=BPH&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2)  
[https://www.uptodate.com/contents/clinical-manifestations-and-diagnostic-evaluation-of-benign-prostatic-hyperplasia?search=BPH&source=search\\_result&selectedTitle=2~150&usage\\_type=default&display\\_rank=2](https://www.uptodate.com/contents/clinical-manifestations-and-diagnostic-evaluation-of-benign-prostatic-hyperplasia?search=BPH&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2)
- Braschi E and Kolber M, To Pee or Not to Pee: Combination agents for benign prostatic hypertrophy. Tools for Practice #316
- Wilt TJ and N'Dow J [Benign prostatic hyperplasia. Part 1--diagnosis.](#) BMJ. 2008 Jan 19;336(7636):146-9.
- Wilt TJ and N'Dow [Benign prostatic hyperplasia. Part 2--management.](#) BMJ. 2008 Jan 26;336(7637):206-10.
- Nickel JC et al., Canadian Urological Association guideline on male lower urinary tract symptoms/benign prostatic hyperplasia (MLUTS/BPH): 2018 update. Can Urol Assoc J. 2018 Oct;12(10):303-312
- Gacci et al. [European Association of Urology Guidelines on Male Urinary Incontinence.](#) Eur Urol. 2022 Oct;82(4):387-398.
- Lee CL, Kuo HC. [Current consensus and controversy on the diagnosis of male lower urinary tract symptoms/benign prostatic hyperplasia.](#) Ci Ji Yi Xue Za Zhi. 2017 Jan-Mar;29(1):6-11.
- Imamua M et al. Lifestyle interventions for the treatment of urinary incontinence in Adults. Cochrane Database of Systematic Reviews 2015, Issue 12. Art. No.: CD003505

# Ms Micti Colate, 70

- You just saw Micti's husband (Per) to discuss his nocturia.
- Micti was also at the appointment, and she would like to discuss similar symptoms that she is having.
- As you had a no-show you were able to squeeze her in.
- She is only on Amlodipine 5mg PO daily for hypertension. There is no other Past Medical History.

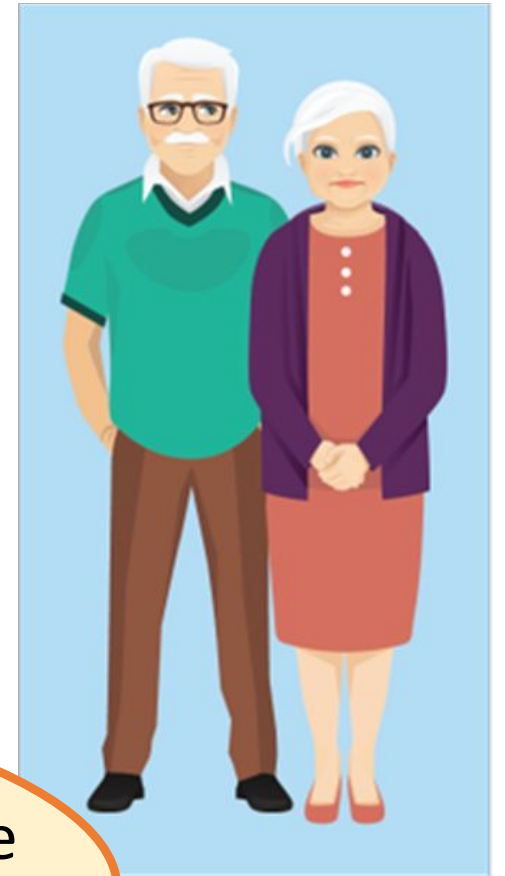


# Ms Micti Colate, 70

So, I have also been getting up to pee at night and sometimes don't make it. I'm worried I'm going to fall. I can't see anything and sometimes I trip on the rugs.

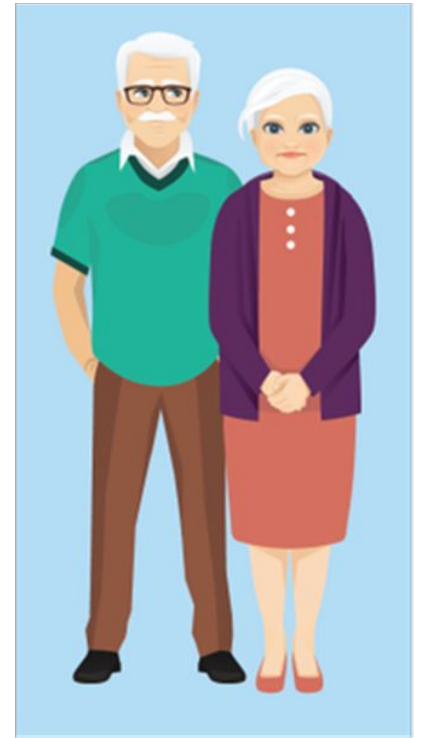
Let's discuss your symptoms. I also think you should remove those rugs. They sound like a fall hazard.

And whenever I get a cold, it's horrible. I have to cross my legs every time I cough.



# Ms Micti Colate, 70

- **Stress urinary incontinence** occurs when there is a leakage of urine during physical exertion / increased abdominal pressure (such as during coughing).
- It can be the sole presenting complaints or be accompanied with **urgency symptoms (overactive bladder)** such as increased frequency, urgent need to void and nocturia.
- Micti is presenting with **mixed symptoms**.



### The Questionnaire for female Urinary Incontinence Diagnosis (QUID)

	None of the time	Rarely	Once in a while	Often	Most of the time	All of the time
Do you leak urine (even small drops), wet yourself, or wet your pads or undergarments...						
1. when you <b>cough</b> or <b>sneeze</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. when you <b>bend down</b> or <b>lift something up</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. when you <b>walk quickly, jog</b> or <b>exercise</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. while you are <b>undressing</b> in order to use the <b>toilet</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Do you get such a <b>strong and uncomfortable need</b> to urinate that you leak urine (even small drops) or wet yourself before reaching the toilet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Do you have to <b>rush to the bathroom</b> because you get a <b>sudden, strong need</b> to urinate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### Scoring:

Each item scores 0 (None of the time), 1 (Rarely), 2 (Once in a while), 3 (Often), 4 (Most of the time) or 5 (All of the time). Responses to items 1, 2 and 3 are summed for the Stress score; and responses to items 4, 5, and 6 are summed for the Urge score.

# Ms Micti Colate, 70

**Pelvic floor exercises:** Systematic review (18 RCTs, 26 - 133 women, followed 2 - 24 weeks)

Self reported cure / improvement: 74% versus 11 % (control)

Leakage (baseline 1-2/day): reduced by 1 episode per day over control.

Patient satisfaction: 71% vs 13% (control)

For Micti, which of the following has the most evidence of benefit:

- a) **Pelvic floor exercises**
- b) Decreasing caffeine intake
- c) Pessaries

# Ms Micti Colate, 70

## Caffeine.

- RCT caffeine reduction education versus continue caffeine intake (n=95):
  - Voids per 24h ~11 pre-intervention decreased to ~7 (decreased caffeine) versus ~8 (continue caffeine).
  - Urgency per 24h ~5 pre-intervention decreased to ~1.5 (decreased caffeine) versus ~3 (continue caffeine).
  - Occasions of leakage: no difference
  - Limitation: Is it the caffeine or the decreased fluid intake?
- Other cross-over pilot study with caffeinated / decaffeinated beverages (n=11). Larger RCTs needed.

b) Decreasing caffeine intake

c) Pessaries

# Ms Micti Colate, 70

## Pessaries

- 1 small 2-week industry funded study (55 women)
- Total incontinence episodes reduced 32% versus 8% control
- Satisfaction 60 versus 5 control (scale 0-100, higher = better)
- Cost \$50-\$150; ~10-40% have unsuccessful first fittings: multiple appointments may be required.
- More evidence is needed!

For Micti, which of the following has the most evidence of benefit:

- a) **Pelvic floor exercises**
- b) Decreasing caffeine intake
- c) Pessaries

# Patient Resources



**IWK Health**

5850/5980 University Ave.  
PO Box 9700, Halifax, NS, B3K 6R8

[www.iwk.nshealth.ca](http://www.iwk.nshealth.ca)

IWK Switchboard: 1-902-470-8888 / Toll Free: 1-888-470-5888  
Emergency: 911 / Telecare: 811

**Pelvic Floor Exercises (Kegel's) and  
Bladder Control Tips**

**A Patient Guide**

## Pelvic Exercises for Urinary Incontinence



**healthwise**  
for every health decision

[Transcript](#) | [Disclaimer](#) | [Credits](#)

- Imagine that you are trying to hold back urine and try to squeeze your muscles without squeezing your buttock or stomach.
- If you want, you can put 1-2 fingers into your vagina to make sure that the right muscles are being tightened. You should feel the squeeze around your fingers.
- Try at least 8 contractions 3 times a day!

Hum... I'm not sure what to say...  
Any medications?



Ms Micti Colate, 70

Which of the following about medications for overactive bladder is **true**?

- a) Anti-cholinergics are similarly effective than B3-agonists (eg Mirabegron)
- b) ~10% risk of patients using anti-cholinergics with develop urinary retention
- c) ~10% of patients using B3-agonists will develop hypertension

# Ms Micti Colate, 70

- **Anti-cholinergics** - cure / improvement: 42% placebo versus 58% anti-cholinergics (Number Needed to Treat = 7)
- Meta-analysis of head to head RCTs (7 total): **similar efficacy** for frequency of micturition, urgency, nocturia and incontinence **between anti-cholinergics (Tolterodine, Solifenacin) and B3-agonists (Mirabegron).**

Which of the following about medications for overactive bladder is **true**?

- Anti-cholinergics are similarly effective to B3-agonists (eg Mirabegron)**
- ~10% risk of patients using anti-cholinergics with develop urinary retention
- ~10% of patients using B3-agonists will develop hypertension

# Ms Micti Colate, 70

- **Anti-cholinergic side effects:** blurred vision, constipation, abdominal pain, dizziness, cough, dry eyes, dyspepsia, urinary tract infection
- Example: Dry mouth: 6% control versus 22% anti-cholinergic.
- Withdrawal due to adverse events: 3% placebo vs 5% anti-cholinergic.
- Urinary retention: 0.3%, additional versus 1% anti-cholinergic. Patients with elevated post-void residual (and at higher risk of urinary retention) often excluded from trials.

Which of the following about medications for overactive bladder is **true**?

- **Anti-cholinergics are similarly effective than B3-agonists (eg Mirabegron)**
- a) ~10% risk of patients using anti-cholinergics with develop urinary retention
- b) ~10% of patients using  $\beta_3$ -adrenoceptor agonists will develop hypertension

# Ms Micti Colate, 70

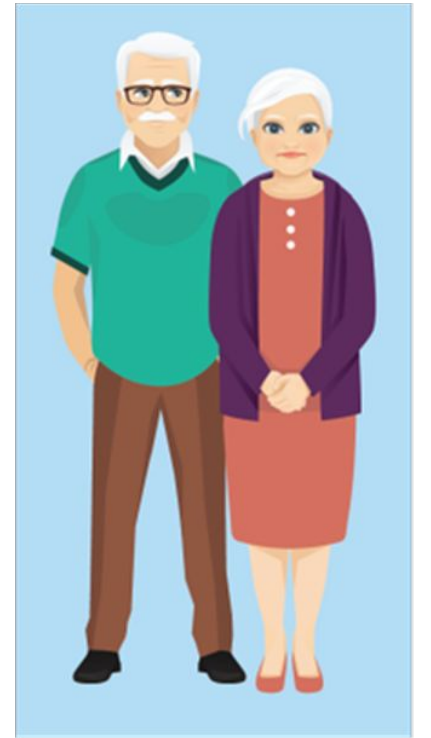
- Meta-analysis of RCTs (e.g. mirabegron 50mg): no increased risk of hypertension (vs anti-cholinergic agents).
- B3-agonists (e.g. mirabegron) contra-indicated in patients with uncontrolled hypertension (>180/110). Case reports of TIA / strokes.
- Supra-therapeutic doses (200mg): increased heart rate and blood pressure in healthy volunteers.

Which of the following about medications for overactive bladder is **true**?

- a) **Anti-cholinergics are similarly effective than B3-agonists (eg Mirabegron)**
- b) ~10% risk of patients using anti-cholinergics with develop urinary retention
- c) ~10% of patients using B3-agonists will develop hypertension

# Ms Micti Colate, 70

My friend has some cream she uses in her private area...



Choose the **right** answer. Vaginal estrogen for post-menopausal women likely improve:

- a) Vaginal dryness
- b) Dyspareunia
- c) Urinary frequency
- d) Urinary incontinence
- e) All of the above

# Ms Micti Colate, 70

Choose the **right** answer. Vaginal estrogen for post-menopausal women likely improve:

- a) Vaginal dryness
- b) Dyspareunia
- c) Urinary frequency
- d) Urinary incontinence
- e) **All of the above**

# Ms Micti Colate, 70

**Vaginal estrogens.** Largest RCT (1,612 women with vaginal atrophy) used 25ug estradiol per vagina versus placebo for 12 months.

**Symptoms of vaginal atrophy** (dryness, itching /burning, dyspareunia...):

- 80% baseline.
- At 12 months: 16% estrogens vs 59% placebo

**Urinary symptoms** (dysuria, frequency / nocturia...):

- 50% baseline.
- At 12 months: 16% estrogens vs 36% placebo

**Incontinence:**

- 30% baseline.
- At 12 months: 14% estrogens vs 18% placebo (\*oral estrogens may increase urinary incontinence, 1 RCT: 23% estrogens versus 14% placebo)

## Mixed Symptoms

### **Stress Urinary Symptoms**

Pelvic Floor exercises

### **Urgency Urinary Symptoms**

Anti-Cholinergics  
Mirabegron

### **Vaginal Atrophy**

Vaginal estrogen

# Ms Micti Colate, 70

## Plan:

- Micti wants to think about her medication options for now. You give her a prescription for pelvic physiotherapy as she does not feel that she could do pelvic floor exercises on her own.
- You discuss that initial improvements are typically seen within 2-4 weeks with more significant results becoming apparent in 6-12 weeks.
- You book a follow up appointment in 3 months to discuss medications if her symptoms continue to be a concern.

# References

- Stoniute A, Madhuvrata P, Still M, Barron-Millar E, Nabi G, Omar MI. Oral anticholinergic drugs versus placebo or no treatment for managing overactive bladder syndrome in adults. Cochrane Database of Systematic Reviews 2023, Issue 5. Art. No.: CD003781. DOI: 10.1002/14651858.CD003781.pub3. Accessed 21 November 2023.
- Gray SL, Anderson ML, Dublin S, et al. Cumulative Use of Strong Anticholinergics and Incident Dementia: A Prospective Cohort Study. JAMA Intern Med. 2015;175(3):401–407. doi:10.1001/jamainternmed.2014.7663
- Korownyk C and Belayneh M. Alpha blockers for BPH-LUTS: Let it flow or still slow? Tools for practice # 164, cfpclern.ca
- Moe S and Train A, Stress Urinary Incontinence: Pelvic floor exercises or pessary? Tools for Practice #346, cfpclern.ca
- Lindblad AJ et al., Verifying the value of vaginal estradiol tablets Tools for Practice #237, cfpclern.ca
- Korownyk C and Allan GM Overactive bladder, urge incontinence and anticholinergic drugs #54, cfpclern.ca
- Kang TW et al., Effect of the symptom-based alpha-blocker treatment on lower urinary tract symptoms in women: systematic review and meta-analysis. Ther Adv Urol. 2021 Oct 26;13:17562872211053679.
- Simunic V et al., Local estrogen treatment in patients with urogenital symptoms. International Journal of Gynecology and Obstetrics 82 (2003) 187–197
- Chen H-L et al., Mirabegron is alternative to antimuscarinic agents for overactive bladder without higher risk in hypertension: a systematic review and meta-analysis. World Journal of Urology (2018) 36:1285–1297
- Dehvari N et al., Mirabegron: potential off target effects and uses beyond the bladder. [Br J Pharmacol](#). 2018 Nov; 175(21): 4072–4082
- Chen H et al., Efficacy of Daily Low-dose Tadalafil for Treating Overactive Bladder: Results of a Randomized, Double-blind, Placebo-controlled Trial. Urology. 2017 Feb;100:59-64.
- Bryant C et al. Caffeine reduction education to improve urinary symptoms. Br J Nurs. 2002;11(8):560-5.
- Wells MJ et al., The Effect of Caffeinated Versus Decaffeinated Drinks on Overactive Bladder A Double-Blind, Randomized, Crossover Study. J Wound Ostomy Continence Nurs. 2014;41(4):371-378
- Welk, B. and McArthur, E. (2020), Increased risk of dementia among patients with overactive bladder treated with an anticholinergic medication compared to a beta-3 agonist: a population-based cohort study. BJU Int, 126: 183-190.
- Gartlehner G et al., Hormone Therapy for the Primary Prevention of Chronic Conditions in Postmenopausal Persons: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. JAMA. 2022 Nov 1;328(17):1747-1765.
- Lukacz ES Urgency urinary incontinence/overactive bladder (OAB) in females: Treatment. UpToDate, accessed Nov 28-2023

# Xiao Yun, 68

You have been following Xiao Yun and his wife since you started your practice. He is an active retired elementary school teacher who also loves to relax with a cigarette. You have discussed smoking cessation numerous times with little success so far.

Did Li make an appointment with you? She had a mini-stroke last week and is supposed to follow-up with you...

I'm sorry to hear that. I haven't seen her yet. What brings you in?

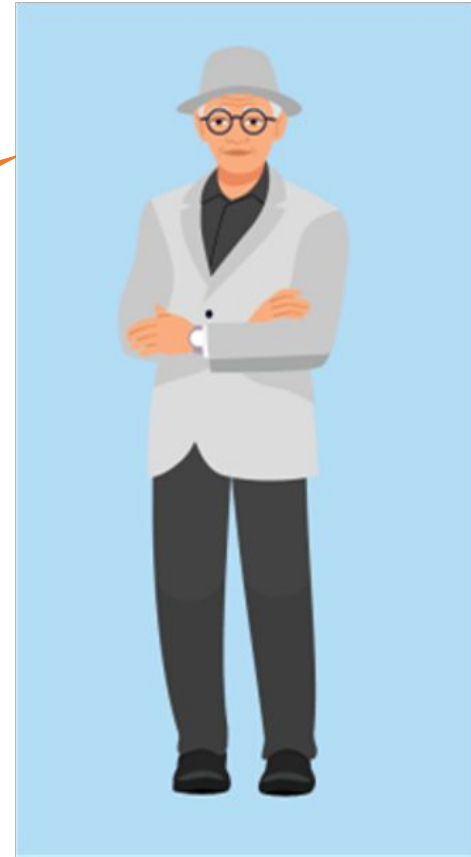
Well, with her having a mini-stroke and all. I figure she'll never stop smoking unless we do it together. So here I am!



# Xiao Yun, 68

I'm happy to hear you want to quit smoking. It is probably the best thing you can do for your health!

I know.  
You've told me before!



Assuming an unassisted quit rate of 2-3%, brief advice to encourage smoking cessation can lead to an additional 1-3% of patients quitting smoking (versus usual care).

- a) True
- b) False

# Xiao Yun, 68

- A Cochrane review showed that brief interventions, such as asking patients whether they want to quit and giving pamphlets, or 5-minute counselling sessions, increases the rate of quitting (RR 1.66). Assuming an unassisted quit rate of 2-3%, this would lead to an additional 1-3% of patients quitting smoking.
- Intensive advice is more effective than minimal advice (RR 1.84) and there is a small benefit of follow-up visits.

Assuming an unassisted quit rate of 2-3%, brief advice to encourage smoking cessation can lead to an additional 1-3% of patients quitting smoking (versus usual care).

- a) True
- b) False

Xiao Yun, 68

Ok, so what do you recommend Doctor?



Which intervention has the *least* supporting evidence?

- a) Nicotine patch
- b) Nicotine patch and as needed nicotine gum / lozenge / inhaler
- c) Bupropion
- d) Varenicline
- e) Nortriptyline

# Xiao Yun, 68

This is a bit of trick question. Nortriptyline has the least evidence but still has 10 RCTs demonstrating it's effectiveness for smoking cessation (Relative Risk 2.03).

- For comparison, there are 65 RCTs of Bupropion.
- There are 3 RCTs (417 patients) that compare nortriptyline and bupropion (no difference in efficacy) but no direct comparison between nortriptyline and NRT.
- Nortriptyline is not approved by Health Canada for smoking cessation.
- No other antidepressants are shown to be efficacious for smoking cessation.

Which intervention has the *least* supporting evidence?

- a) Nicotine patch
- b) Nicotine patch and as needed nicotine gum / lozenge / inhaler
- c) Bupropion
- d) Varenicline
- e) **Nortriptyline**

# Xiao Yun, 68

In a meta-analysis, cessation rates were 13% with a nicotine patch alone versus 16% for nicotine patch with as needed short acting nicotine replacement therapy (NRT).

RCTs looking at effectiveness of these interventions usually provide behavioral support, which also increases cessation rates (20% versus 17% at 6 months).

- Which intervention has the *least* supporting evidence?
  - a) Nicotine patch
  - b) Nicotine patch and as needed nicotine gum / lozenge / inhaler
  - c) Bupropion
  - d) Varenicline
  - e) **Nortriptyline**

# Xiao Yun, 68

In the EAGLES RCT, after 12 weeks of treatment, abstinence for weeks 9 to 24, were 22% for varenicline, 16% for bupropion, 16% for the nicotine patch and 9% for placebo. Varenicline was statistically superior to bupropion and the nicotine patch.

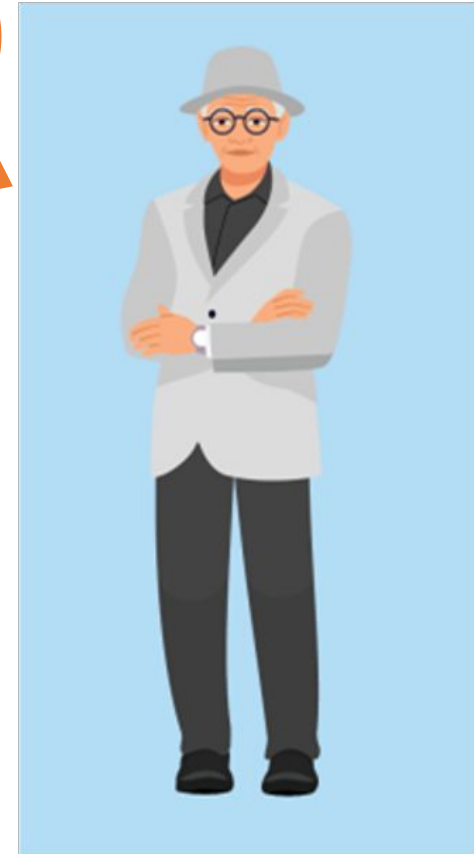
There are no statistically significant increase in serious neuropsychiatric or cardiovascular adverse events with varenicline and bupropion. The FDA warning from 2009 for cardiovascular and psychiatric adverse events was removed in 2016 after EAGLES was published.

- Which intervention has the *least* supporting evidence?

- a) Nicotine patch
- b) Nicotine patch and as needed nicotine gum / lozenge / inhaler
- c) Bupropion
- d) Varenicline
- e) **Nortriptyline**

## Xiao Yun, 68

How about e-cigarettes, is it any better than those pills you are talking about? My son has started using them. He likes them but I'm not sure they are any better. In the end you are still addicted to nicotine. I'm not sure I'd like that.



There is good evidence that nicotine e-cigarettes are more effective than Varenicline or Bupropion.

- a) True
- b) False

# Xiao Yun, 68

- There is no high quality RCT comparing e-cigarettes to Varenicline or Bupropion.
- A 2021 Cochrane review showed that quit rates were higher in people receiving electronic cigarettes compared to NRT (RR 1.53). Most common adverse events are mouth irritation, headache, cough and nausea. There was no evidence of serious harms but follow-up was limited to 2 years.

There is good evidence that nicotine e-cigarettes are more effective than Varenicline or Bupropion.

- a) True
- b) False**

# Xiao Yun, 68

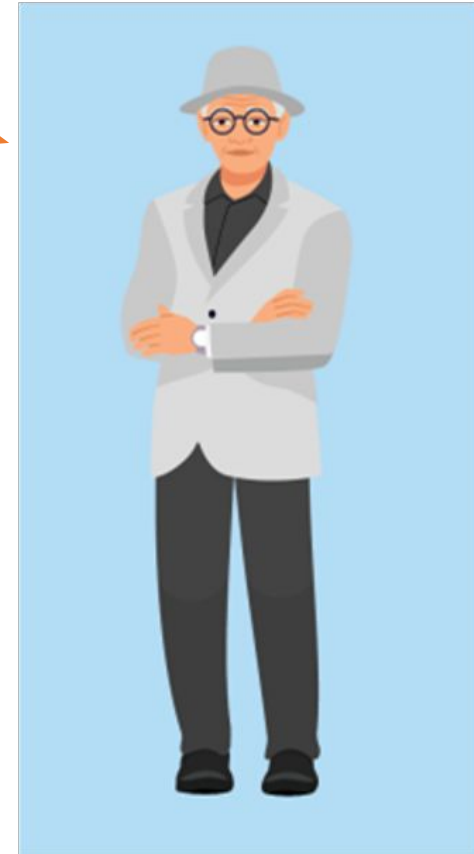
- In a 2022 RCT, patients unable to stop with usual treatments were more likely to achieve abstinence at 6 months with e-cigarettes (19.1% vs 3% with NRT).
  - Nicotine e-cigarettes appear more effective than non-nicotine e-cigarettes.
- In some trials, the continued use of e-cigarettes have been high, up to 80% of participants.
- For those reasons e-cigarettes remain controversial and are usually used as a harm reduction strategy.

There is good evidence that nicotine e-cigarettes are more effective than Varenicline or Bupropion.

- a) True
- b) False**

## Xiao Yun, 68

I don't know. It's been 50 years. I'm scared to disappoint Li if I can't quit. I'm not sure I'm ready now, I need a bit more time... Are you sure you are giving me the strongest thing?  
Can I start the pills now?



Pick the right statement:

- a) Adding NRT products to Varenicline has no additional benefits
- b) If patients are not ready to quit today but may be in 3 months, one should start varenicline or NRT today

# Xiao Yun, 68

In an RCT of 1510 patients only willing to quit in 3 months, starting varenicline immediately increased cessation rates (at ~10 weeks 32% versus 7% if started on planned quit date).



Pick the right statement:

- a) Adding NRT products to Varenicline has no additional benefits
- b) If patients are not ready to quit today but may be in 3 months, one should start varenicline or NRT today**

# Xiao Yun, 68

A meta-analysis showed that adding NRT or bupropion to varenicline improved smoking cessation rates.

It is usually recommended to add a second medication class only if complete abstinence is not achieved.

- Pick the right statement:
  - a) Adding NRT products to Varenicline has no additional benefits
  - b) If patients are not ready to quit today but may be in 3 months, one should start varenicline or NRT today**

## Smoking Cessation After Initial Treatment Failure

RCT (N = 490 smokers, ~20 cig/day)

- **Phase 1 (6 weeks):** Varenicline 2 mg/day vs. Combined NRT (21 mg patch + 2 mg lozenge)
- **Phase 2 (6 weeks):** Non-quitters re-randomized to:
  - Continue same dose
  - Increase dose (Varenicline 3mg, add on another 21mg patch)
  - Switch therapy

**Primary Outcome:** 7-day biochemically confirmed abstinence at 12 weeks

Results for nonabstainers in the varenicline arm:

- Continuing same dose: ~3% abstinence
- Increasing varenicline dose: ~20% abstinence

For nonabstainers in the CNRT arm:

- Continuing same CNRT dose: ~8% abstinence
- Increase CNRT dose: ~14%
- Switch to varenicline: ~14%

**Bottom Line:** For patients that are not able to quit smoking with varenicline 2mg it would be reasonable to increase the dose to 3mg. For those on NRT, could consider increasing NRT or switching to varenicline. No additional benefit was found switching from varenicline to NRT.



Xiao Yun, 68

- Plan:

- Mr. Yun agrees to quit smoking in 3 months.
- You do not wait for his quit date and instead start him on varenicline 0.5mg PO daily then 0.5mg PO BID for 4 days then 1mg PO BID.
- You also refer him to the local resource for counselling support to assist with cessation.
- You book a follow-up appointment in 3 months.

# References

- Hartmann-Boyce J, McRobbie H, Butler AR, Lindson N, Bullen C, Begh R, Theodoulou A, Notley C, Rigotti NA, Turner T, Fanshawe TR, Hajek P. Electronic cigarettes for smoking cessation. Cochrane Database of Systematic Reviews 2021, Issue 9. Art. No.: CD010216. DOI: 10.1002/14651858.CD010216.pub6.
- Smith et al., E-cigarettes versus nicotine replacement treatment as harm reduction interventions for smokers who find quitting difficult: randomized controlled trial. *Addiction*. 2022 Jan;117(1):224-233
- Rigotti et al, Treatment of Tobacco Smoking: A Review. *JAMA*. 2022 Feb 8;327(6):566-577.
- Allan M and Els C. Pharmacotherapy for Smoking. *Canadian Family Physician* January 2011, 57 (1) 47
- Wong T and Kolber M. Electronic Cigarettes - Hoot that helps, hurts, or just hype? Tools for Practice number 252, Alberta College of Family Physicians
- Stead L et al., Physician advice for smoking cessation. *Cochrane Database Syst Rev*. 2013 May 31;2013(5):CD000165.
- Hughes J and al, Antidepressants for smoking cessation. *Cochrane Database Syst Rev*. 2014 Jan 8;2014(1):CD000031