Common Respiratory Diseases in the Older Adult

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**2023 Toronto Geriatrics Update Course
9:50 – 10:40 AM EST**

Disclosures

- Speaker honoraria from Astra Zeneca

- I am not a geriatrician ☹

Objectives

- Review common respiratory disorders in older adults
  - COPD
  - Asthma

- Management of these disorders
  - Inhaler choice

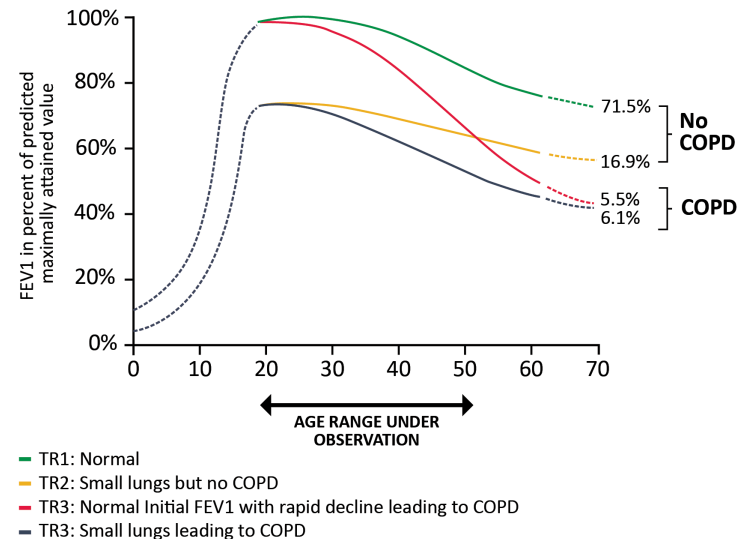- Navigating "respiratory virus season"

Normal lung growth and aging

- Lungs represent a unique interface with the outside environment

- Composed of a variety of cell types that face ongoing chemical, mechanical, biological, immunological and xenobiotic stress over a lifetime

- In healthy individuals, lung function progressively declines over time (FEV1 decline ~20 ml/year)

FEV1 Trajectories (TR) Over the Life Course

Figure 1.1

FEV1 in percent of predicted maximally attained value

- 71.5% — No COPD
- 16.9%
- 5.5% — COPD
- 6.1%

AGE RANGE UNDER OBSERVATION

- — TR1: Normal
- — TR2: Small lungs but no COPD
- — TR3: Normal Initial FEV1 with rapid decline leading to COPD
- — TR3: Small lungs leading to COPD

Note: This is a simplified diagram of FEV1 progression over time. In reality, there is heterogeneity in the rate of decline in FEV1 owing to the complex interactions of genes with environmental exposures and risk factors over an individual's lifetime [adapted from Lange et al. NEJM 2015;373:111-22].
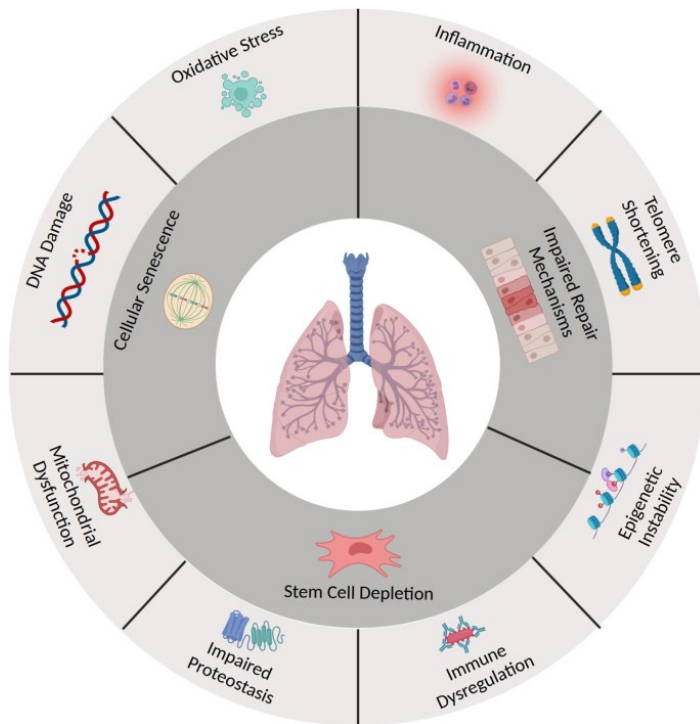
Normal Lung Aging

- Structural changes, loss of elasticity
  - Decrease in measures of lung function and gas exchange
- Reduced mucociliary clearance
- Impairments to stress response, decline in lung defense mechanisms
- Weakening of respiratory muscles
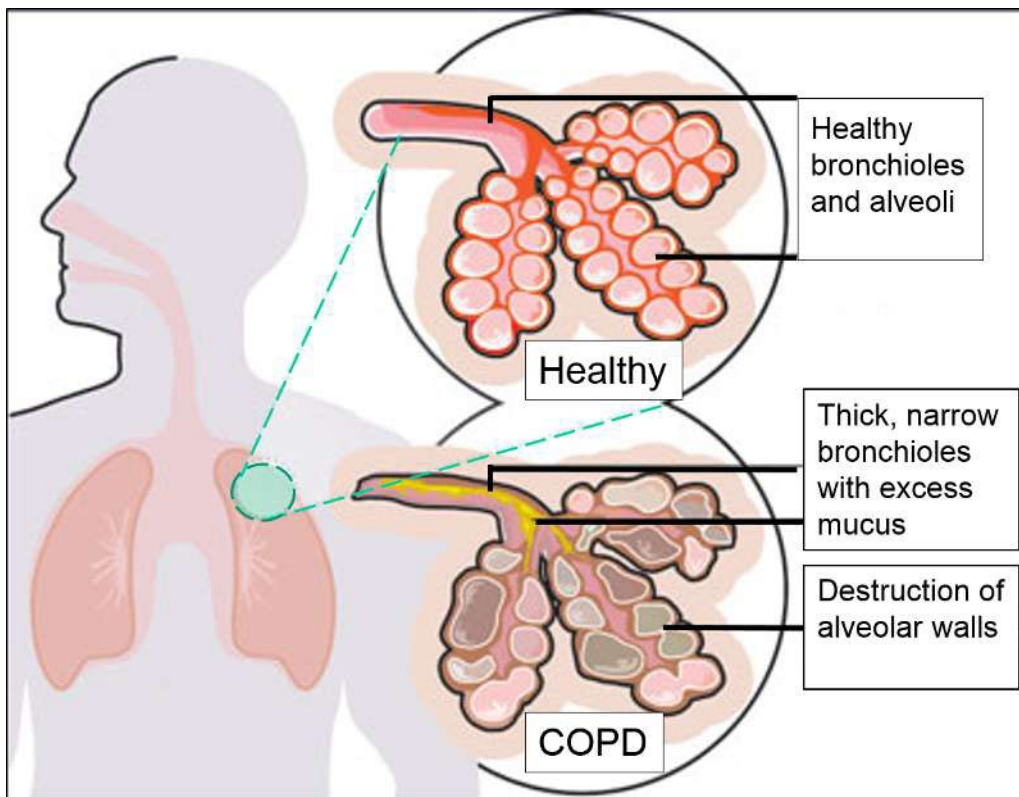- Increased chest wall stiffness; kyphoscoliosis

COPD in the Older Adult

Definition of COPD

Labels on figure:
- Healthy bronchioles and alveoli
- Healthy
- Thick, narrow bronchioles with excess mucus
- Destruction of alveolar walls
- COPD

- **Heterogenous** lung condition characterized by chronic respiratory symptoms
  - dyspnea, cough, sputum production, exacerbations

- Due to abnormalities of the airways (bronchitis, bronchiolitis) and/or alveoli (emphysema)

- Causing persistent, often progressive, airflow obstruction

- Defined by spirometry

1 in 9 Ontario adults lives with COPD

ICES

Despite drop in incidence, steep rise in prevalence and lower mortality over 20 years point to higher future COPD health care needs.

Researchers analyzed health data for all 13 million Ontario residents since 1996.

Chronic Obstructive Pulmonary Disease (COPD) is an umbrella term for progressive lung diseases including emphysema and chronic bronchitis. While COPD cannot be reversed, it can be treated.

COPD incidence, mortality and prevalence (2014-15 data)

11.8%
Prevalence
Percentage of adult population living with COPD in 2014/15
(37% higher than 1996/97)

12%
10%
8%
1996/97   2014/15

8.8 per 1,000 adults
Incidence
Proportion of population newly diagnosed with COPD in 2014/15
(32% lower than 1996/97)

Per 1000
12
10
8
1996/97   2014/15

1 in 25
Mortality
Proportion of people with COPD who died in the year 2014/15
(28% lower than 1996/97)
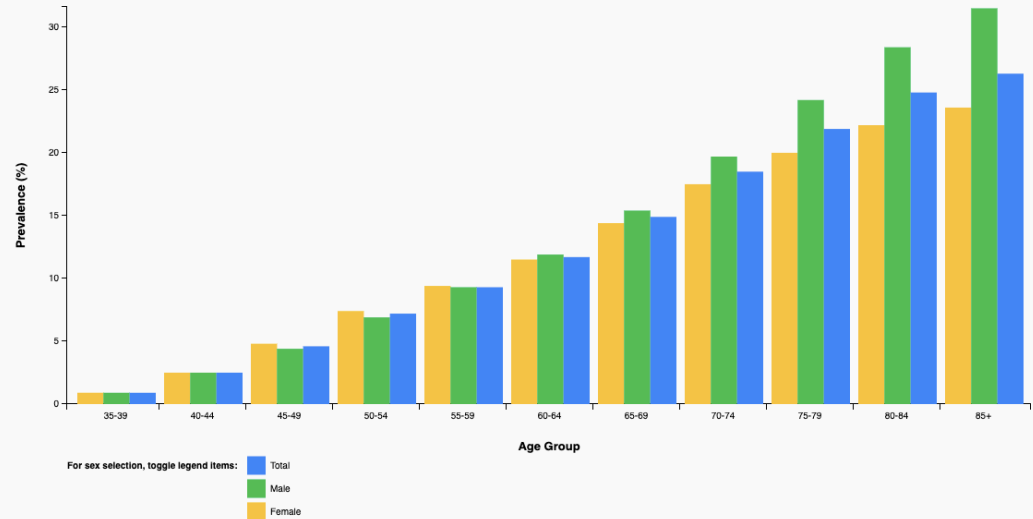
6%
5%
4%
1996/97   2014/15

Aging and COPD

- Increased risk of COPD with age
- In Ontario:
  - **15% of seniors** between the ages of **65 and 69** were living with COPD
  - **26% of seniors aged 85 years and older** were living with COPD

Prevalence (%) of COPD among Canadians aged 35 years and older, by sex and age-group, 2012-2013

For sex selection, toggle legend items:
- Total
- Male
- Female

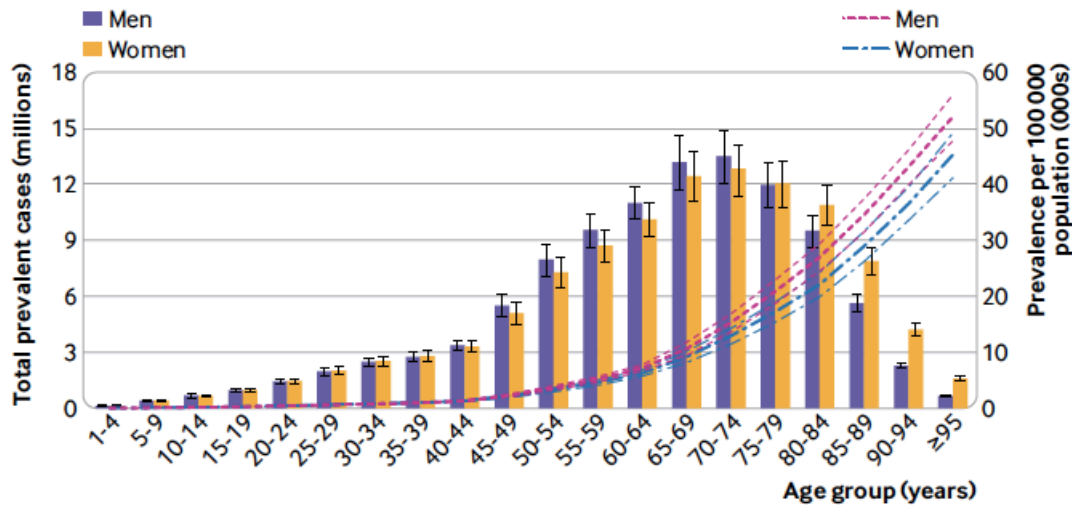# Global Prevalence of COPD with age

Fig 3 | Number of prevalent cases globally and prevalence of chronic obstructive pulmonary disease per 100 000 population, by age and sex in 2019. Lines indicate prevalent case with 95% uncertainty intervals for men and women (generated from data available at https://ghdx.healthdata.org/gbd-results-tool)

Safiri et al, Burden of COPD in 204 countries, 1990-2019. BMJ 2022

COPD Diagnosis

Clip on nose

Machine records results

Pulmonary Function Test

- Spirometry is ***essential*** for the diagnosis of COPD

- Definition:
- fixed *postbronchodilator* ratio of the FEV1/FVC of 0.70
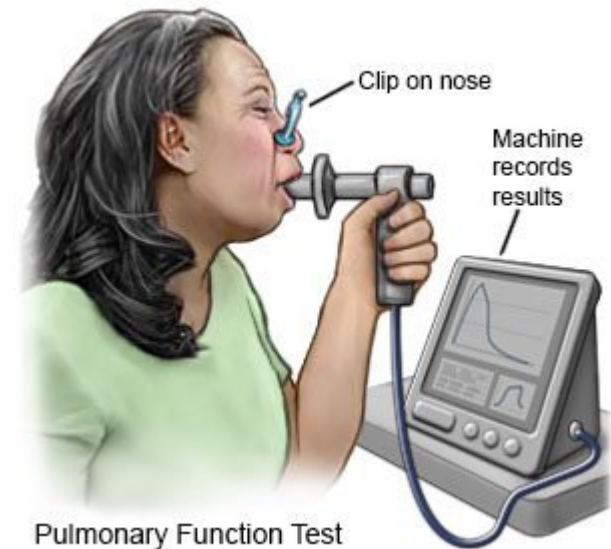 - ***or* < the lower limit of normal (LLN) ratio**

Image from: https://www.drugs.com/cg/pulmonary-function-tests.html

COPD in the Older Adult

Case #1: Mr. B – Complexity of COPD in older adults

- 79 yo male

- **RFR:** Dyspnea and exercise limitation

- **PMHx:** Hypertension, depression, diabetes, heart failure secondary to coronary artery disease, osteoarthritis

- **Social history**: Widowed, lives alone. 40 pack year smoking history, quit 15 years ago. Worked as an accountant.

- **Medications**: ASA, Metformin, Bisoprolol, Perindopril, Atorvastatin, Omeprazole, Sertraline, Pantoprazole, Tylenol prn

- On history, breathless walking 1 block or the flight of stairs in house

- SpO2 89% on RA

Diagnostic Considerations regarding Dyspnea

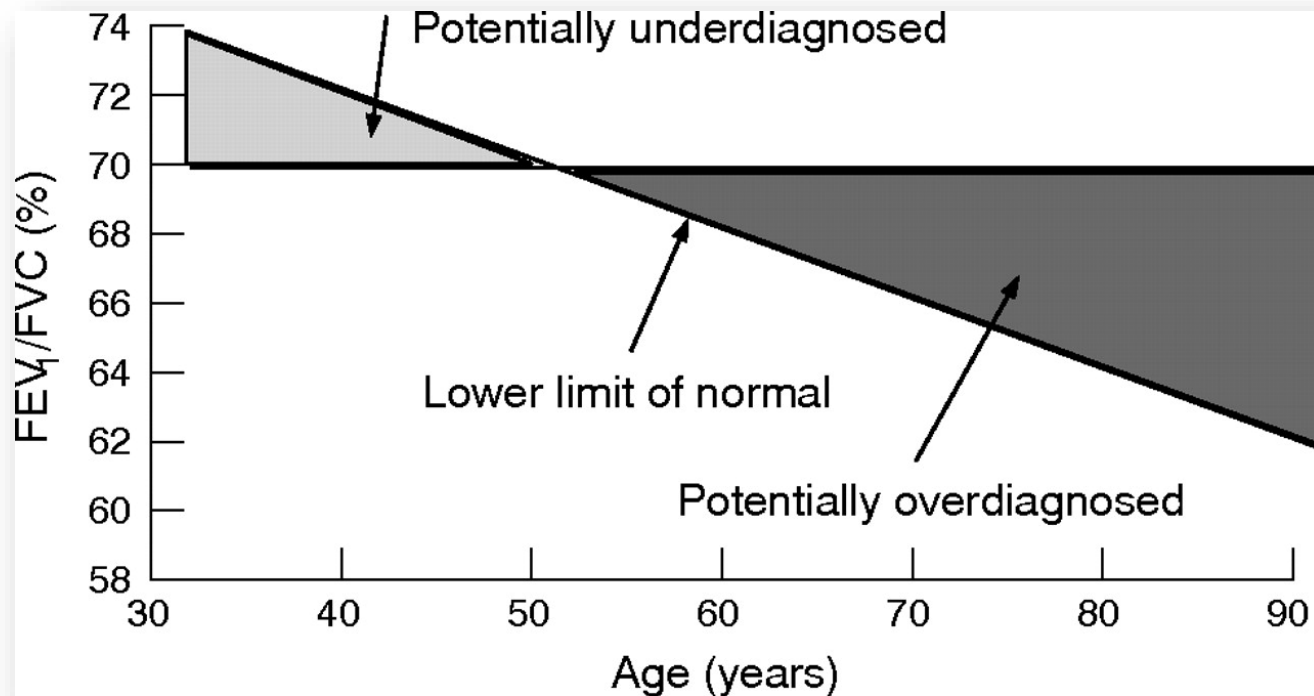| Contributing Factor	Diagnostic Approach
Reduced ventilatory capacity due to: • COPD +/- exacerbation • Heart failure exacerbation • Medication-related effects • Respiratory muscle weakness • Osteoporosis-related kyphoscoliosis • Advanced age	- CXR - PFT - BNP, Echo - CT Chest - Consider medications
Increased ventilatory demand (reduced aerobic capacity) due to: • Low cardiac output (e.g. COPD [cor pulmonale], HF) • Anemia • Sarcopenia (e.g. deconditioning, malnutrition, age) • Medication-related effects (e.g. myopathy)	- Eccho - Orthostatic vital signs - Gait and balance assessment - Diet, swallowing - CBC, anemia review - CK – myopathy?

Sinai Health | Healthy Ageing and Geriatrics

UHN Toronto General Toronto Western Princess Margaret Toronto Rehab Michener Institute

Diagnostic Considerations regarding Dyspnea

Contributing Factor	Diagnostic Approach
Psychosocial factors: • Depression • Anxiety • Pain • Social isolation	• Psychiatric referral • Explore day programs, family/community supports etc.
Environmental factors: • Allergens • ? Second-hand smoke • ? Biomass fuels (wood-burning fireplace or stove) • Stairs (especially those without rails)	• Home evaluation, including assessment of safety and need for single-floor living, ramps, and stair glide

PFTs

- Severe airways obstruction, concomitant reduction in FVC
- Severe hyperinflation and gas trapping
- Severe reduction in diffusing capacity

Test Performed	Lower Limit	Upper Limit	Mean Ref.val.	Pre BD Obs.	Pre BD %Ref.val.	Post BD Obs.	Post BD %Ref.val.
TLC (L)*	5.9	8.5	7.2	10.3	143		
FRC-PL (L)*	2.3	4.6	3.4	8.5	245		
IC (L)*	2.3	3.9	3.1	1.8	59		
VC (L)*	3.6	5.5	4.6	2.6	56		
RV (L)*	1.7	3.3	2.5	7.7	306		
RV/TLC ratio (%)*	32	50	41	75	183		
FVC (L)*	3.6	5.5	4.6	2.18	48	2.73	60
FEV1 (L)*	2.5	4.2	3.4	0.91	27	1.14	34
FEV1/FVC ratio (%)*	65	85	75	42		42	
Flow @ 50% VC	2.2	5.0	3.59	0.39	11	0.49	14
Flow @ 25% VC	0.6	1.5	1.02	0.25	24	0.22	22
FIF50 (L/sec)				2.3			
Raw (cmH2O/L/sec)*	66% — 177%		0.26	4.81	2004		
MVV (L/min)*	100	168	134	----	----		
DLco (ml/min/mmHg)*	75% — 125%		24.7	10.5	43		
VA@BTPS - DLco (L)*	5.7	8.4	7.0	5.9	83		

Predicted Values
FVC — Gutierrez 2004
TLC — Gutierrez 2004
DLCO sb — Gutierrez 2004
RAW Ins — Gutierrez 2004
MEP — Gutierrez 2004

Normal Hb: Male=14.6, Female=13.4

Values are BOLD when normal limits are exceeded. (excluding Raw, MVV & DLco)
*Normal range: 90% confidence interval.

Technologist's Comments:

Reason for testing: no dx
Test performance for spirometry, DLco, LV good. ATS/ERS criteria met. Extensive coaching required as pt unable to follow instructions.
4 puffs of salbutamol delivered via MDI.

Pre-Post, Selected Flow-Volume Loops

Ventolin 400.00 mcg

Particular challenges in older adults

- Diagnosis of COPD → using correct FEV1/FVC cutoff

- Multifactorial presentations of dyspnea, functional limitation

- Increased comorbidities → multi-disease management
  - Treatment strategies influenced by interaction of various diseases*

- Polypharmacy and inhaler choice*

- Palliative (symptom support) and end-of-life care planning

Asthma in the Older Adult

What is Asthma?

- Inflammatory disorder of airways
- Symptoms such as dyspnea, chest tightness, wheezing, sputum production and cough
- Associated with variable airflow limitation and airway hyper-responsiveness

Why asthma makes it hard to breathe

Air enters the respiratory system from the nose and mouth and travels through the bronchial tubes.

In an asthmatic person, the muscles of the bronchial tubes tighten and thicken, and the air passages become inflamed and mucus-filled, making it difficult for air to move.

In a non-asthmatic person, the muscles around the bronchial tubes are relaxed and the tissue thin, allowing for easy airflow.

Inflamed bronchial tube of an asthmatic

AAAAI
American Academy of Allergy Asthma & Immunology
www.aaaai.org

Normal bronchial tube

Revised 2016

What is Asthma?

Common Allergic Asthma Triggers

- Dust mites
- Moulds
- Pollen
- Animals/Pet Allergens (i.e. dander)
- Food Allergies/Additives (i.e. sulphites)
- Cockroaches
- Other Allergens

Common Non-Allergic Triggers

- Air pollutants (i.e. Smoke/Smog)
- Exercise
- Viral infections
- Cold air/weather changes
- Chemical fumes, scented products (perfumes, detergents etc.)
- Intense emotions

Asthma in Canada

- 3.8 million Canadians living with diagnosed asthma (10.8%)

- ~ 300 Canadians are diagnosed with asthma daily

- ~250 Canadians with die annually secondary to asthma

- Both "overdiagnosis" and "underdiagnosis" remain issues

PHAC, April 2018: Report from the Canadian Chronic Disease Surveillance System: Asthma and COPD in Canada, 2018
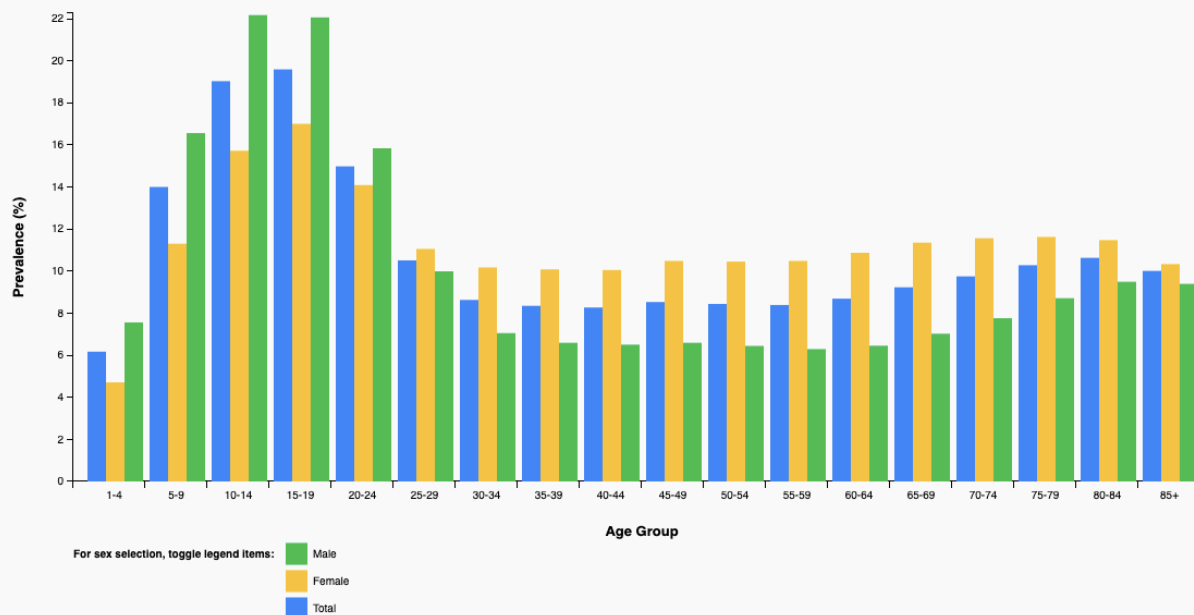
Prevalence of Asthma in Canada

Prevalence (%) of diagnosed asthma among Canadians aged 1 year and older, by sex and age group, in 2011/12

Unique features and challenges in the older adult

- Envisioned to be a disease of younger ages
  - Under-recognition, misdiagnosis (fixed obstruction on PFTs)

- Asthma can develop in older age!
  - Respiratory viruses, allergens, air pollutants
  - Occupational risk factors
  - Obesity and weight gain is a risk factor (non-atopic asthma subtypes)
  - Medications (NSAIDs, ASA, beta-blockers)

- Different presentation
  - May present as cough, functional limitation
  - May not have as much wheeze (?inactivity)

Case #2 – Ms. V
Long standing, under controlled asthma

- 86F

- RFR: Dyspnea

- **PMHx**: myelodysplastic syndrome, severe anemia

- Lifelong nonsmoker

- Worked as a sewing machine operator in a factory setting for approximately 20 years: exposure to textile dust

- Never had a frank diagnosis of asthma, but reports dyspnea and increased coughs/colds for many years, increased symptoms worse around smoke/fireplaces

- mMRC 3-4 dyspnea, expiratory wheeze on exam

PFTs – Severe fixed airflow obstruction

Left Table

| Test Performed	Lower Limit	Upper Limit	Mean Pred.val.	Pre BD Obs.	Pre BD %Pred.val.	Post BD Obs.	Post BD %Pred.val.
TLC (L)*	3.3	5.2	4.2	6.5	155		
FRC-PL (L)*	1.6	3.1	2.4	5.2	221		
IC (L)*	1.1	2.5	1.8	1.4	75		
VC (L)*	1.4	2.8	2.1	2.1	100		
RV (L)*	1.4	2.6	2.0	4.5	224		
RV/TLC ratio (%)*	38	57	48	68	143		
FVC (L)*	1.4	2.8	2.1	1.6	76	2.0	97
FEV1 (L)*	1.0	2.2	1.6	0.5	33	0.6	39
FEV1/FVC ratio (%)*	66	85	76	34	45	31	41
Flow @ 50% VC	LLN-M: 61%, F: 65%		2.53	0.12	5	0.17	7
Flow @ 25% VC	LLN-M: 55%, F: 65%		0.58	0.08	14	0.11	19
FEF 25-75 (L/sec)	70% --- 130%		0.9	0.1	15	0.2	19
FIF50 (L/sec)				1.5			
Raw (cmH2O/L/sec)*	65% --- 177%		1.01	3.53	351		
MVV (L/min)*	70% --- 130%		64	—	—		
DLco sb (ml/min/mmHg)*	75% --- 125%		14.5	6.8	47		
VA@BTPS - DLCO (L)*	3.2	5.1	4.1	3.5	86		

Normal Hb: Male=14.6, Female=13.4

Values are BOLD when normal limits are exceeded. (excluding FEF 50, 25, Raw, MVV & DLco)

* Normal range: 90% confidence interval. Reference, CDN: Gutierrez, C., CRJ 2004

Technologist's Comments:

Patient is attending clinic within 14 days.
ATS Grades: Spirometry: Pre-A , Post-A ; Diffusion: A/A.
Lung Volumes met ATS.
O2 sat at rest (room air) 92%.

Pre-Post, Selected Flow-Volume Loops

Ventolin 400.00 mcg

Right Table
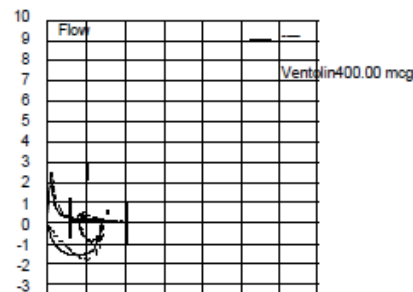
Test Performed	Limit	Limit	Pred.val.	Obs.	%Pred.val.	Obs.	%Pred.val.
TLC (L)*	3.3	5.2	4.2	—	—		
FRC-PL (L)*	1.6	3.1	2.4	—	—		
IC (L)*	1.1	2.5	1.8	—	—		
VC (L)*	1.3	2.8	2.0	—	—		
RV (L)*	1.4	2.6	2.0	—	—		
RV/TLC ratio (%)*	39	58	48	—	—		
FVC (L)*	1.3	2.8	2.0	2.7	133	2.7	133
FEV1 (L)*	1.0	2.1	1.6	1.2	77	1.2	76
FEV1/FVC ratio (%)*	66	85	75	45	59	44	58
Flow @ 50% VC	LLN-M: 61%, F: 65%		2.50	0.56	22	0.43	17
Flow @ 25% VC	LLN-M: 55%, F: 65%		0.56	0.12	21	0.12	21
FEF 25-75 (L/sec)	70% --- 130%		0.9	0.3	40	0.3	38
FIF50 (L/sec)				3.3			
Raw (cmH2O/L/sec)*	65% --- 177%		—	—	—		
MVV (L/min)*	70% --- 130%		63	—	—		
DLco sb (ml/min/mmHg)*	75% --- 125%		—	—	—		
VA@BTPS - DLCO (L)*	3.2	5.1	4.1	—	—		

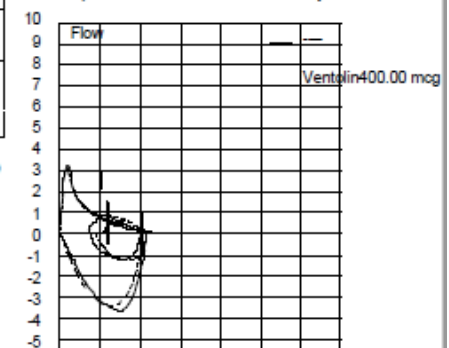*Normal Hb: Male=14.6, Female=13.4*

Values are BOLD when normal limits are exceeded. (excluding FEF 50, 25, Raw, MVV & DLco)

* Normal range: 90% confidence interval. Reference, CDN: Gutierrez, C., CRJ 2004

Technologist's Comments:

Patient is attending clinic today.
Salbutalmol (4 puffs) given for post-spirometry.
ATS Grades: Spirometry: Pre-A , Post- A
O2 sat at rest (room air) 98%.
/LLIN

Pre-Post, Selected Flow-Volume Loops

Ventolin 400.00 mcg

The Inhaled Route

aka. The bane of a respirologist

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RESPIRATORY TRAINING & EDUCATOR COURSE

COPD MEDICATIONS

www.resptrec.org
www.lungsask.ca

Short-Acting Bronchodilators

SAMA
(Short-Acting Muscarinic Antagonist)
USE REGULARLY or PRN

Atrovent® MDI
(ipratropium bromide)
20 mcg/dose

Duration: 4-6h
Company: BI
*nebules also available

Company Key

AZ – AstraZeneca Canada Inc.

BI – Boehringer Ingelheim Canada Ltd.

GSK – GlaxoSmithKline Inc.

Novartis – Novartis Pharmaceuticals Canada Inc.

Valeant – Valeant Canada

Viatris – Viatris

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SABA
(Short-Acting Beta2-Agonist)
USE REGULARLY or PRN

Airomir™ MDI
(salbutamol sulphate)
100 mcg/dose

Duration: 4-6h
Company: Valeant

Bricanyl® Turbuhaler®
(terbutaline sulphate)
0.5 mg/dose

Duration: 4-6h
Company: AZ

Ventolin® Diskus®
(salbutamol sulphate)
200 mcg/dose

Duration: 4-6h
Company: GSK

Ventolin® MDI
(salbutamol sulphate)
100 mcg/dose

Duration: 4-6h
Company: GSK
*nebules and generic brands available

Long-Acting Bronchodilators

LAMA
(Long-Acting Muscarinic Antagonist)
USE REGULARLY

Incruse™ Ellipta®
(umeclidinium bromide)
62.5 mcg/dose

Duration: 24h
Company: GSK

Seebri® Breezhaler®
(glycopyrronium bromide)
50 mcg/dose

Duration: 24h
Company: Novartis

Spiriva® Handihaler®
(tiotropium bromide monohydrate)
18 mcg/dose

Duration: 24h
Company: BI

Spiriva® Respimat®
(tiotropium bromide monohydrate)
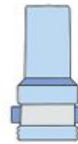2.5 mcg/dose

Duration: 24h
Company: BI

Tudorza® Genuair®
(aclidinium bromide)
400 mcg/dose

Duration: 12h
Company: AZ

LABA
(Long-Acting Beta2-Agonist)
USE REGULARLY

Foradil® Aerolizer®
(formoterol fumarate)
12 mcg/dose

Duration: 12h
Company: Novartis

Onbrez® Breezhaler®
(indacaterol maleate)
75 mcg/dose

Duration: 24h
Company: Novartis

Serevent® Diskus®
(salmeterol xinafoate)
50 mcg/dose

Duration: 12h
Company: GSK

Striverdi® Respimat®
(olodaterol hydrochloride)
2.5 mcg/dose

Duration: 24h
Company: BI
*Approved by Health Canada but may not be available yet

Combination Inhalers

ICS/LABA
(Inhaled Corticosteroid/Long-Acting Beta2-Agonist)
USE REGULARLY

Advair® Diskus®
(fluticasone propionate/salmeterol xinafoate)
100/50; 250/50; 500/50 mcg doses

*only the Advair® Diskus® has been approved for COPD use.

Duration: 12h
Company: GSK

Breo™ Ellipta®
(fluticasone furoate/vilanterol trifenatate)
100/25 mcg/dose

Duration: 24h
Company: GSK

Symbicort® Turbuhaler®
(budesonide/formoterol fumarate)
100/6; 200/6; 400/12 FORTE mcg doses

Duration: 12h
Company: AZ

Wixela® Inhub®
(fluticasone priopionate/salmeterol xinafoate)
100/50; 250/50; 500/50 mcg doses

Duration: 12h
Company: Viatris

ICS/LAMA/LABA
USE REGULARLY

Breztri™ Aerosphere®
(budesonide/glycopyronium/formoterol fumarate)
182/8.2/5.8 mcg/dose

Duration: 12h
Company: AZ

Trelegy™ Ellipta®
(fluticasone furoate/umeclidinium bromide/vilanterol trifenatate)
100/62.5/25 mcg/dose

Duration: 24h
Company: GSK

SAMA and SABA
USE REGULARLY

Combivent® Respimat®
(ipratropium bromide/salbutamol sulphate)
20/100 mcg/dose

Duration: 4-6h
Company: BI
*nebules also available

LAMA and LABA
USE REGULARLY

Anoro™ Ellipta®
(umeclidinium bromide/vilanterol trifenatate)
62.5/25 mcg/dose

Duration: 24h
Company: GSK

Duaklir® Genuair®
(aclidinium bromide/formoterol fumarate dehydrate)
400/12 mcg/dose

Duration:12h
Company: AZ

Inspiolto® Respimat®
(tiotropium bromide monohydrate/olodaterol hydrochloride)
2.5/2.5 mcg dose

Duration: 24h
Company: BI

Ultibro® Breezhaler®
(glycopyrronium bromide/indacaterol maleate)
50/110 mcg/dose

Duration: 24h
Company: Novartis

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ASTHMA INHALED MEDICATIONS

Corticosteroids

ICS
(Inhaled Corticosteroid)
Controller

Aermony Respiclick™
(fluticasone propionate)
55; 113; 232 mcg/actuation
Duration: 12h
Company: TEVA

Asmanex™ Twisthaler™
(mometasone furoate)
100; 200; 400 mcg/actuation
Duration: 24h
Company: Organon

Alvesco® MDI
(ciclesonide)
100; 200 mcg/actuation
Duration: 24h
Company: Covis

Flovent® Diskus®
(fluticasone propionate)
100; 250; 500 mcg/blister
Duration: 12h
Company: GSK

Arnuity™ Ellipta®
(fluticasone furoate)
100; 200 mcg/actuation
Duration: 24h
Company: GSK

Flovent® MDI
(fluticasone propionate)
50; 125; 250 mcg/actuation
Duration: 12h
Company: GSK

Pulmicort® Turbuhaler®
(budesonide)
100; 200; 400 mcg/actuation
Duration: 12h
Company: AZ
*nebules also available

Qvar™ MDI
(beclomethasone dipropionate)
50; 100 mcg/actuation
Duration: 12h
Company: Bausch

Company Key
AZ – AstraZeneca Canada Inc.
Bausch – Bausch Health Canada Inc.
BI – Boehringer Ingelheim Canada Ltd.
Covis – Covis Pharma
GSK – GlaxoSmithKline Inc.
Novartis – Novartis Pharmaceuticals Canada Inc.
Organon – Organon Canada Inc.
Takeda – Takeda Canada Inc.
TEVA – TEVA Canada
Valeo – Valeo Pharma Inc.
Viatris – Viatris

Combination Inhalers

ICS/LABA
(Inhaled Corticosteroid and Long-Acting Beta2-Agonist)
Controller

Advair® MDI
(fluticasone propionate/salmeterol xinafoate)
125/25; 250/25 mcg/actuation
Duration: 12h
Company: GSK

Breo™ Ellipta®
(fluticasone furoate/vilanterol trifenatate)
100/25; 200/25 mcg/actuation
Duration: 24h
Company: GSK

Advair® Diskus®
(fluticasone propionate/salmeterol xinafoate)
100/50; 250/50; 500/50 mcg/blister
Duration: 12h
Company: GSK

Symbicort® Turbuhaler®
(budesonide/formoterol fumarate)
100/6*; 200/6*; 400/12 mcg (FORTE) mcg/actuation
Duration: 12h
Company: AZ
*May also be used as a reliever

Atectura® Breezhaler®
(indacaterol/mometasone furoate)
150/80; 150/160; 150/320 mcg/capsule
Duration: 24h
Company: Valeo

Wixela® Inhub®
(fluticasone propionate/salmeterol xinafoate)
100/50; 250/50; 500/50 mcg/actuation
Duration: 12h
Company: Viatris

ICS/LAMA/LABA

Enerzair® Breezhaler®
(indacaterol / glycopyrronium mometasone furoate)
150/50/160 mcg/capsule
Duration: 24h
Company: Valeo

Zenhale™ MDI
(mometasone furoate/formoterol fumarate)
100/5; 200/5 mcg/actuation
Duration: 12h
Company: Organon

Trelegy™ Ellipta™
(fluticasone furoate/umeclidinium / vilanterol)
100/62.5/25; 200/62.5/25 mcg/actuation
Duration: 24h
Company: GSK

Bronchodilators

SABA
(Short-Acting Beta2-Agonist)
Reliever

Airomir™ MDI
(salbutamol sulphate)
100 mcg/actuation
Duration: 3-6h
Company: Bausch

Bricanyl® Turbuhaler®
(terbutaline sulphate)
0.5 mcg/actuation
Duration: 4-7h
Company: AZ

Ventolin® Diskus®
(salbutamol sulphate)
200 mcg/blister
Duration: 3-6h
Company: GSK

Ventolin® MDI
(salbutamol sulphate)
100 mcg/actuation
Duration: 4-6h
Company: GSK
*generic brands available

LABA
(Long-Acting Beta2-Agonist)
Controller
Never used on its own for asthma without an ICS

Oxeze® Turbuhaler®
(formoterol fumarate)
6; 12 mcg/actuation
Duration: 12h
Company: AZ

Serevent® Diskus®
(salmeterol xinafoate)
50 mcg/blister
Duration: 12h
Company: GSK

LAMA
(Long-Acting Muscarinic Antagonist)
Controller
Never used on its own for asthma without an ICS

Spiriva® Respimat®
(tiotropium bromide monohydrate)
2.5 mcg/actuation
Duration: 24h
Company: BI

Using your HandiHaler

1. Remove a capsule from the blister package of medicine. Take the capsule out of the package right before you're going to use it.

2. Flip off the lid of the HandiHaler and open the mouthpiece.

3. Put the capsule in the hole.

4. Flip the mouthpiece closed. Make sure you hear a click, so you know it's closed properly.

5. Hold the HandiHaler upright with the mouthpiece facing up.

6. Sit up with your back straight.

7. Press the big button on the side of the HandiHaler. This pokes a hole in the capsule to let the medicine out.

8. Exhale: blow out all your air.

9. Seal your lips around the HandiHaler mouthpiece.

10. Breathe in slowly and deeply from the mouthpiece until your lungs are full.

11. As you're breathing in, you should notice that the HandiHaler is vibrating. This is supposed to happen. It shows that you're taking your medication properly.

12. Take the device out of your mouth and hold your breath for as long as you can (10 seconds or longer, if you can).

13. Breathe out normally.

14. Seal your lips around the device and take another deep breath from the HandiHaler to make sure you get all the medicine.

15. Take the HandiHaler out of your mouth and hold your breath for as long as you can (10 seconds or longer, if you can).

16. Breathe out normally.

HOW TO USE YOUR HANDIHALER

About the HandiHaler

Using your HandiHaler

VIDEO: How to use your HandiHaler

Inhaler challenges

- Many steps in using an inhaler

- Mistakes are frequent

- Cognitive impairment predicts difficulty learning and retaining inhaler techniques

- Osteoarthritis may limit use of certain inhalers

- Respiratory muscle strength

- Cost $$

The inhaled route…

Basic Principles for Appropriate Inhalation Device Choice

Table 4.5

- Availability of the drug in the device
- Patients' beliefs, satisfaction with current and previous devices and preferences need to be assessed and considered
- The number of different device types should be minimized for each patient. Ideally, only one device type should be used
- Device type should not be switched in the absence of clinical justification nor without proper information, education and medical follow-up
- Shared decision making is the most appropriate strategy for inhalation device choice
- Patient's cognition, dexterity and strength must be taken into account
- Patient's ability to perform the correct specific inhalation manoeuvre for the device must be assessed:
  - Dry powder inhalers are appropriate only if the patient can make a forceful and deep inhalation. Check visually that the patient can inhale forcefully through the device - if there is doubt assess objectively or chose alternative device
  - Metered-dose inhalers and, to a lesser extent, soft mist inhalers require coordination between device triggering and inhalation and patients need to be able to perform a slow and deep inhalation. Check visually that the patient can inhale slowly and deeply from the device - if there is doubt consider adding a spacer/ VHC or chose alternative device
  - For patients unable to use an MDI (with or without spacer/VHC), SMI or DPI a nebulizer should be considered
- Other factors to consider include size, portability, cost
- Smart inhalers may be useful if there are issues with adherence/persistence or inhalation technique (for devices that can check it)
- Physicians should prescribe only devices they (and the other members of the caring team) know how to use
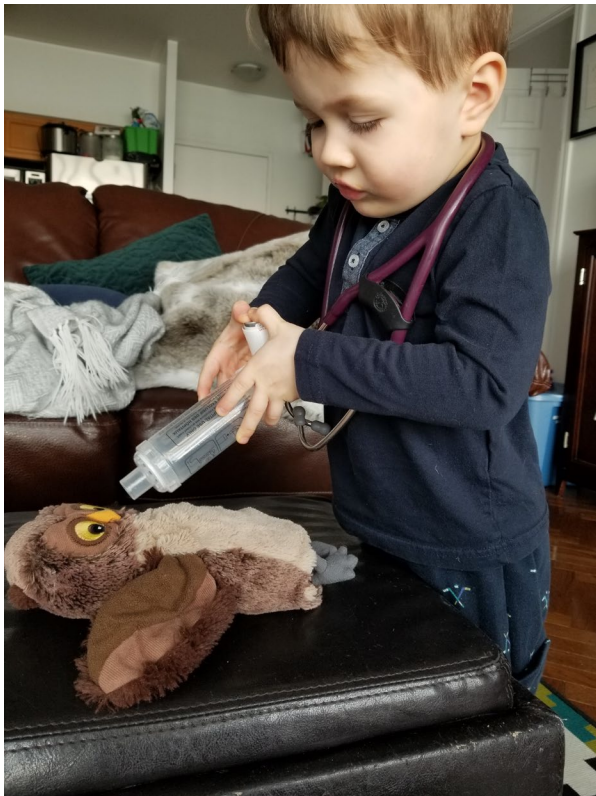
GOLD COPD Report 2023

Other considerations in older adults

- Lower doses of inhaled corticosteroids (ICS) if possible
  - Hoarseness
  - Osteoporosis
  - Glaucoma
  - Pneumonia risk
  - Oral candidiasis

- Beta-agonists are safe to use in older adults with heart disease
  - (Cardiac specific beta blocker use)

- Limit oral steroids

- Biologic therapies in asthma seem safe to use (although studies did not include a significant group of adults > 75)

Respiratory Illness "Season"

Wait, wasn't this just the last 3 years?

Ontario Respiratory Viral Tool

Laboratory confirmed weekly case counts or rates for selected viruses in Ontario

https://www.publichealthontario.ca/en/Data-and-Analysis/Infectious-Disease/Respiratory-Virus-Tool
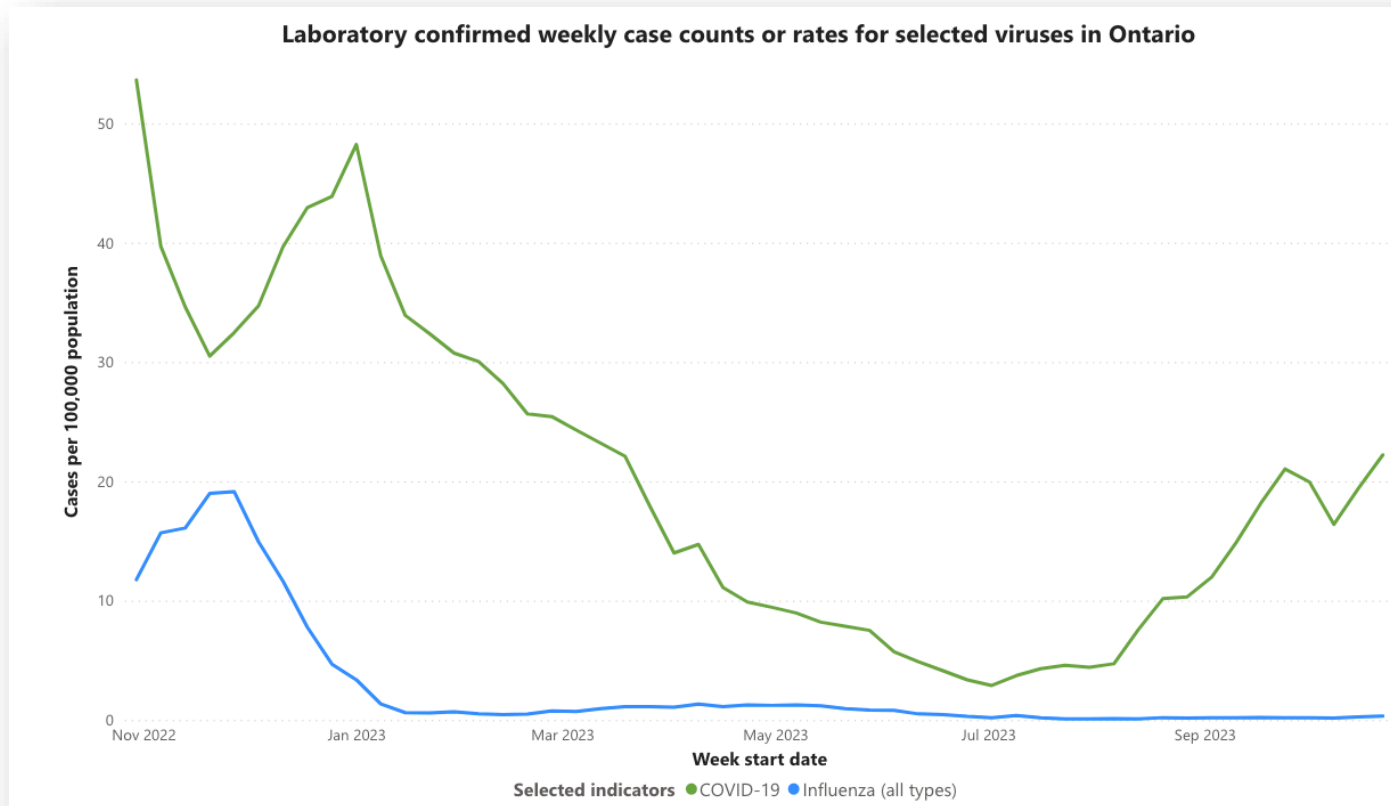
Percent Positivity on Viral Testing – Oct 22-28

Respiratory virus activity

Virus	Percent positivity (%)
Adenovirus	0.7%
COVID-19	18.6%
Entero/Rhinovirus	10.0%
Human metapneumovirus	0.3%
Influenza A	0.5%
Influenza B	0.1%
Parainfluenza (all types)	1.0%
Respiratory syncytial virus	4.2%
Seasonal human coronavirus	0.3%

Basic Prevention Guidelines

Hand washing

Staying home when unwell

Sick day planning:
(How to access Paxlovid etc.)

Masking

Vaccinations
1) COVID
2) Flu
3) RSV*

COVID and Flu Vaccines

- Recommended for essentially everyone (Ages 6 months and up)
  - COVID vaccine matched to the Omicron subvariant XBB.1.5

- No safety concerns to date with co-administration of COVID-19 and influenza vaccines

- Canada's National Advisory Committee on Immunization (NACI):
  - COVID-19 vaccines may be given concurrently (i.e., same day), or at any time before or after, non-COVID-19 vaccines (including live and non-live vaccines)

RSV: Respiratory Syncytial Virus
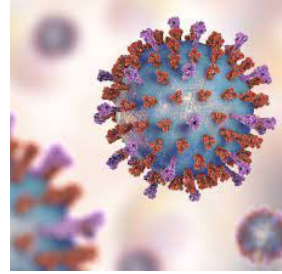
- Common and highly contagious viral cause of respiratory illness in older adults and children

- Often causes mild illness, similar to the "common cold"

- Symptoms develop in 4-6 days post-infection
  - Runny nose
  - Coughing
  - Sneezing

- Usually contagious for 3 to 8 days, may be contagious 1-2 days before symptom onset

- Spread through respiratory droplets

- Young children, people over age 60 and those with chronic lung or heart conditions or immunosuppression at particular risk of severe infection/hospitalization

New for 2023: RSV Vaccine "Arexvy"

- GSK RSV vaccine "Arexvy"
- Examined in a placebo controlled, RCT of ~ 25 000 adults aged ≥60 years
  - Included those with pre-existing medical conditions (39.2%)
  - Included high-risk patients according to the Charlson Comorbidity Index (33.5%)
  - Vaccine efficacy in preventing RSV-lower respiratory tract disease was 82.6% during the first season, 2nd season was 56%
    - Low vaccine efficacy was observed among those who were ≥80 years (33.8%) or frail (14.9%); however, there were relatively low sample numbers in these populations

- Approved for use in people aged 60 or older
  - Publicly covered in long-term homes, elder care lodges and some retirement homes
  - **Private purchase - $250-300** ☹

Recap

- **Unique features of asthma and COPD in older adults**
  - **Diagnosis**
  - **Comorbidities**
- **Considerations for inhaler choice**
- **Respiratory illness season**
  - **New RSV vaccine**
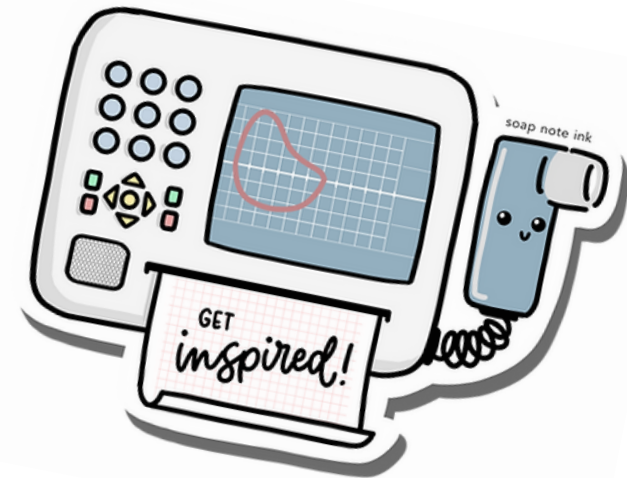
www.soapnoteink.com

Resources

- Mount Sinai Hospital – Asthma/COPD Education Clinic

- Lung Health Foundation
  - My Lung Health Coach, 6 sessions across 12 weeks.
    - https://lunghealth.ca/my-lung-health-coach/
  - Lung Health Line – telephone line can speak with a Certified Respiratory Educator
  - Fitness for Breath

- The Lung Association
  - Virtual Pulmonary Rehab program

Thank you!
Questions?

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