Heart Disease Community of Practice Series 3

Interaction of heart failure and lung disease

Project ECHO
Palliative Care - Canada
BY Pallium Canada

Host: **Holly Finn, Pallium Canada**

Presenter: **Drew Stumborg, RN**

Date: **August 20th 2025**

Territorial Honouring

The Palliative Care ECHO Project

The Palliative Care ECHO Project is a 5-year national initiative to cultivate communities of practice and establish continuous professional development among health care providers across Canada who care for patients with life-limiting illness.

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The Palliative Care ECHO Project is supported by a financial contribution from Health Canada. The views expressed herein do not necessarily represent the views of Health Canada.

Health Canada Santé Canada

Project ECHO Palliative Care - Canada BY Pallium Canada

Introductions

Host

Holly Finn, PMP
Senior Manager of Program Delivery, Pallium Canada

Presenter

Drew Stumborg, RN
Saskatchewan Health Authority

Introductions

Panelists

Dr. Caroline McGuinty, MD FRCPC
Cardiologist, Advanced Heart Failure and Transplantation, Cardiac Palliative Care
University of Ottawa Heart Institute
Assistant Professor, University of Ottawa

Dr. Leah Steinberg, MD, CFPC, FCFP, MA
Palliative Care Clinician, Sinai Health System
Assistant Professor, Division of Palliative Care, University of Toronto

Dr. Michael Slawnych, MD FRCPC
Clinical Assistant Professor
Department of Cardiology, St Paul's Hospital
University of British Columbia

Shannon Poyntz, NP-PHC, MN
Nurse Practitioner, Supportive Care

Dr. Lynn Straatman, MD FRCPC
Clinical Assistant Professor, UBC
Department of Medicine (Cardiology and Palliative Care)
Department of Pediatrics (Adolescent Health)
Medical Director, Cardiac Function Clinic

Disclosure

Relationship with Financial Sponsors:

Pallium Canada

- National registered charitable organization
- Funded by Health Canada

Disclosure

This program has received financial support from:

- Health Canada in the form of a contribution program
- Pallium Canada generates funds to support operations and R&D from Pallium Pocketbook sales and course registration fees
- An educational grant or in-kind resources from Boehringer Ingelheim.

Facilitator/ Presenter/Panelists:

- Holly Finn: employed at Pallium Canada.
- Dr. Leah Steinberg: Pallium Canada (education material), HPCO (clinical advisory committee, educator).
- Morgan Krauter: Novartis, Alnylam, Pfizer (speaker fees); Alleviant (consulting fees).
- Dr. Michael Slawnych: Novartis.
- Dr. Caroline McGuinty: Servier (consulting fees), Novartis (speaker fees).
- Dr. Lynn Straatman: Servier, Novartis, Astra Zeneca, BI, Medtronic, Pfizer, Eli Lilly, Bayer, Merck (clinical trials).
- Shannon Poyntz: None to disclose.
- Drew Stumborg: None to disclose.

Disclosure

Mitigating Potential Biases:

- The scientific planning committee had complete independent control over the development of program content

Welcome and Reminders

- Please introduce yourself in the chat!
- Your microphones are muted. There will be time during this session for questions and discussion.
- Please use the Q&A function to ask questions.
- Add comments or to let us know if you are having technical difficulties via the Chat!
- This session is being recorded and will be emailed to registrants within the next week.
- Remember not to disclose any Personal Health Information (PHI) during the session.
- This 1-credit-per hour Group Learning program has been certified by the College of Family Physicians of Canada for up to **6 Mainpro+** credits.
- This event is also an Accredited Group Learning Activity through the Royal College of Physicians and Surgeons of Canada. You may claim a maximum of **6.00 hours.**

Objectives of this Series

After participating in this program, participants will be able to:

- Describe what others have done to integrate palliative care services into their practice.
- Share knowledge and experience with their peers.
- Increase their knowledge and comfort around integrating a palliative care approach for their patients with advanced heart failure.

Overview of Topics

Session #	Session title	Date/ Time
Session 1	Collaboration Building: How to build collaboration with teams in your setting	October 2, 2024 from 12-1pm ET
Session 2	Diuretic management in an outpatient setting	December 11, 2024 from 12-1pm ET
Session 3	Challenging conversations	February 5, 2025 from 12-1pm ET
Session 4	De-prescribing cardiac and other medications: palliative care in people with advanced heart failure	April 30, 2025 from 12-1pm ET
Session 5	Non ischemic causes of heart failure	June 25, 2025 from 12-1pm ET
Session 6	Interaction of heart failure and lung disease	August 20, 2025 from 12-1pm ET

Objectives of this Session

After participating in this session, participants will be able to:

- Appreciate the challenges arising for patients who have both advanced heart failure and lung disease
- Learn about managing symptoms in patients with both advanced heart failure and lung disease
- Share challenges and discuss management options with peers

Interactions of Heart Failure and Lung Disease – Correlations and Considerations

Heart Failure and Lung Disease

- Many people with heart failure also have lung disease
- Share some common risk factors; primarily smoking – which may contribute to COPD, asthma, and lung cancer
- Another commonality shared may be obstructive sleep apnea
- Severity of both heart failure and lung disease may vary in persons affected by both
- Both conditions are degenerative in nature

- Symptoms often present similarly for persons with lung disease and heart failure
  - Worsens breathlessness
  - Fatigue
  - Cough
  - Decreases exercise tolerance

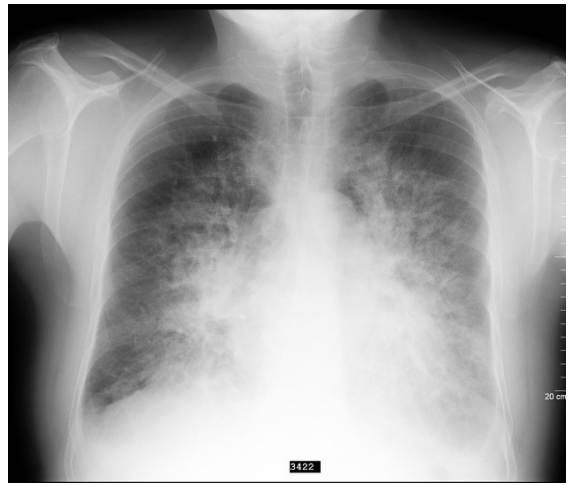
Disease Interactions

Complex pathophysiological interactions and mechanisms

- Changes in cardiac function may directly influence lung function due to alterations in cardiac preload and afterload
- Lung disease interferes with gas exchange, decreasing oxygen transport from the lungs into the blood stream causing decreased oxygenation to your vital organs
- Left sided HF is most commonly caused by HTN and CAD, but low oxygenation from lung diseases strains the heart and worsens heart failure symptoms
- Advanced lung disease will cause impaired ability to expel carbon dioxide, worsening fatigue and decreasing exercise tolerance
- When persons have lung disease and heart failure, the right side of the heart (which pumps blood to the lungs) is affected by the increased workload
- When the right side is effected there is more peripheral edema and ascites

Disease Interactions

- Fluid accumulation in Pulmonary Edema for persons affected by lung disease will:
  - Cause worsen symptoms
  - Obstruct bronchioles
  - Cause increased respiratory rate
  - Capillaries in the lungs may even rupture causing blood to leak into the alveoli
  - Increases risk for pneumonia and lung failure



Worsening lung disease in an exacerbation will strain the heart contributing to heart failure, just as a heart failure exacerbation will worsen lung failure.

Declining lung function serves as a predictor of heart failure progression and increasing severity.

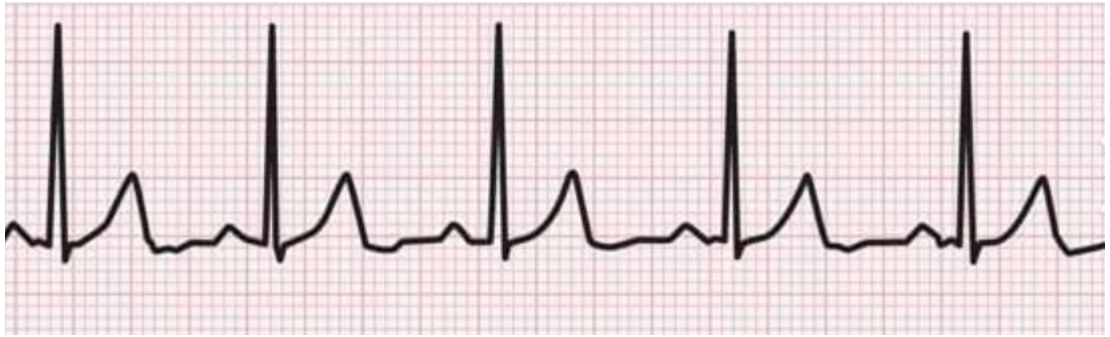
Diagnosing

Initially discovering the underlying concern(s) is often difficult and requires a multifaceted approach.

- Presenting symptoms are often very similar, but there are generally a few differences you may notice on examination.

1) Productive cough
    a) HF - clear sputum
    b) Lung disease - thicker secretions which may appear yellow, brown, or green in color
2) Lung sounds –
    a) HF - crackles are often fine and high pitched, heard at the base of the lungs on inspiration
    b) Lung disease – more coarse, lower pitched, heard throughout the respiratory cycle. Additionally you may hear wheezes or rhonchi
3) Heart sounds
    a) HF – may hear extra heart sounds, murmurs, pericardial friction rubs

Diagnosing



3) ECG
   a) HF – may show signs of Left Ventricular Hypertrophy, arrythmias, a past heart attack, irregular heart rhythms, enlarged chambers, conduction abnormalities
   b) Lung Failure – right atrial enlargement, right ventricular hypertrophy, right bundle branch block, low voltage, tachycardia, atrial fibrillation/flutter, or low QRS voltage
5) CXR
   a) HF – cardiomegaly, pulmonary edema, pleural effusion
   b) Lung Disease – consolidation, infiltrates, tumors/masses, enlarge lymph nodes, nodules, hyperinflation, pneumothorax, bullae
6) Blood work
   a) HF – elevated BNP
   b) Lung Failure – ABG (high CO_2)

Conclusive diagnostics will require an Echocardiogram and PFT not just spirometry

Treatment

If clients have a history of lung disease and heart failure often they will need to be treated in conjunction rather than trying to treat one underlying condition

- Bronchodilators – may be required to support the lung disease, but be aware that they may increase the heart rate
- Antibiotics – may be required to support when indicated, sometimes even prophylactically
- Non-invasive positive pressure ventilation (e.g. Bi-PAP)
- Mechanical ventilation may even be required for lung failure

Oxygen Therapy

Supplemental oxygen - Long term hypoxia will likely require support with oxygen therapy; important to use as prescribed

- Nocturnal oxygen
- Exertional oxygen
- Continuous oxygen

Appropriate oxygen therapy may reduce stress on your heart and organs related to hypooxygenation.

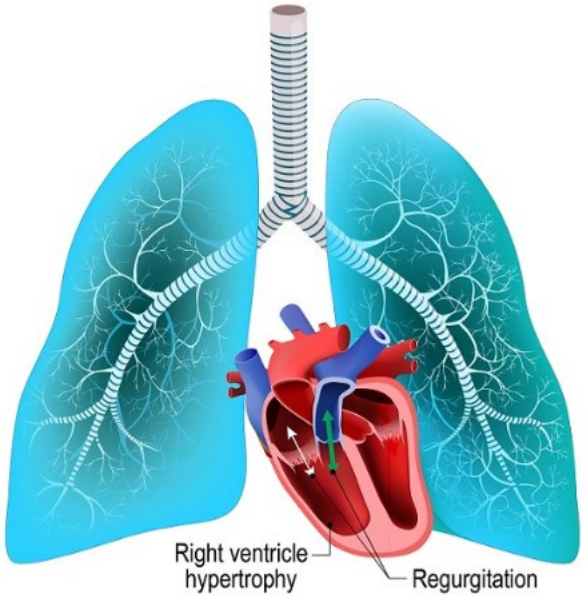
Prednisone and Corticosteroids

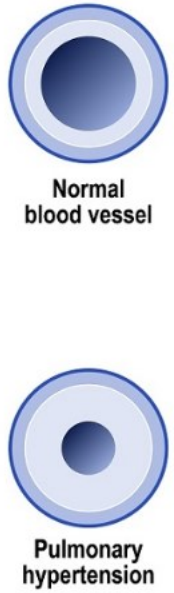
- Prednisone and other corticosteroids like methylprednisolone (Solu-Medrol) are often used to treat COPD and asthma exacerbations as well as interstitial lung disease
- Can make you retain more fluid, making it critical to have a low salt diet and maintain fluid restriction
- Causes restlessness and inability to sleep
- Increased appetite may lead to increased salt intake
- Raises your blood sugar; increase your risk of diabetic ketoacidosis and with prolonged uncontrolled blood glucose increases risk of CAD
- May cause electrolyte imbalances – causing you to retain sodium and excrete potassium
- Inhaled corticosteroids to treat lung disease do not cause the same systemic side effects

Clients with heart failure will likely need increased diuretics when experiencing an exacerbation of an underlying lung disease.

Pulmonary Hypertension

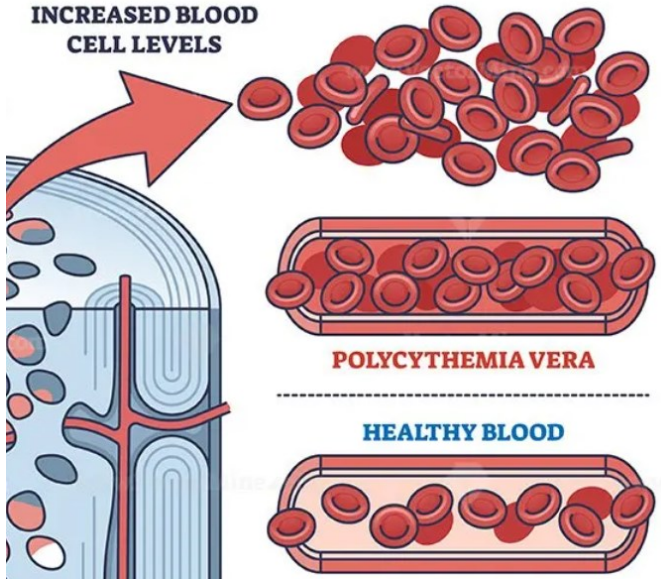
- High blood pressure in the arteries which supply blood to the lung
- Causes damage to the right side of the heart
- Arterial walls become thick and stiff, making them unable to expand efficiently to allow blood to pass through easily
- The right side of the heart has to work harder and becomes weaker
- Most commonly caused by lung disease and hypoxia





Polycythemia

- Erythrocytosis is when there is abnormally high concentrations of RBS in the body, which may related to polycythemia vera or other factors like dehydration and medications
- Polycythemia is a blood disorder which elevates hemoglobin and hematocrit, creating excessive red blood cells therein thickening blood – prevalence is up to 5.9% of persons with HF
- Causes decreased blood flow; increasing risk of clots, cardiovascular problems, and heart failure, and may cause:
  - Heart attack
  - Stroke
  - Pulmonary emboli



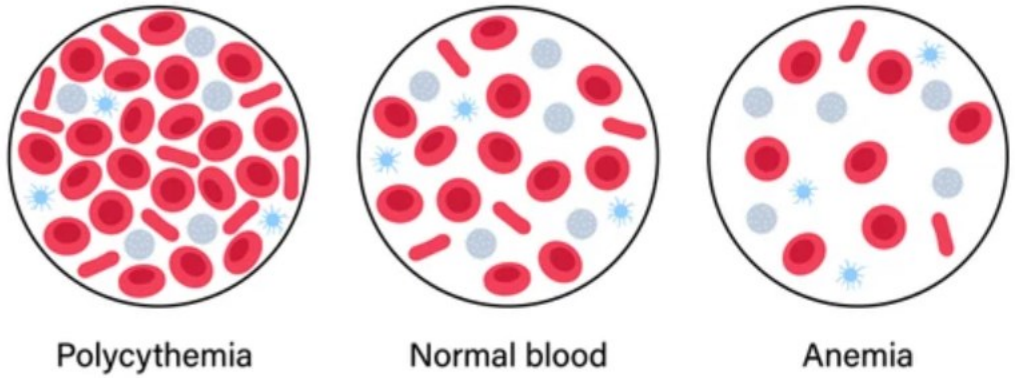
Polycythemia

Can be divided into primary and secondary diagnoses

- Primary is a result of increased erythroid progenitor cells due to an intrinsic cellular defect
- Secondary due to tissue hypoxia or elevated production of erythropoietin:
  - Contributing factors may include obesity, sleep apnea, hypoventilation, COPD, smoking, and diuretic use

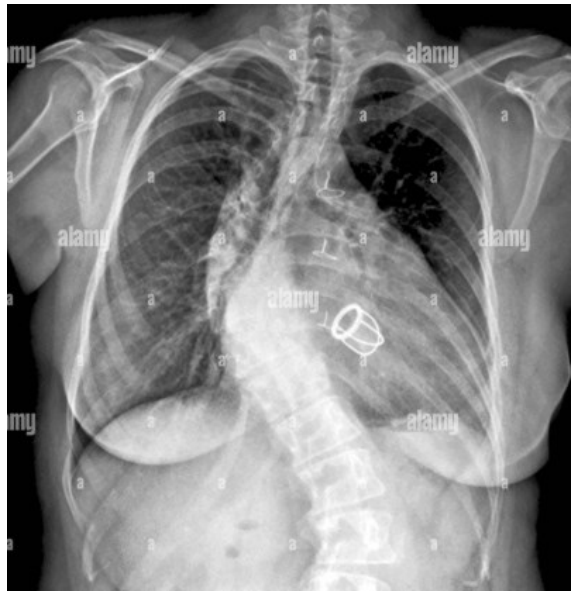
Diuretic use is a normal treatment plan for persons with HF, but may worsen polycythemia; concentrating plasma and causing hyper-viscosity.

Primary treatment is phlebotomy
removing blood, lowering RBC counts.



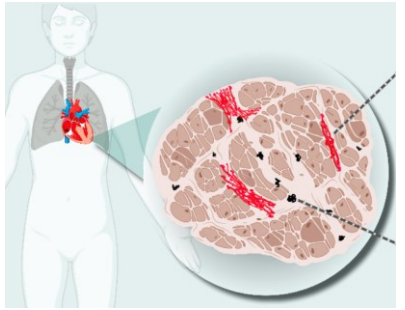
Kyphoscoliosis

- Spinal curvature which may impact the lung and heart from chest wall deformities
- May reduce lung volume, impair breathing, and lead to pulmonary HTN and heart failure
- Hyperventilating alveoli and increasing risk of infections and respiratory failure
- Causes cardiac displacement, possibly rotating the heart, straining the right ventricle causing hypertrophy



Amyloidosis

- Amyloid Proteins deposits build up in organs, significantly impacting the heart and lungs
- Cardiac Amyloidosis - in the heart the proteins stiffen the muscles and thicken the heart tissue impairing the ability to pump blood
  - Causes Arrhythmias impairing the electrical conduction
  - Contributing to valvular disease and cause heart failure



- Pulmonary Amyloidosis
  - Tracheobronchial – deposits in the trachea and bronchi narrowing the airway
  - Nodular and Diffuse Parenchymal patters – deposit into the lung tissue causing nodules or diffuse patters

Symptoms may include cough, SOB, and wheezing as well as chest pain, hemoptysis. Putting persons at risk for lung infections and may ultimately lead to respiratory failure.

- May show on blood tests and may also need a biopsy to diagnose

Case-Based Discussion

Case Study #1

- 79 year old male diagnosed with COPD
- Having progressive dyspnea
- History of smoking
- Recommended use of CPAP following dx. Of OSA but clients declines same
- Pulse 98
- Presents in their family Dr. office
- Followed by a respirologist and has been stabilized on inhaled medications
- History of diabetes type 2 NIDDM
- Elevated WBC count
- Increased cough
- Discomfort in intercostal areas with coughing

- Where do you start?
- What are the challenges you currently face?
- What can we strive to do differently?

Case Study #1

- Given antibiotics and prednisone for a diagnosis of a COPD exacerbation
- Recommended increased use of Combivent Respimat to 2 inhalations QID scheduled while exacerbating
- Jugular vein distention
- Increased lower extremity edema and ascites

Case Study #1

- Increased to Pulse 118
- Symptoms worsening after 3 days
- Clear frothy sputum
- Weight has climbed up 8 lbs
- Blood sugars have climbed up

Case Study #2

- 56 year old male with a 38 year history of cigarette smoking and a BMI of 23.4
- History of Heart Failure with Coronary Artery Disease and stents
- Presenting with progressive dyspnea, increased peripheral edema, elevated heart rate and blood pressure
- Hemoglobin of (normal) and Hematocrit of % (normal), BNP (normal <)
- Chest x-ray reveals cardiomegaly and bilateral pulmonary edema

Case Study #2

- Introduced Loop Diuretic for therapy – initially provided some symptom relief, but began worsening

Questions/Discussion

Wrap Up

- Please fill out the feedback survey following the session! Link has been added into the chat.
- A recording of this session will be e-mailed to registrants within the next week.
- Thank you for your participation in this series!

Thank You

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