



BEST CARE COPD AND HEART FAILURE A MODEL FOR HEALTH SYSTEM INNOVATION

DR. CHRISTOPHER LICKS KAI MD FRCPC ON BEHALF OF
ASTHMA RESEARCH GROUP AND THE PRIMARY CARE INNOVATION COLLABORATIVE

OBJECTIVES

Best Care has as a core principle the support of primary care physicians in the delivery of best practices for chronic disease on site in their practice

1. A brief COPD guideline overview
2. A brief overview of how Best Care can support you to deliver COPD and HF guidelines in your practice



- 78-year-old female
- Diagnosed with COPD 3 years ago

FEV₁ 58%
predicted; MRC 3;
CAT 12

Non-
smoker x 4
years

Husband deceased
and waiting long
term care as has RA

Currently on a
LAMA/LABA with SABA
prn (~2x/week)



- Good inhaler technique and adherent with prescribed medication
- No influenza vaccination last year; never received pneumococcal vaccination
- No history of hospitalizations for COPD
- Physical examination
 - No cyanosis or clubbing, normal vitals with SpO₂ 96%
 - Breath sounds are reduced with no focal signs; no findings of heart failure
- Two bad 'chest colds' this past year
 - Antibiotic therapy for both; prednisone for one

**Claire needs her therapy
optimized
to prevent future exacerbations**

Abbreviations: CAT = COPD Assessment Test; COPD = chronic obstructive pulmonary disease; FEV₁ = forced expiratory volume 1; LABA = long-acting β_2 -agonist; LAMA = long-acting muscarinic-agonist; MRC = Medical Research Council; prn = when necessary; SABA = short-acting beta2-agonist; SpO₂ = peripheral capillary oxygen saturation

6 Key Take Home Messages from COPD Guidelines

1. Emphasis on SYMPTOMS (dyspnea) and EXACERBATION prevention
2. Action plans with team support and a prescription improve QoL and reduce hospitalization for COPD and are guideline recommended
3. Mono → DUAL → Triple (Consider eosinophils / ACO)
4. Prominent role for DUAL bronchodilators for mild to moderate / low risk of exacerbation
5. ICS used for HIGH risk patients with frequent exacerbation after DUAL **and** for Asthma COPD Overlap (ACO)
6. Step down therapy is **not** recommended for high risk individuals

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Definition of Exacerbations = Lung Attack

- Exacerbations are “**event-based**” occurrences; that is, respiratory symptom(s) that **worsen beyond the normal day-to-day variability** and may require the use of **antibiotics and/or systemic corticosteroids and/or healthcare services**.
- 22–43% of patients hospitalized with a COPD exacerbation die within 1 year^{3–6}
- The in-hospital mortality rate for COPD exacerbations is 8–11%^{3,4}

COPD, chronic obstructive pulmonary disease; SABD, short-acting bronchodilator.
Canadian Thoracic Society, in press

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Educate Patients to Manage Exacerbations

My goals are _____

My support contacts are _____ and _____
(Name & Phone Number) (Name & Phone Number)

My Symptoms	I Feel Well	I Feel Worse	I Feel Much Worse	URGENT
I have sputum.	My usual sputum colour is: _____	Changes in my sputum, for at least 2 days. OR Yes <input type="checkbox"/> No <input type="checkbox"/>	My symptoms are not better after taking my flare-up medicine for 48 hours.	
I feel short of breath.	When I do this: _____	More short of breath than usual for at least 2 days. Yes <input type="checkbox"/> No <input type="checkbox"/>	I am very short of breath, nervous, confused and/or drowsy, and/or I have chest pain.	
My Actions	Stay Well	Take Action	Call For Help	
	I use my daily puffers as directed.	If I checked 'Yes' to one or both of the above, I use my prescriptions for COPD flare-ups.	I will call my support contact and/or see my doctor and/or go to the nearest emergency department.	
Notes:		I use my daily puffers as usual. If I am more short of breath than usual, I will take _____ puffs of _____ up to a maximum of _____ times per day.	I will dial 911.	
		I use my breathing and relaxation methods as taught to me. I pace myself to save energy.	Important information: I will tell my doctor, respiratory educator, or case manager within 2 days if I had to use any of my flare-up prescriptions. I will also make follow-up appointments to review my COPD Action Plan twice a year.	
		If I am on oxygen, I will increase it from _____ L/min to _____ L/min.		

Should I provide an Action Plan with a prescription for Antibiotics and Prednisone? YES!!

- A. Prednisone and antibiotics are recommended for the treatment of COPD
- B. Early intervention in an exacerbation improves health outcomes and can prevent hospitalization and ED visits
- C. Patients who have exacerbation experience – the exacerbation phenotype – are familiar with the exacerbation and treatment
- D. Exacerbations are life threatening and life altering events that deserve aggressive intervention
- E. The Best Care CRE will provide education and patient support to ensure the appropriate use of prednisone and antibiotics
- F. Action Plans are guideline recommended (CHEST, CTS and GOLD) in the context of team care such as Best Care COPD

WHAT ARE WE ASKING PRIMARY CARE PRACTITIONERS TO DO BASED ON GUIDELINES – IN A 7 - 10 MINUTE ENCOUNTER?

- Do pre and post spirometry to Dx COPD
- Differentiate COPD from asthma
- Initiate inhaler treatment based on GOLD/ CTS guidelines
- Do device instruction on every visit
- Monitor adherence
- Teach patients about COPD
- Write an action plan and support self-efficacy
- Support smoking cessation
- Manage exacerbations – see urgently when needed
- Ensure proactive identification and follow-up



WHAT ELSE IS IMPACTING ON THE HEALTH OF THESE PATIENTS?

- Depression
- Heart Failure
- Anxiety
- Language barrier / Literacy
- Smoking
- Substance abuse
- Weak / Frail Elderly
- No drug coverage
- Is primary caregiver to son
- Non-adherent to therapy
- Unemployed / financial issues
- Mobility issues make it difficult to attend clinic appointments
- $BMI = 15.1$
- Brain injury / dementia (self-care and medication management??)
- Refusing referral to services for help
- Does not want services to come into home
- Needs specialist care
- Needs palliative care
- Inadequate housing

WHAT IS THE BEST CARE PROGRAM?

- A complete knowledge translation module for primary care
- Supports pharmacologic and non-pharmacologic treatment
- Case management across biopsychosocial continuum
- SAY YES!

HOW DOES IT WORK IN MY CLINIC? THE CLINIC WORK FLOW

- Designed to work in a primary care practice
 - >13,000 visits in the past 2 years (61,000 total visits)
 - > 600 physicians
- CRE in your practice seeing your patients
 - Under your supervision
- Patient leaves with all elements of evidence based care (Diagnosis, Rx, education, action plan, case management)

THE BEST CARE TEAM

Certified Respiratory Educators

Barb Veigli, RRT, CRE
Carly Hudacek, RRT, CRE
Colleen MacDonald, RRT, CRE
Janet McGlaughlin, RRT, CRE
Karen Hergott, RRT, CRE
Navjot Virdi, RRT, CRE
Amy Domik, RRT, CRE
Claudia Martin, RRT, CRE
Samantha Moberly, RRT, CRE
Kelly Fishleigh, RRT, CRE
Laura Kessel, RRT, CRE
Margaret Bunker, RRT, CRE
Diana Kolpak, RN, CRE
Hayley Rushton, RRT, CRE
Desiree O'Halloran, RRT, CRE
David Da Silva-Krul, RRT, CRE
Donna Wilson, RRT, CRE

Registered Respiratory

Therapists / RN

Anisa Samsair, RRT
Paula Calleja, RRT
Himanshu Ladola, RRT
Reshma Saeed, RRT
Evelyn Guevara, RRT
Cindy Spencer, RRT
Carly Malenfant, RRT
Monique Mackie, RRT
Anastasia Begon, RN

Respiratory and Heart Failure Educators

Zofe Roberts, RRT, CRE, HF
Melissa Fisk, RRT, CRE, HF
Brandie Elliot RRT, CRE, HF
Kevin Barry RRT, CRE, HF
Meghan Kimball RRT, CRE, HF
Ashley Osborne, RN, HF
Rebecca Whiting, RRT, CRE

Provincial Coordinator

Madonna Ferrone RRT CRE, HF

Respirology Lead

Christopher Licskai MD

Cardiac Lead

Robert McKelvie MD

Primary Care Lead

Tim O'Callahan MD

Quality and Evaluation

Coordinator

Anna Hussey

Administrative Coordinator and

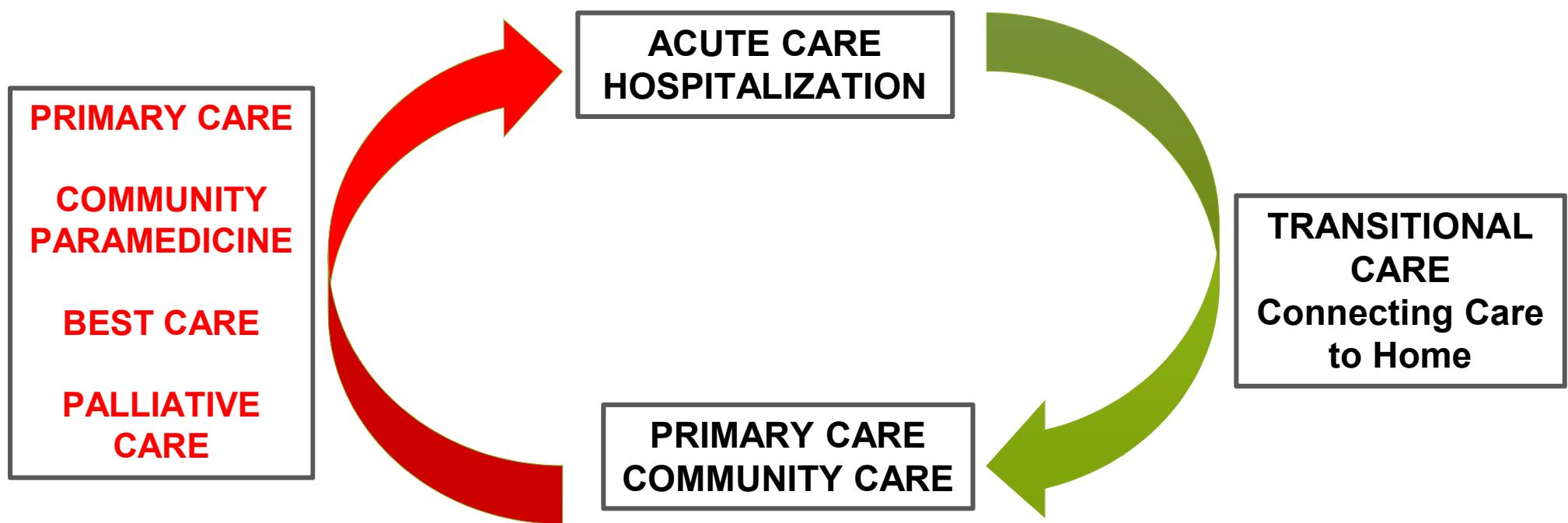
Quality and Evaluation

Assistant

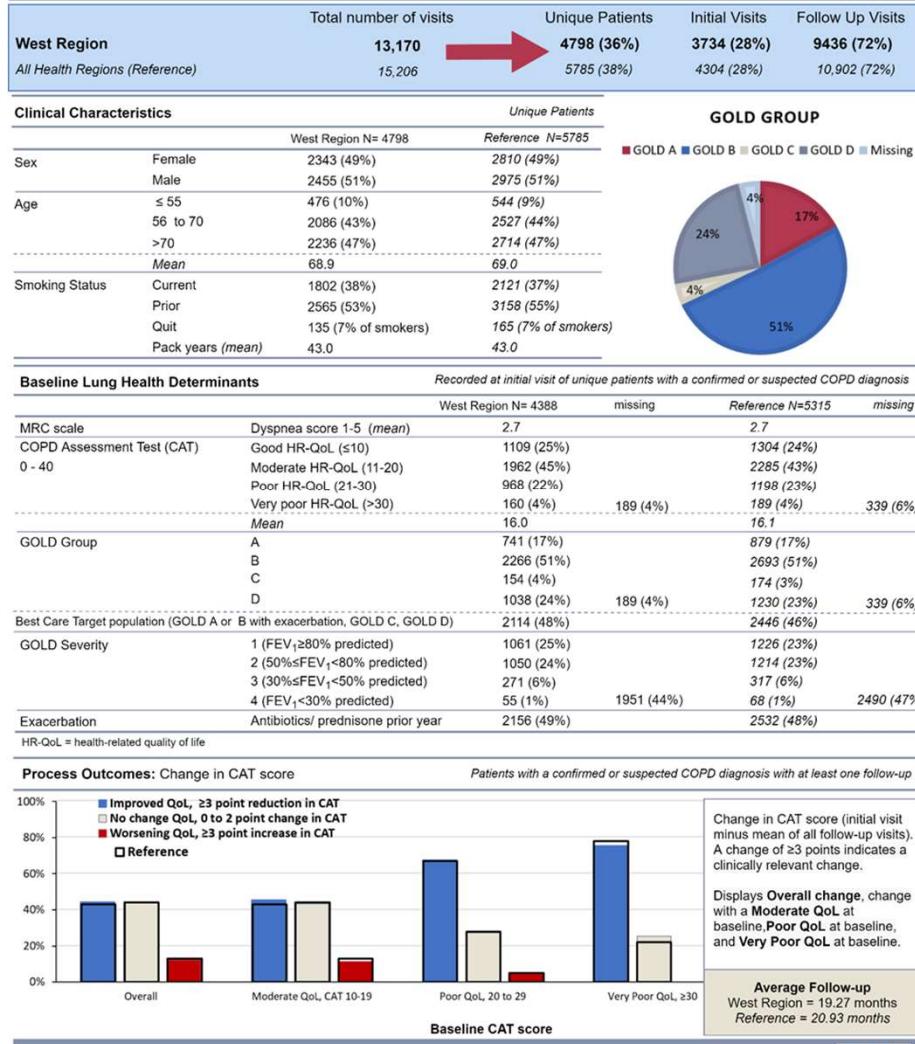
Alyson Hergott

Partner Organizations

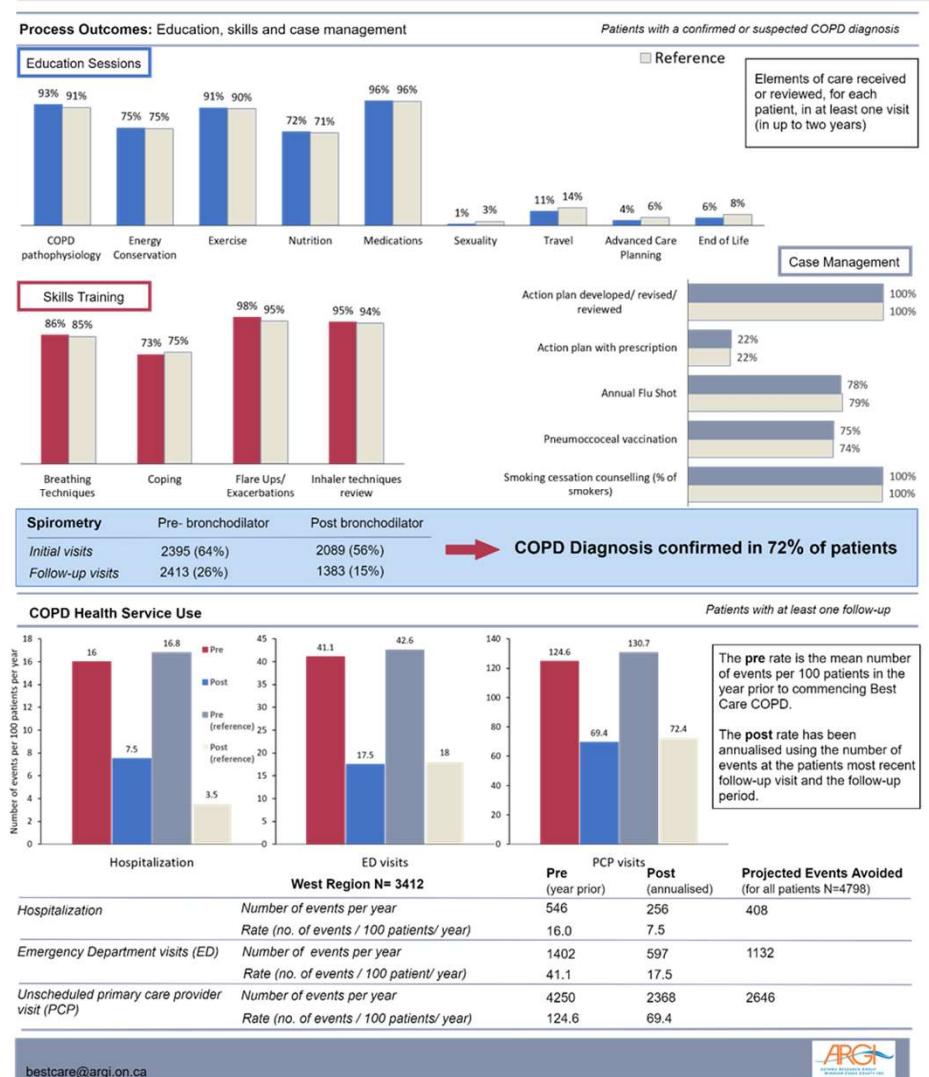
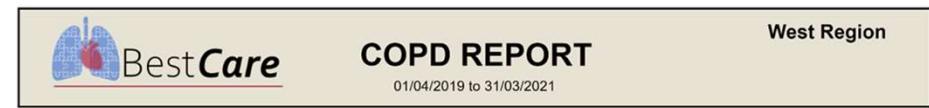
An proactive upstream solution to improve quality of life and disrupt the annual cycle of COPD hospitalizations



Hospitalization reductions of 40-60% sustained over a 6 year interval;
Dramatic and sustained improvements in quality of life



bestcare@argi.ca.on



Thank you

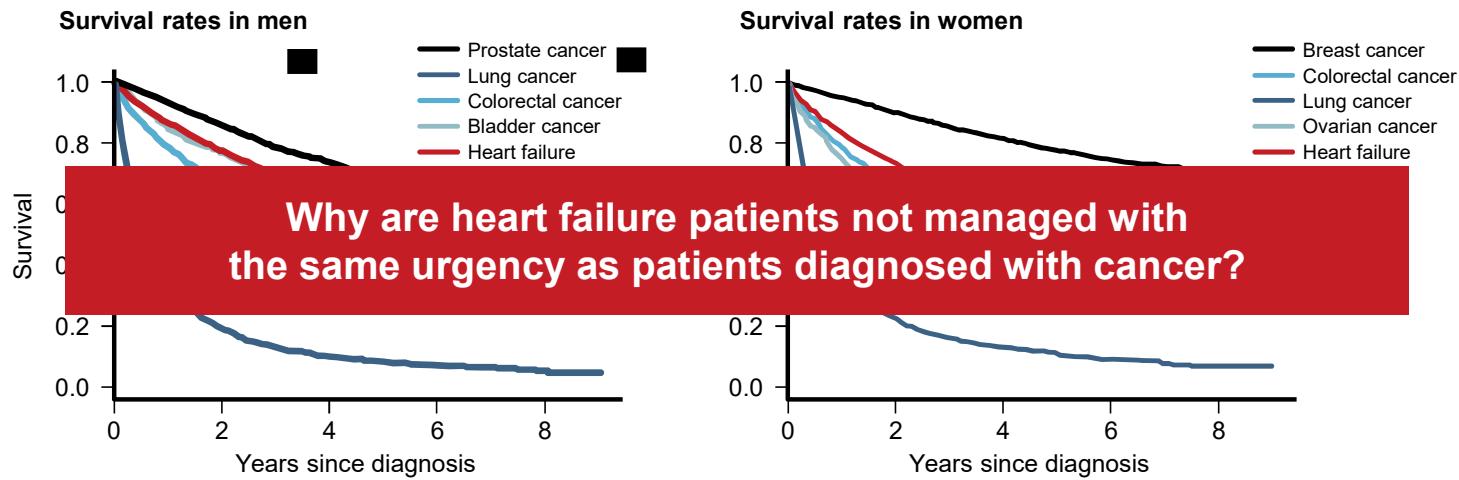
- Please reach out to Madonna Ferrone or me for further information or to become connected to the Best Care program mferrone@argi.on.ca
- We would welcome returning to do some case based learning in the town hall format

Heart Failure Guidelines



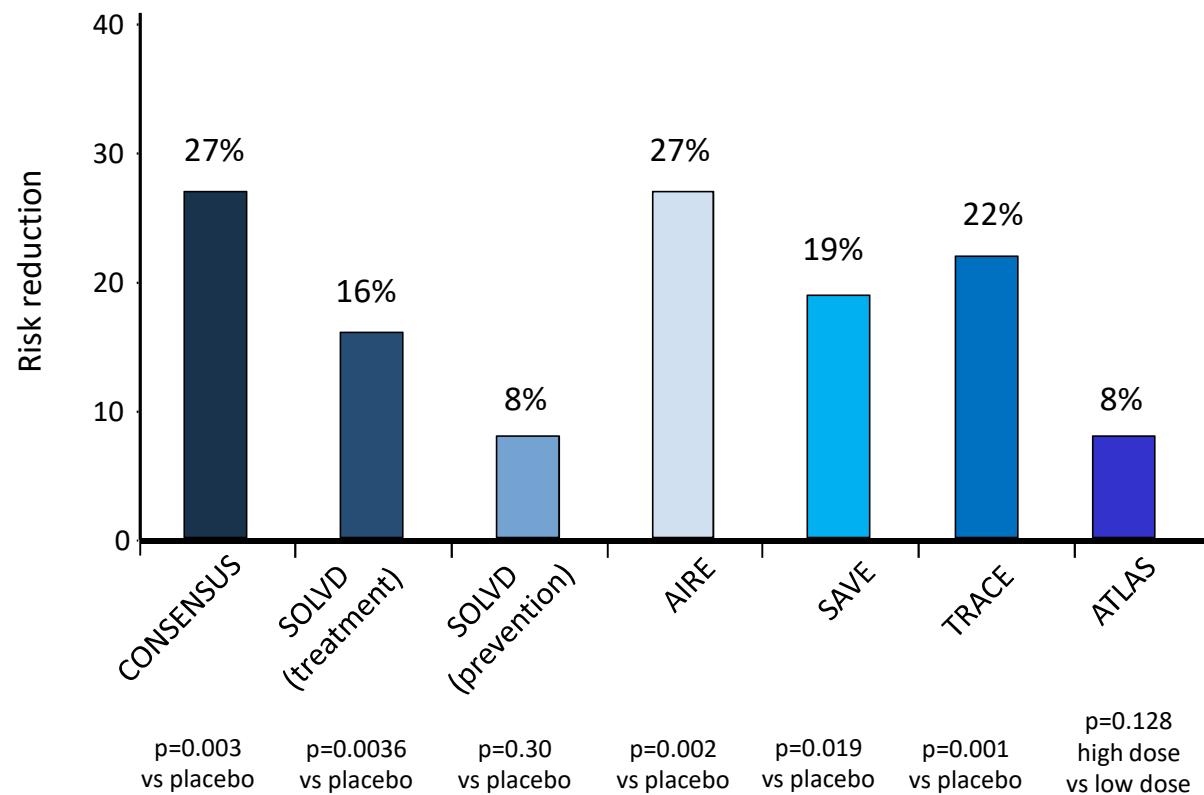
MORTALITY RATE IS HIGHER FOR HEART FAILURE THAN SOME CANCERS

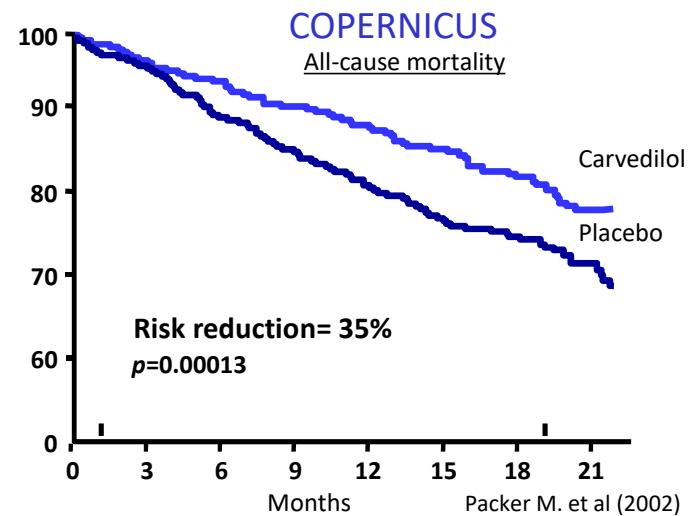
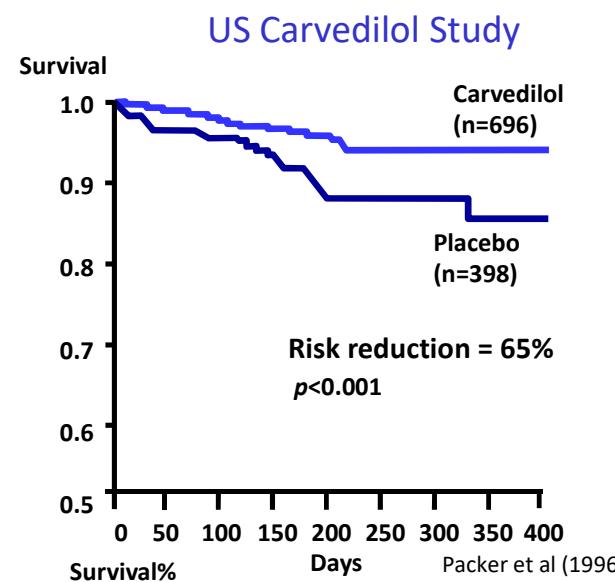
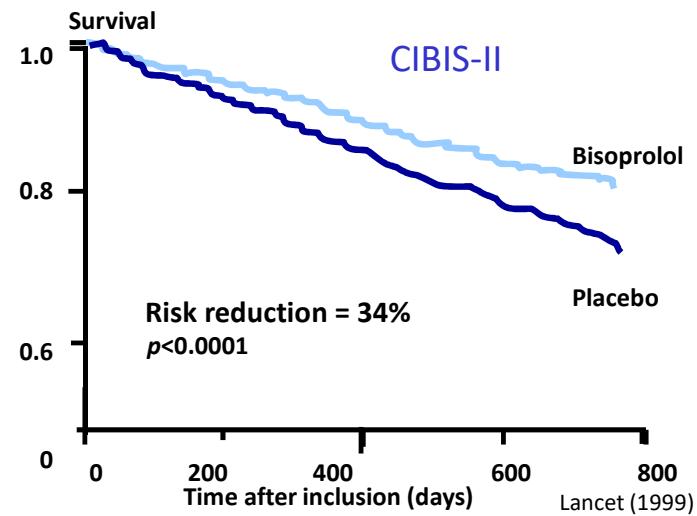
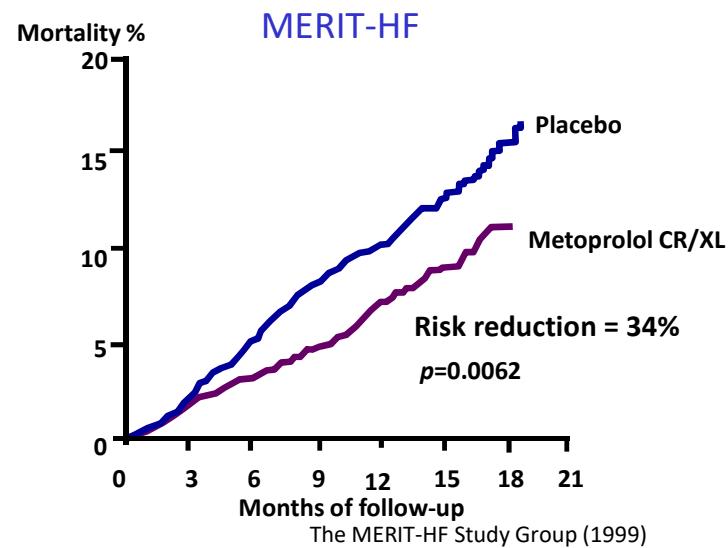
The mortality rate for patients with chronic HF is as high as 50% at 5 years post-diagnosis^{1,2,3}



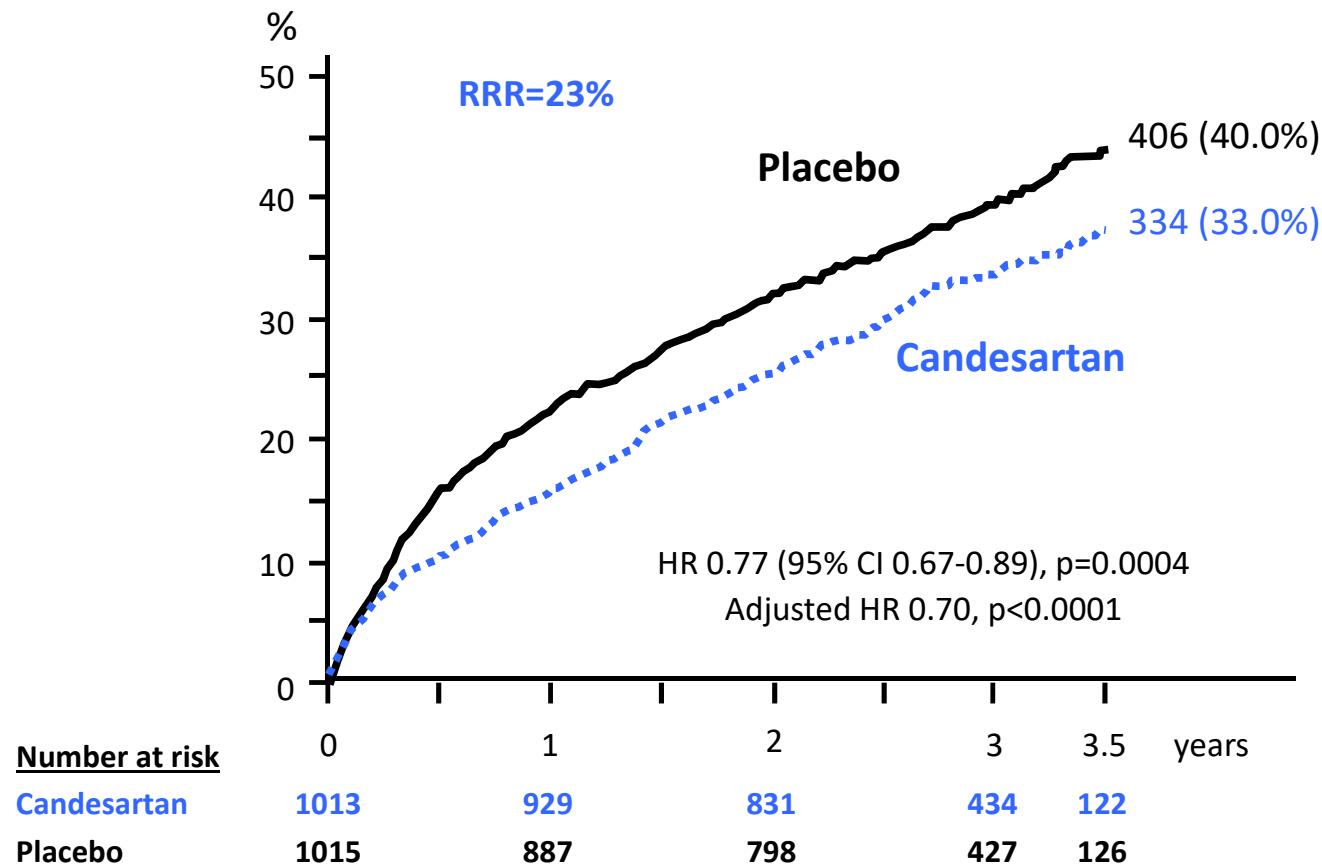
1. Mamas et al. Eur J Heart Fail. 2017;19(9):1095-1104; 2. Benjamin et al. Circulation 2017;135(10):e146-e603; 3. Roger et al. JAMA 2004;292:344-50

Primary Outcomes of ACE Inhibitors in Heart Failure and/or LV Dysfunction: Mortality

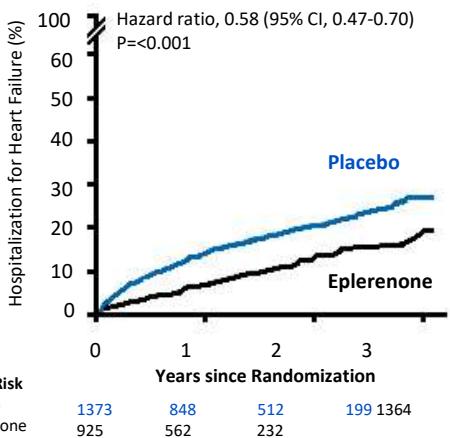
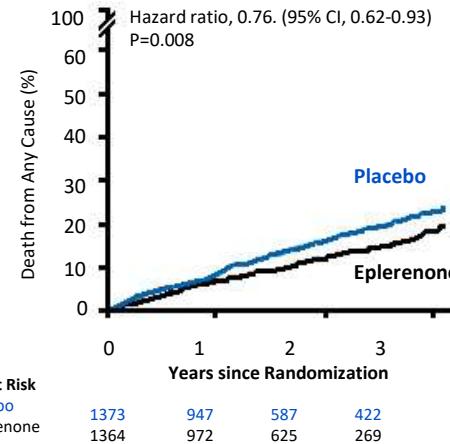
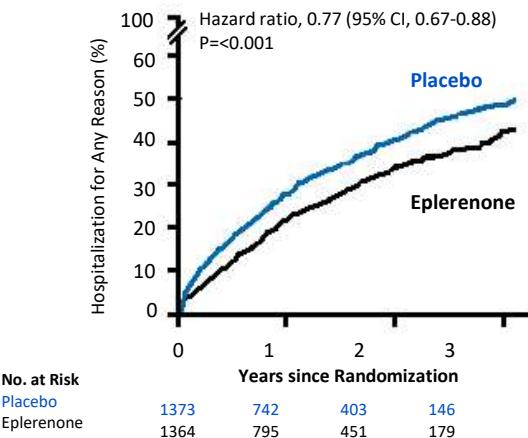
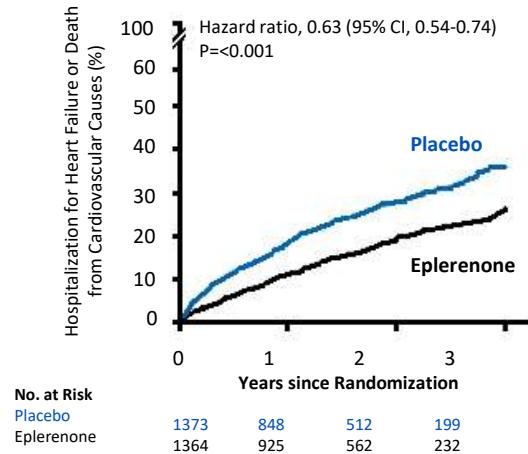




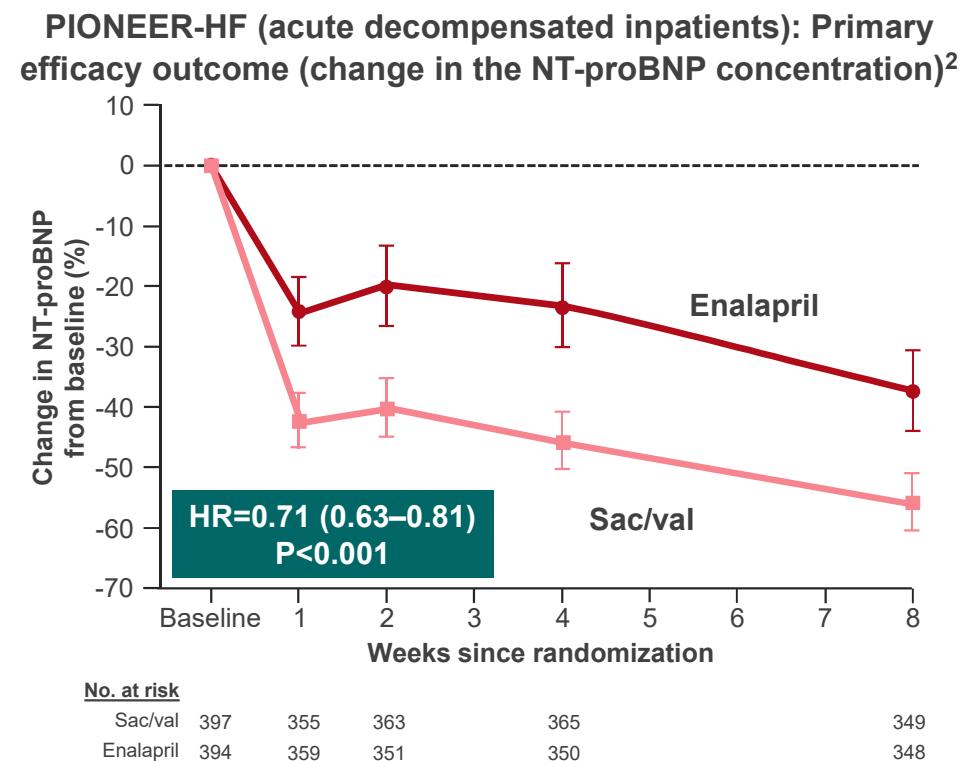
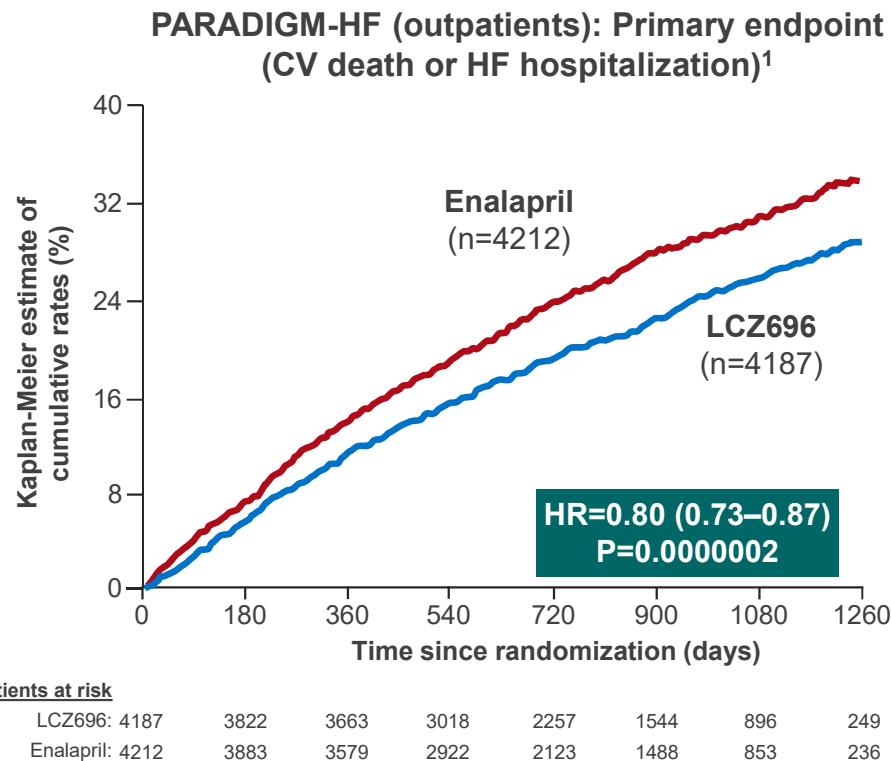
CHARM-Alternative: Primary outcome CV death or CHF hospitalization



Rates of the Primary Outcome and Other Outcomes in EMPHASIS



SacubitriI/Valsartan: Early separation in HFrEF and acute decompensated HF



CV, cardiovascular; HR, hazard ratio; NT-pro-BNP, N-terminal pro b-type natriuretic peptide; sac/val, sacubitriI/valsartan
 1. McMurray JJ et al. N Eng J Med 2014;371(11):993-1004; 2. Velazquez EJ et al. N Eng J Med 2019;280(6): 539-548.

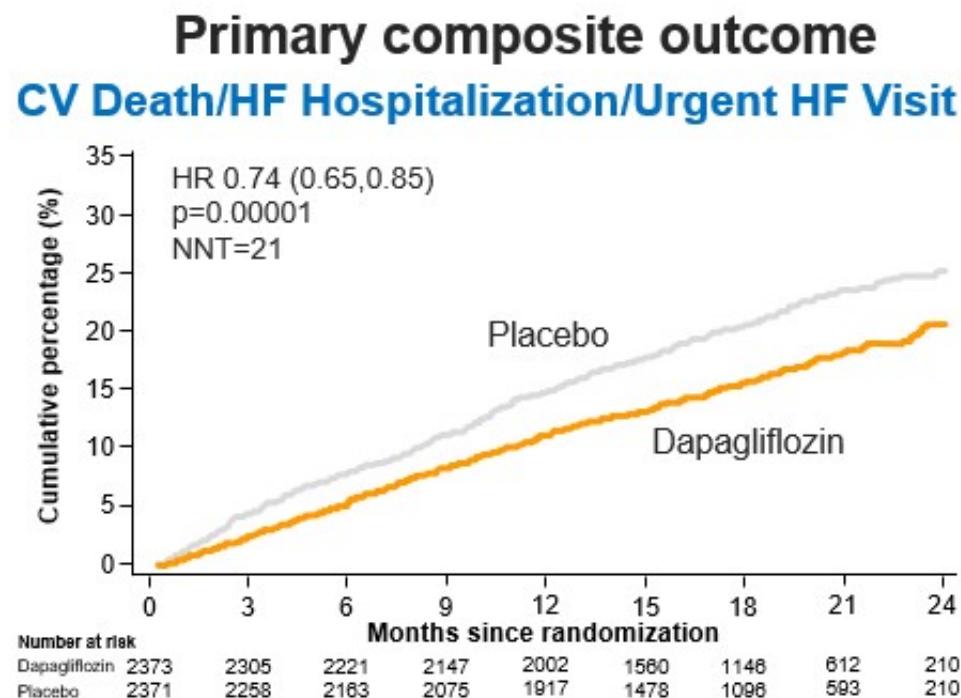
Incremental Benefit of Drug Therapies for HFrEF

Summary results of treatment effect vs. placebo for selected drug group or combination of groups and for each endpoint

	All-cause Mortality	CV Mortality	All-cause Hospitalization	Hospitalization for HF
ARNI+BB+MRA	0.38 (0.20–0.65)	0.36 (0.16–0.71)	0.58 (0.36–0.92)	0.27 (0.07–1.07)
ACEI+BB+MRA+IVA	0.41 (0.21–0.70)	0.41 (0.19–0.82)	0.58 (0.36–0.92)	0.25 (0.07–0.99)
ACEI+BB+MRA	0.44 (0.27–0.67)	0.45 (0.25–0.75)	0.65 (0.45–0.93)	0.34 (0.13–0.91)
ACEI+BB	0.58 (0.42–0.73)	0.56 (0.37–0.75)	0.75 (0.54–0.92)	0.34 (0.17–0.56)
ACEI+MRA	0.58 (0.36–0.90)	0.56 (0.31–0.95)	0.69 (0.45–0.96)	0.36 (0.12–0.96)
BB	0.58 (0.34–0.95)	0.62 (0.27–1.32)	0.86 (0.59–1.18)	0.45 (0.13–1.39)
ACEI	0.84 (0.67–1.01)	0.81 (0.60–1.04)	0.89 (0.71–1.05)	0.52 (0.32–0.76)

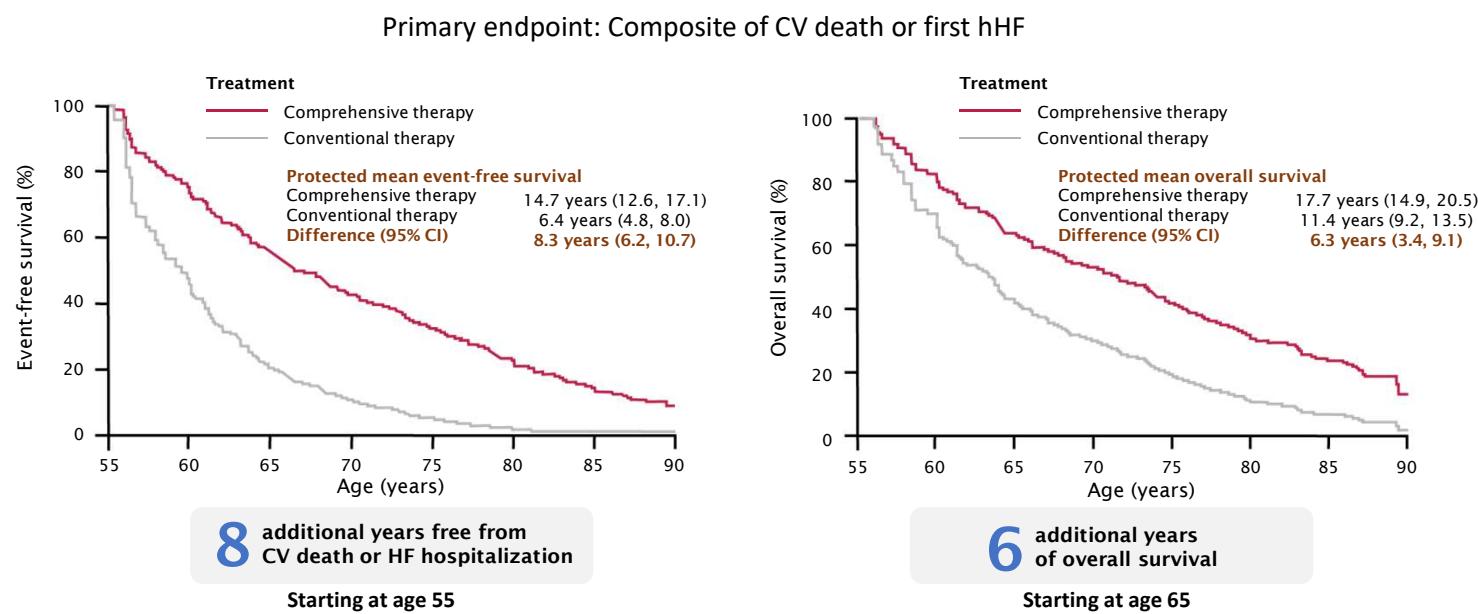
ARNI, angiotensin-receptor-neprilysin inhibitor, BB, beta-blocker
Komajda M et al. *Eur J Heart Fail* 27 May 2018. doi:10.1002/ejhf.1234

DAPA-HF: Reduction in CV death, HF hospitalization, urgent HF visit



McMurray JJV et al. N Engl J Med 2019;381(21):1995-2008.

(ARNi + BB + MRA + SGLT2 inhibitor) vs limited conventional therapy (ACEi/ARB + BB)



ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ARNi, angiotensin receptor neprilysin inhibitor; BB, β blocker; CI, confidence interval; CV, cardiovascular; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; MRA, mineralocorticoid receptor antagonist; SGLT2, sodium-glucose co-transporter 2

Adapted from Vaduganathan M, et al. *Lancet* 2020;396:121-128

TREAT COMORBIDITIES PER CCS HF RECOMMENDATIONS (INCL. AF, FUNCTIONAL MR, IRON DEF, CKD, DM)
DIURETICS TO RELIEVE CONGESTION (TITRATED TO MINIMUM EFFECTIVE DOSE TO MAINTAIN EUVOLEMIA)

HFrEF: LVEF \leq 40% AND SYMPTOMS

Initiate Standard Therapies

ARNI or ACEi/ARB
then substitute ARNI

BETA BLOCKER

MRA

SGLT2 INHIBITOR

Assess Clinical Factors for Additional Interventions

HR >70 bpm and
sinus rhythm
• Consider ivabradine*

Recent HF hospitalization
• Consider vericiguat **

Black patients on optimal GDMT,
or patients unable to tolerate
ARNI/ACEi/ARB
• Consider combination
hydralazine-nitrates

Suboptimal rate control for
AF, or persistent symptoms
despite optimized GDMT
• Consider digoxin

Initiate standard therapies as soon as possible and titrate every 2-4 weeks to target or maximally tolerated dose over 3-6 months



Reassess LVEF, Symptoms, Clinical Risk



NYHA III/IV, Advanced HF
or High-Risk Markers

CONSIDER

- Referral for advanced HF therapy (mechanical circulatory support/transplant)
- Referral for supportive/palliative care

LVEF \leq 35% and
NYHA I-IV (ambulatory)

Refer to CCS CRT/ICD
recommendations

LVEF $>$ 35%,
NYHA I, and Low Risk

Continue present management,
reassess as needed

ADVANCE CARE PLANNING AND DOCUMENTATION OF GOALS OF CARE
NON-PHARMACOLOGIC THERAPIES (EDUCATION, SELF-CARE, EXERCISE)

Medication Titration

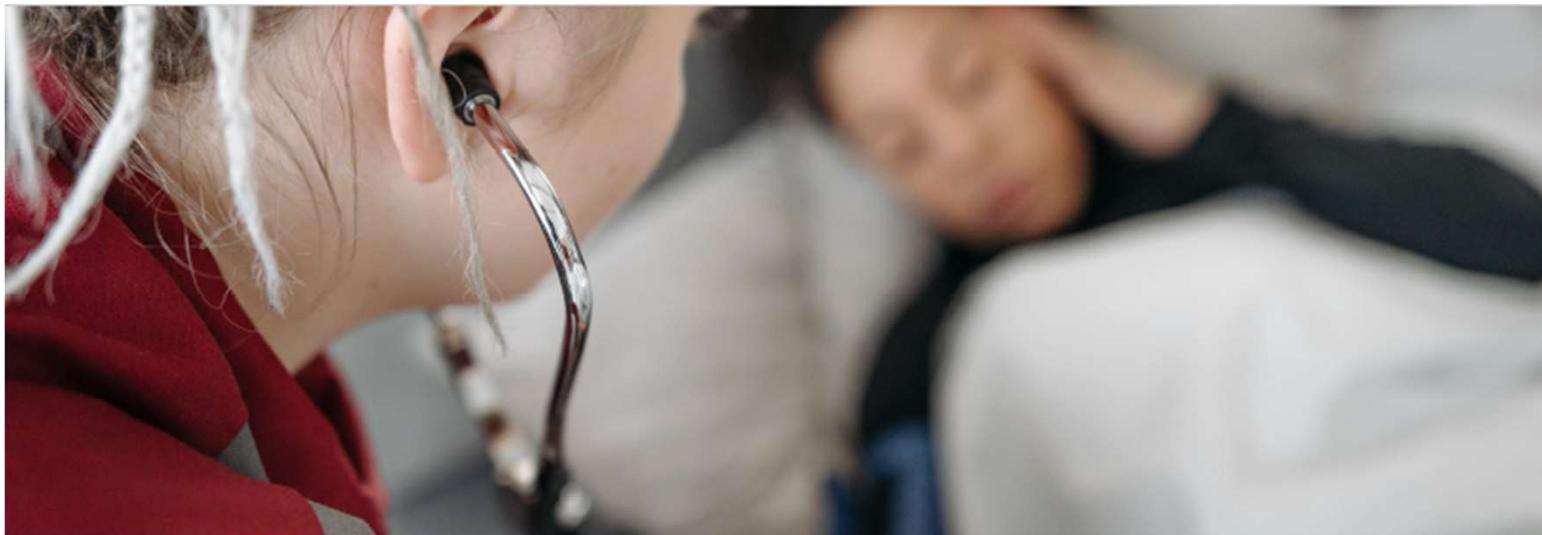
- Titration to maximum tolerated doses of HF medication is recommended to reduce morbidity and mortality in left ventricular systolic HF.
- Every attempt should be made to titrate medications as soon as feasible after the diagnosis. It is reasonable to aim for titration of all standard therapies concurrently to target doses, or maximally tolerated doses, within 3-6 months from diagnosis. (Canadian Guidelines, 2021)
- Initiation and titration of standard therapies should be embraced by nonspecialists (Canadian Guidelines, 2021)
- Titration of medicines can be challenging as individuals with HF frequently have multiple co-morbidities, numerous medications and often move between acute and primary health-care sectors.
- There is no proven superior approach to medication initiation and titration

How the educator will work with you to achieve this goal

- Patient-specific titration plan collaboratively developed
- Close follow up with patient and monitoring of blood work and symptoms
- Clear communication with primary care provider and specialist as needed
- Identify adherence issues
- COMMUNICATION IS KEY

Collaborative Self-Management Action Plan

<p>GREEN ZONE – “ALL CLEAR”</p> <p>YOUR SYMPTOMS ARE UNDER CONTROL IF:</p> <p>BREATHING - No new or worsening shortness of breath.</p> <p>PAIN/CHEST - No chest discomfort, pressure or pain.</p> <p>SWELLING - No swelling or increase in swelling of your feet, ankles, legs or stomach.</p> <p>PHYSICAL ACTIVITY - Normal</p> <p>WEIGHT - No weight gain of more than 2kg's (4lbs) in over 2 days in a row or 2.5 kg's (5 lbs) in 1 week.</p>	<p>Keep up the good work</p> <p>Your normal LASIX dose is:</p> <hr/>
<p>YELLOW ZONE – “CAUTION”</p> <p>Warning zone – need to act on this</p> <p>BREATHING - More shortness of breath with activity OR a dry hacking cough OR Trouble breathing when you are lying down / trouble sleeping flat / need extra pillows.</p> <p>SWELLING - Increased swelling in your legs, feet or ankles OR Discomfort or swelling in the abdomen.</p> <p>PHYSICAL ACTIVITY - You are more tired than normal and don't have the energy to do your daily activities.</p>	<p>Your ACTION PLAN</p> <p>You have gained 2kg's (4lbs) over 2 days in a row or 2.5 kg's (5lbs) in a week.</p> <p><input type="checkbox"/> Start LASIX at _____</p> <p><input type="checkbox"/> Increase your LASIX to _____</p> <p><input type="checkbox"/> Continue daily weights, if in 2 days you do not meet your dry weight call your Physician / Nurse Practitioner or Educator.</p>
<p>RED ZONE - “EMERGENCY”</p> <p>BREATHING - You are struggling to breathe or have shortness of breath that does not go away while you are at rest/sitting still.</p> <p>CHEST - You have a fast heartbeat that does not slow down when you rest OR You have chest pain that does not go away with rest or with medicine.</p>	<p>Emergency zone – act fast</p> <p>GO TO EMERGENCY OR CALL 911</p>



TOWN HALL
COMMUNITY
PARAMEDICINE
COPD
CHF

Family Physicians and Nurse Practitioners

Do you care for patients:

- with COPD and/or CHF**
- who are frail and waiting for
LTC (ALC)?**

**Join us on June 8, 2021 to learn how we
can help you care for these patients.**

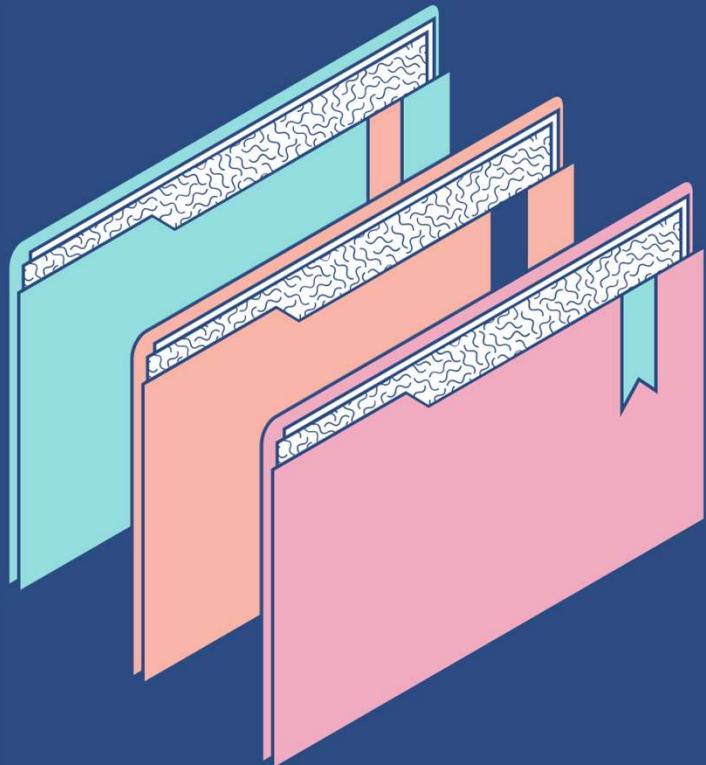


A QUICK INFORMATION GUIDE

Middlesex London Paramedic Service | Community Paramedicine Program

Helping to build your healthcare team to better support you and your patients





Agenda

KEY TOPICS DISCUSSED IN THIS PRESENTATION

- What are community paramedics?
- How paramedics can enhance and improve your practice?
- Which patients can they support in your practice?
- How can you add the Middlesex-London Community Paramedics to your team!

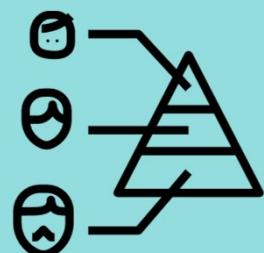


What is a Paramedic?

- Government regulated healthcare professionals who provide care under the paramedic/ ambulance service as part of the emergency response system
- Delegated the ability to perform controlled acts and other advanced medical procedures by a network of base hospital physicians
- Multiple levels requiring academic medical qualifications set by accredited national standards
 - Primary Care Paramedic (PCP)
 - Advanced Care Paramedic (ACP)
 - CBRNE/HRT/Tactical Paramedic
 - Critical Care Paramedic (CCP)



3250 Square Kilometers



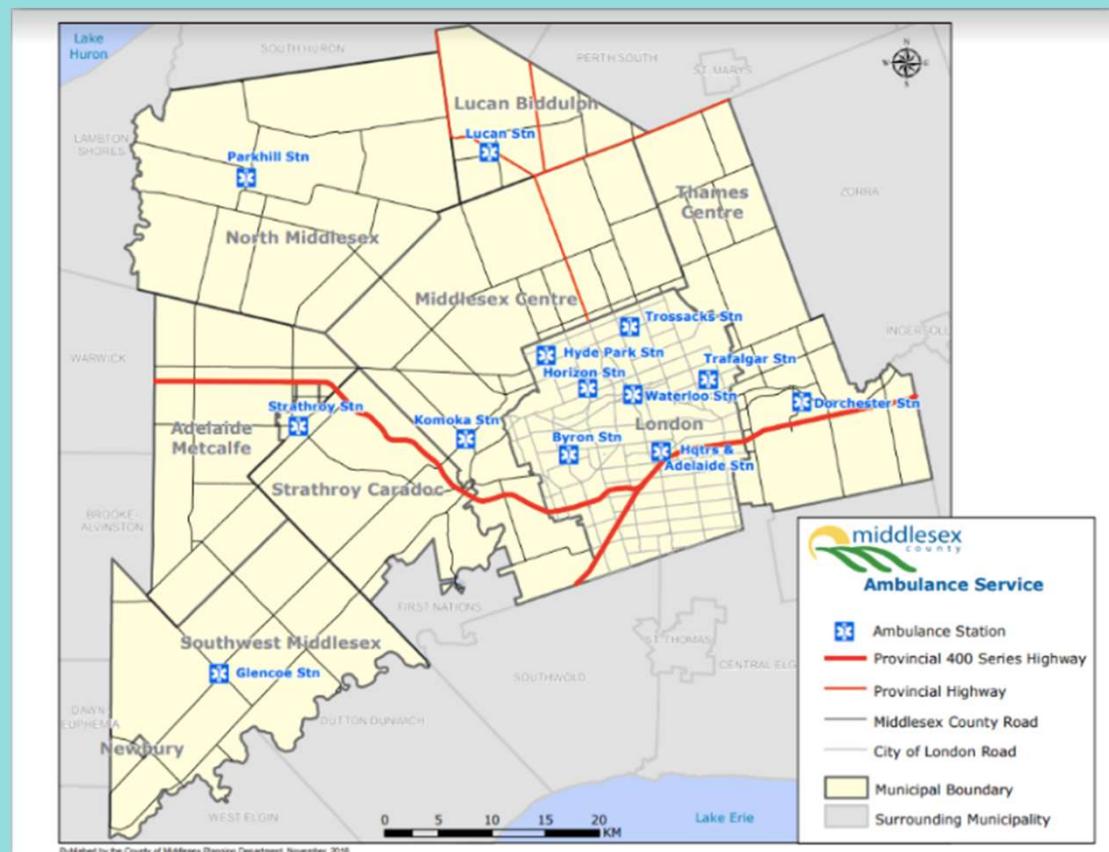
Over 400,000 patients with
16% of those patients being
older adults



14 paramedic stations and
>350 paramedics



94,000 calls annually
50% placed by older adults
1 call every 6 minutes

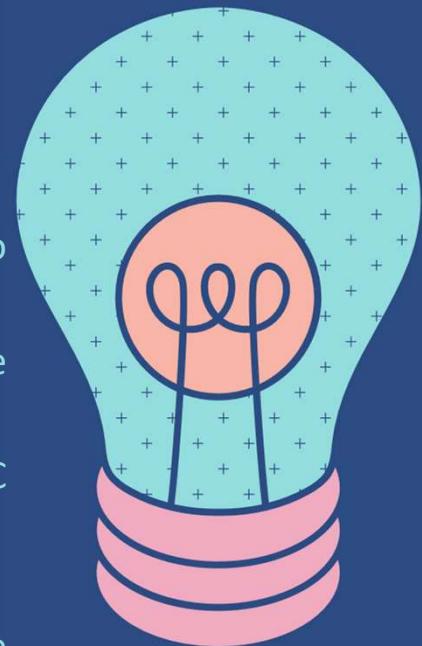


Community Paramedicine for Patients Awaiting Long-Term Care

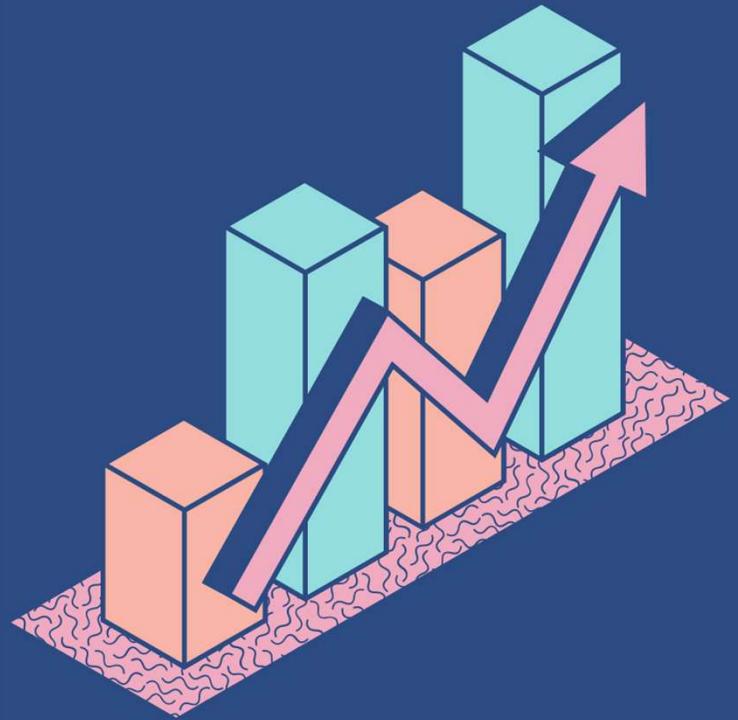
HELPING TO SUPPORT PATIENTS

- Community Paramedicine is a model of community based health care shown to reduce non-essential 911 calls and avoidable emergency room visits
 - The MOHLTC is funding the CPLTC program to support patients currently on the wait list for LTC or those who are soon to be eligible
 - The CPLTC is one solution to attempt to address systemic barriers to LTC development and the growing demand for Long Term Care

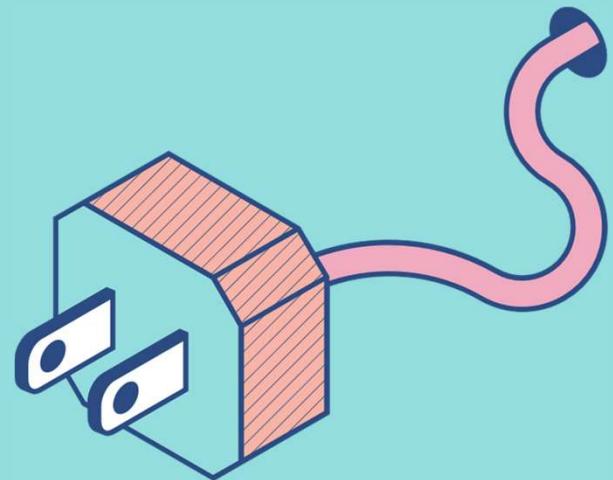
In our community of Middlesex-London more than 1000 patients are currently on the waitlist for Long-Term Care



Improving patient
outcomes by
supplementing and not
replacing care delivered
by other providers



Community Paramedics can
keep your patients connected
to care 24/7/365



Working together

AS OF JUNE 3RD, 2021

Family Physicians and NPs will have the collaborative support of paramedics during the day and an on-call team of paramedics and palliative care physicians overnight

8 am - 5 pm

Family doctors and NPs have a community paramedic on their team

On-Call Support from a team of palliative care physicians

5 pm - 8 am



Primary Care with Integrated Community Paramedicine

- Community paramedics support primary care with a
 - Timely
 - Mobile
 - Reliable response
- They support patients 24/7 and can always attend in the home to support patients and families
- They work with you to help you have timely accurate information to help keep your patient safe and at home

Expanded Scope of Practice



Point of Care Testing:

- COVID-19 Nasopharyngeal & Rapid Testing
- Urinalysis
- Blood tests



Vaccine Administration:

- COVID-19
- Influenza



Chronic Disease Management:

- COPD Exacerbation
- Heart Failure Exacerbation
- Hypoglycemia
- IV access and fluid therapy



Palliative Care Directives:

- Nausea or Vomiting
- Hallucination or Agitation
- Pain or Dyspnea
- Terminal Congested Breathing
- Intravenous and Fluid Therapy
- ICD Deactivation
- COVID-19 Nasopharyngeal & Rapid Testing
- Status Seizures
- Terminal Bleeds
- Field Pronouncement of Death

Benefits to Family Physicians & Nurse Practitioners

HOW COMMUNITY PARAMEDICINE HELPS YOU
DO YOUR WORK

Allows primary care to
be more flexible

Connects patients to a
24/7 care team



Allows access to more
resources

How to connect your patients to Community Paramedicine

1 ————— 2 ————— 3 ————— 4 ————— 5

STEP

Who is eligible?

Patients on the waiting list for long term care

Those who are soon to be eligible for LTC

Those eligible based on home and community support services care coordinator assessment

STEP

Review Patient Care Directives

Reach out to a member of the LMPCA or the Community Paramedicine team if you have any questions!

STEP

Complete the Community Paramedicine Referral Form

STEP

Sign off the Patient Care Directives

Return completed directives to allow community paramedics to perform delegated acts on your behalf

STEP

Care for your patients in the community!

Do you have any questions?

Send it to us! We hope you learned something new.

Please reach out if you have questions or would like to participate!

Dustin Carter (dcarter@mlems.ca)

Brittany D'Angelo (bdangelo@mlems.ca)

Madonna Ferrone (mferrone@argi.on.ca)



Heart Failure Case Reviews



Case #2

67 y.o. male

Past Hx

- June 2019 anterior MI with PCI to LAD and circumflex with DES; LVEF 25 %; started optimization of medical treatment
- August 2019 LVEF still 25% and had ICD implanted

Referral to HFC October 2019 by Family Physician

- Describing peripheral edema, orthopnea, PND and SOBOE
- Somewhat noncompliant with diet

Medications:

- Bisoprolol 10mg daily
- Perindopril 2mg daily
- Spironolactone 25mg daily
- Lasix 80mg bid
- ASA 81mg daily
- Ticagrelor 90mg bid
- Started on IV for Lasix at home

Examination:

- BP 104/70 P- 84 bpm NSR
- Crackles bilaterally in bases
- JVP at angle of jaw
- 3+ peripheral pitting edema R=L

Labs: Na 140; K 3.6; Creatinine 107

What would you do now?

1. Increase Perindopril
2. Add Entresto
3. Add Ivabradine
4. Stop Perindopril and replace with Entresto
5. Add SGLT2i

Started on:

- Entresto 24.3/ 25.7mg bid was started and Perindopril stopped
- 3 days later:
 - NA 138, K 3.8, Creatinine 110, weight decreasing as expected, BP 100/75 P- 85 bpm

7 days later

- BP 105/80
- P- 90 bpm
- JVP 3cm ASA,
- minimal peripheral edema
- lungs clear
- Na 139, K 3.7, Creatinine 105
- ECG: NSR
- IV Lasix stopped and switched to FDR with oral Lasix

What would you do to optimize therapy?

1. Increase Entresto
2. Start Ivabradine
3. Start SGLT2i
4. Increase Spironolactone
5. Nothing, because it is too soon to make changes

Result

- Ivabradine 2.5mg bid was started
- 2 weeks later patient was reviewed
 - BP 110/70, P- 80 bpm
 - Na 140, K 4.0, Creatinine 100, ECG: NSR, JVP 2cm ASA, no peripheral edema

What else would you do now to optimize therapy?

1. Increase Entresto
2. Start SGLT2i
3. Start Ivabradine
4. Increase Entresto and Ivabradine
5. Increase Spironolactone