

CSHP-BC PAM

Take the Power Back

How pharmacists can empower patients in decision-making

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Plan for today

Discuss how pharmacists can engage in clinical & research roles to make healthcare more patient-centered

Including my own experiences with:

1. Clinical: PHARM-HF clinic & clinical trial
2. Policy: Pharmacist involvement in developing guidelines & decision aids
3. Research: Integration of Shared Decision-Making in Heart Failure Pharmacotherapy

PHARM-HF

(Pharmacist-led Rapid Medication optimization
for Heart Failure with reduced ejection fraction)
clinic



Heart failure (HF) in Canada in 2023

HEART FAILURE IS A GROWING EPIDEMIC



HEART FAILURE
is on the
RISE
in
CANADA.



750,000
CANADIANS
are living with
HEART FAILURE.



100,000
CANADIANS
are diagnosed
each year with
HEART FAILURE.



1 in **2**
CANADIANS
has been touched by
HEART FAILURE.



HEART FAILURE
costs
more than
\$2.8 BILLION
per year.

The HF medication problem

- HF with reduced ejection fraction (HFrEF) makes up ~1/2 of HF cases
- Left untreated, HFrEF: 5-year mortality ~50%
- **Good news:** Several medications improve outcomes in HFrEF
 - Combination can reduce death by ~60% (on average to ~20%)
- **Bad news:** Even without contraindications, few HFrEF patients are on (or have ever tried) these medications

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This is a medication problem... how can pharmacists help fix it?

The HF medication solution: Pharmacists?

- Pharmacists are core members of specialized ambulatory HF clinics
 - Canadian guidelines having a pharmacist on your team 😊
 - But 2020 Canadian survey noted most HF clinics don't have a pharmacist 😞
- Multiple high-quality *randomized* controlled trials (RCTs) show that pharmacists reduce death & hospitalizations, & improve patient quality of life
 - How? By doing what every pharmacist does each & every day
 - Educate patients, healthcare professionals & the public
 - Accurate medication histories/med rec
 - Prevent/treat adverse drug events/drug interactions
 - Improve med adherence & access

Could pharmacists do more in HF?

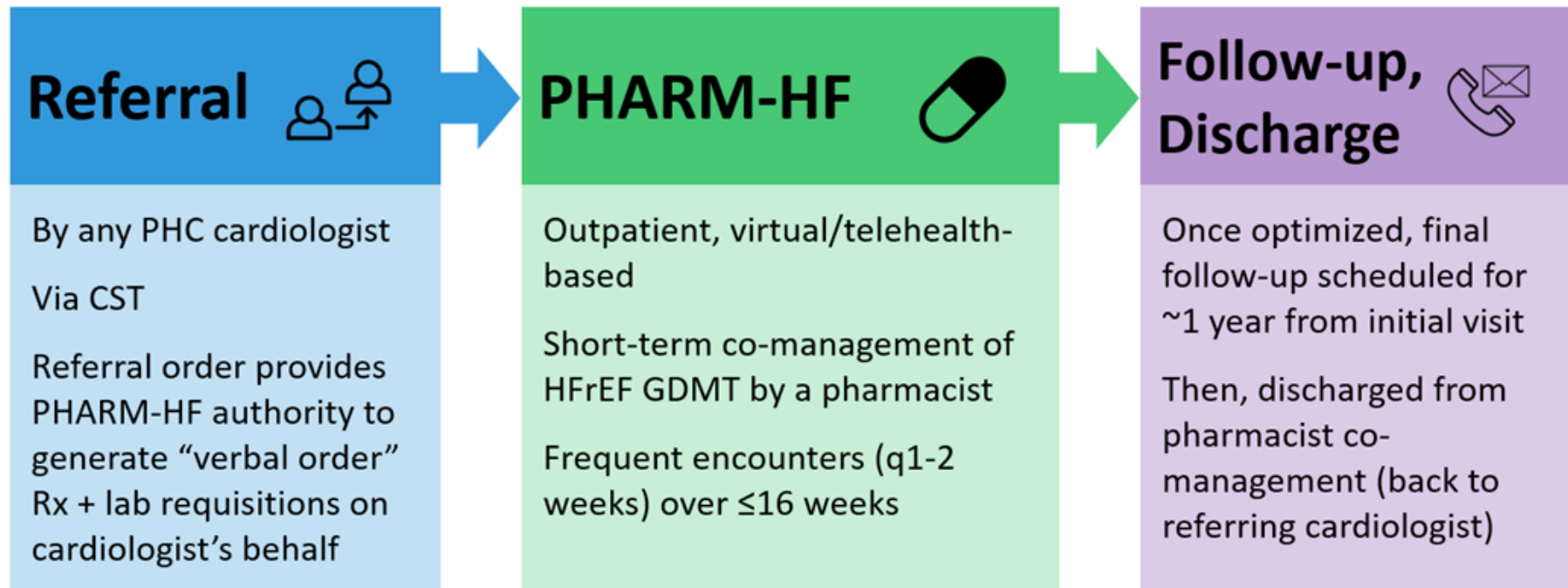
- In *RCTs*, pharmacist expanded scope & independent/collaborative prescribing improves outcomes across several disease states
 - Chronic kidney disease, diabetes, dyslipidemia, hypertension, tobacco use (to name a few)
- **Pharmacist-led optimization of heart failure medications: A systematic review**
In 10 observational studies, pharmacist-led medication optimization associated with:
 - ↑ HFrEF medication use
 - ↓ death/hospitalization

Vivien F.S. Cao B.Sc.Pharm., Pharm.D.¹  | Emily Cowley Pharm.D.² |
Sheri L. Koshman B.Sc.Pharm., Pharm.D.³ | Jenny MacGillivray B.Sc.Pharm.¹ |
Margaret Sidsworth B.Sc.Pharm.¹ | Ricky D. Turgeon B.Sc.Pharm., Pharm.D.⁴ 

PHARM-HF

- Established in January 2021 with full support from PHC cardiologists
- Lean structure: One 0.2 FTE pharmacist (me), 1 clerk to book appointments, send lab requisitions

- Pathway:



PHARM-HF: Components of care

Based on best evidence & tailored to local needs

Assessment

In addition to standard HF assessment:

Kansas City Cardiomyopathy Questionnaire-12

HF risk scores (e.g. **MAGGIC**)

Comprehensive assessment of medication **adherence**, trajectories, & **barriers** to adherence

Interventions

Initiate or titrate modern HFrEF GDMT

- Max-tolerated ARNI + BB + MRA + SGLT2i
- Adjuncts (e.g. ivabradine, omecamtiv mecarbil, vericiguat) as eligible

Rx sent directly to pharmacy

Remove access barriers, streamline therapy

Discussions facilitated with HFMedChoice

Verbal + electronic patient instructions/education

Documentation

Initial & final encounters: Detailed consult letters, including all HRQoL & assessment data

Follow-ups: Brief letters

Using CST Powerforms for standardized data collection ready for QI/research

PHARM-HF: The patient experience



Improving Care | Putting Patients First

Access to Care

Cardiology & Cardiovascular Disease

Drugs & Pharmaceuticals

Patient-Centred Care

Discover PHARM-HF, a clinic connecting pharmacists with patients with heart failure

<https://cheos.ubc.ca/research-in-action/discover-pharm-hf-a-clinic-connecting-pharmacists-with-patients-with-heart-failure/>

PHARM-HF: Early experience

Before-after study of **HFrEF patients** seen by PHARM-HF & from clinic inception (Jan 2021) & discharged by Feb 2023

- Median 5 pharmacist encounters/patient (interquartile range 4-7)

Objectives: Evaluate changes in medication use, cardiac function & remodeling with PHARM-HF co-management

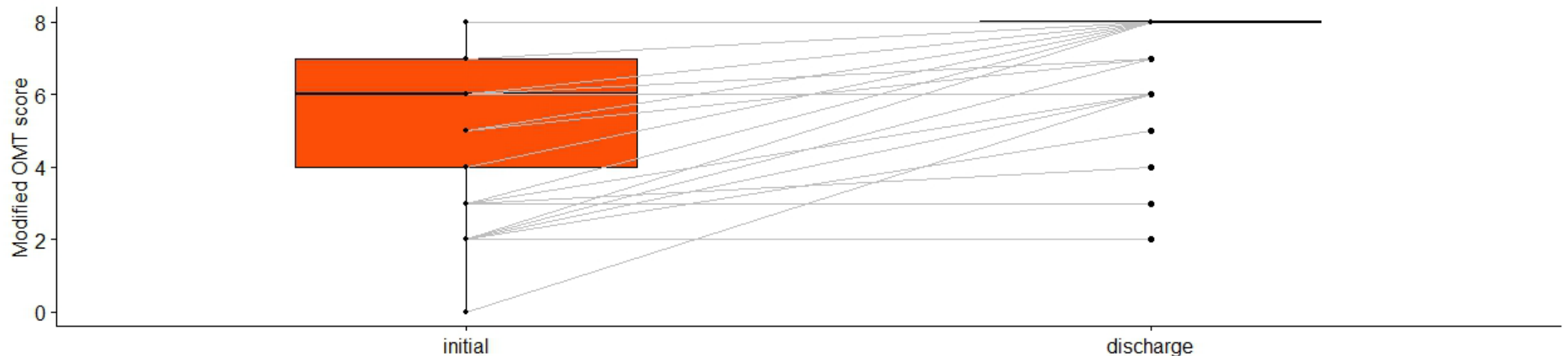
Baseline characteristics	n=81
Age	Median 68 (range: 34-82)
Female sex	21%
Atrial fibrillation	35%
Diabetes	31%
Prior MI	30%
Ventricular arrhythmia	16%

PHARM-HF: Early experience

Primary outcome: Modified optimal medical therapy (OMT) score

Total score 0-8 based on use & attainment of max-tolerated doses of ACEI/ARB/ARNI, beta-blockers, MRAs, SGLT2 inhibitors

- Median: 6 @baseline → 8 @discharge ($p < 0.00001$)



PHARM-HF: Early experience

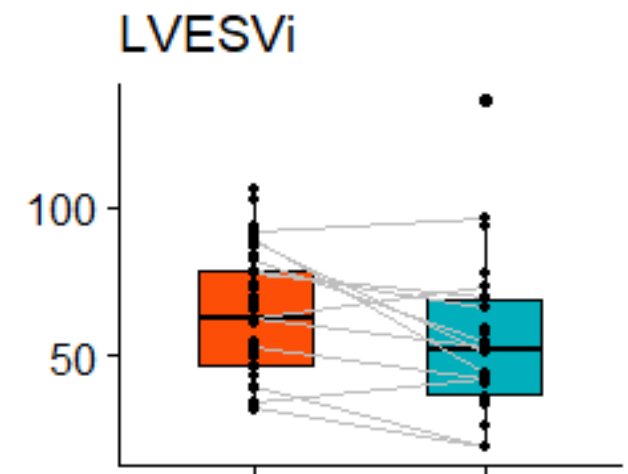
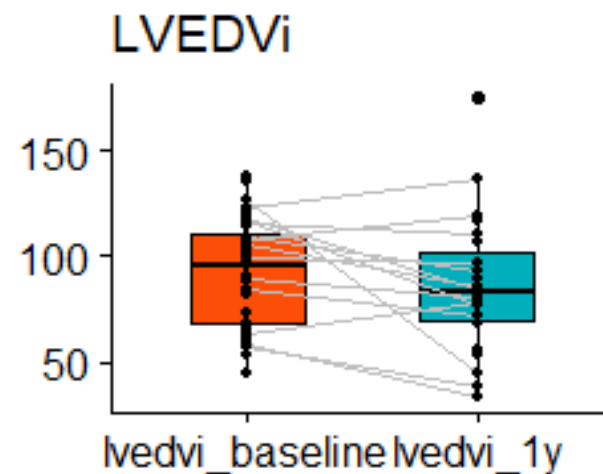
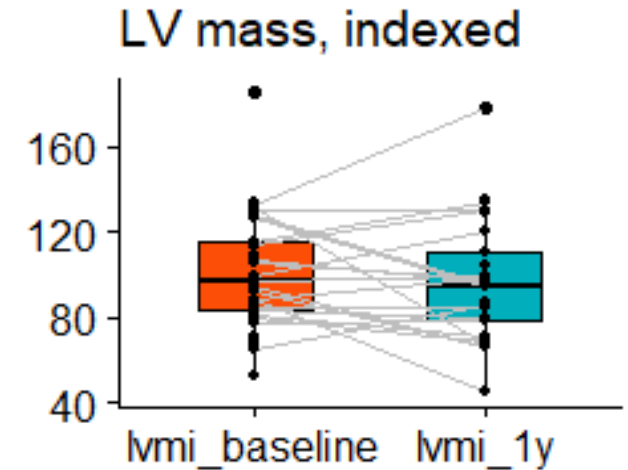
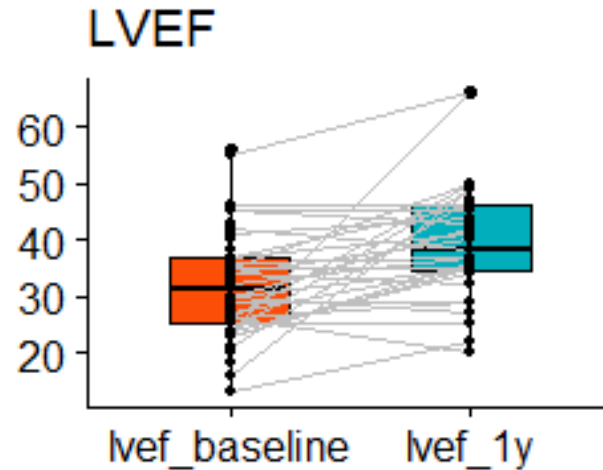
Secondary outcome: Change in use of individual medication classes

Medications	Before	After
ACEI/ARB/ARNI	97%	99%
ARNI	57%	80%
Beta-blocker	94%	96%
MRA	69%	90%
SGLT2 inhibitor	48%	85%
Digoxin	4%	0%

PHARM-HF: Early experience

Secondary outcome: Cardiac function & remodeling

- Median LVEF improved from 30% to 38% ($p < 0.001$) at 1 year
- Similarly, left ventricular mass & volumes generally declined
 - negative remodeling = predictor of lower death/hospitalization (i.e. a good thing)



PHARM-HF: Is early experience data enough?

- Enough to **encourage** us and keep going!
- But single-centre before-after study is **low level evidence**
 - Doesn't give a good sense of how this can generalize & translate elsewhere, with other pharmacists, with different delivery strategies, etc
 - Won't convince
 - Guideline committees to recommend this as standard of care
 - Policymakers to fund this sort of service
 - Other centres/non-MDs to adopt

What do we need to do next?

PHARM Optimal-HF trial

D Allocation-concealed, open-label, pragmatic randomized controlled trial

P **Adults with HFrEF, NYHA 1-3 on a stable or declining dose of loop diuretic within 1 week of first visit to Heart Function clinic**

- Exclusions: Already receiving target doses of ARNI-based HFrEF "quadruple therapy"

I **Pharmacist-led HFrEF medication optimization + usual HFC care**
(PHARM-HF clinic management protocol)

C **Usual HFC care alone**

- O**
- **60-patient pilot**: Feasibility at St. Paul's Hospital (*now recruiting*)
 - **Subsequent definitive, multicentre trial**: Modified OMT score; health-related quality of life, LVEF, composite of death or worsening HF

Pharmacist involvement in clinical practice guideline development



Few pharmacotherapy guidelines include a pharmacist

- 4/10 guidelines have at least 1 pharmacist author
 - ~50% of these had only 1 pharmacist (average 12 other authors)
 - Pharmacists represent ~7% of all guideline authors
- **Most** pharmacist authors: Emergency medicine, critical care, GIM
- **Least** pharmacist authors: Onc, peds, cardiology (☹), geri

Pharmacists lead & shape guidelines with their expertise in pharmacotherapy & EBM

2021 Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in Adults

Glen J. Pearson, PharmD,^{a,‡} George Thanassoulis, MD,^{b,‡} Todd J. Anderson, MD,^c
Arden R. Barry, PharmD,^d Patrick Couture, MD, PhD,^e Natalie Dayan, MD,^f

CCS/CHFS Heart Failure Guidelines Update: Defining a New Pharmacologic Standard of Care for Heart Failure With Reduced Ejection Fraction

Primary Panel: Michael McDonald, MD (Co-chair),^a Sean Virani, MD (Co-chair),^b
Michael Chan, MBBS,^c Anique Ducharme, MD,^d Justin A. Ezekowitz, MBBCh,^e Nadia Giannetti, MD,^f
George A. Heckman, MD,^g Jonathan G. Howlett, MD,^h Sheri L. Koshman, PharmD,^e

The 2020 Canadian Cardiovascular Society/Canadian Heart Rhythm Society Comprehensive Guidelines for the Management of Atrial Fibrillation

Jason G. Andrade, MD, (Co-chair),^{a,b} Martin Aguilar, MD, PhD,^b Clare Atzema, MD, MSc,^c
Alan Bell, MD,^c John A. Cairns, OBC, MD,^a Christopher C. Cheung, MD, MPH,^a
Jafna L. Cox, MD,^d Paul Dorian, MD, MSc,^c David J. Gladstone, MD, PhD,^c Jeff S. Healey, MD,^e
Paul Khairy, MD, PhD,^b Kori Leblanc, ACPR, PharmD,^c M. Sean McMurtry, MD, PhD,^f

Clinical Practice Guidelines

PEER simplified chronic pain guideline

Management of chronic low back, osteoarthritic, and neuropathic pain in primary care

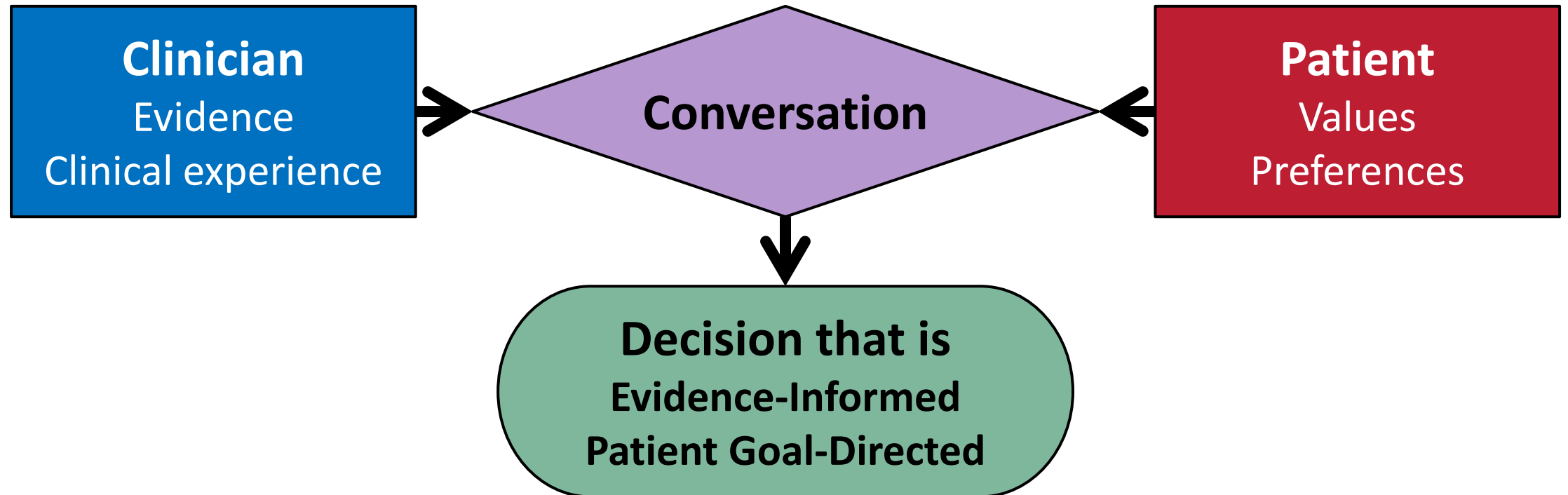
Christina S. Korownyk MD CCFP Lori Montgomery MD CCFP FCFP
Jennifer Young MD CCFP(EM) FCFP Simon Moore MD CCFP
Alexander G. Singer MBBCh BAO CCFP Peter MacDougall PhD MD FRCPC
Sean Darling PhD Kira Ellis BScPT Jacqueline Myers BSP Candice Rochford NP
Marie-Christine Taillefer PhD G. Michael Allan MD CCFP Danielle Perry MSc RN
Samantha S. Moe ACPR PharmD Joey Ton PharmD Michael R. Kolber MD MSc CCFP
Jessica Kirkwood MD CCFP(AM) Betsy Thomas BScPharm Scott Garrison MD CCFP PhD
James P. McCormack PharmD Jamison Falk PharmD Nicolas Dugré PharmD MSc
Logan Sept Ricky D. Turgeon PharmD ACPR Allison Paige MD CCFP Jen Potter MD CCFP
Tony Nickonchuk BScPharm Anthony D. Train MBChB MSc CCFP Justin Weresch MD CCFP
Karenn Chan MD CCFP(COE) Adrienne J. Lindblad ACPR PharmD

Pharmacist involvement in patient decision aids

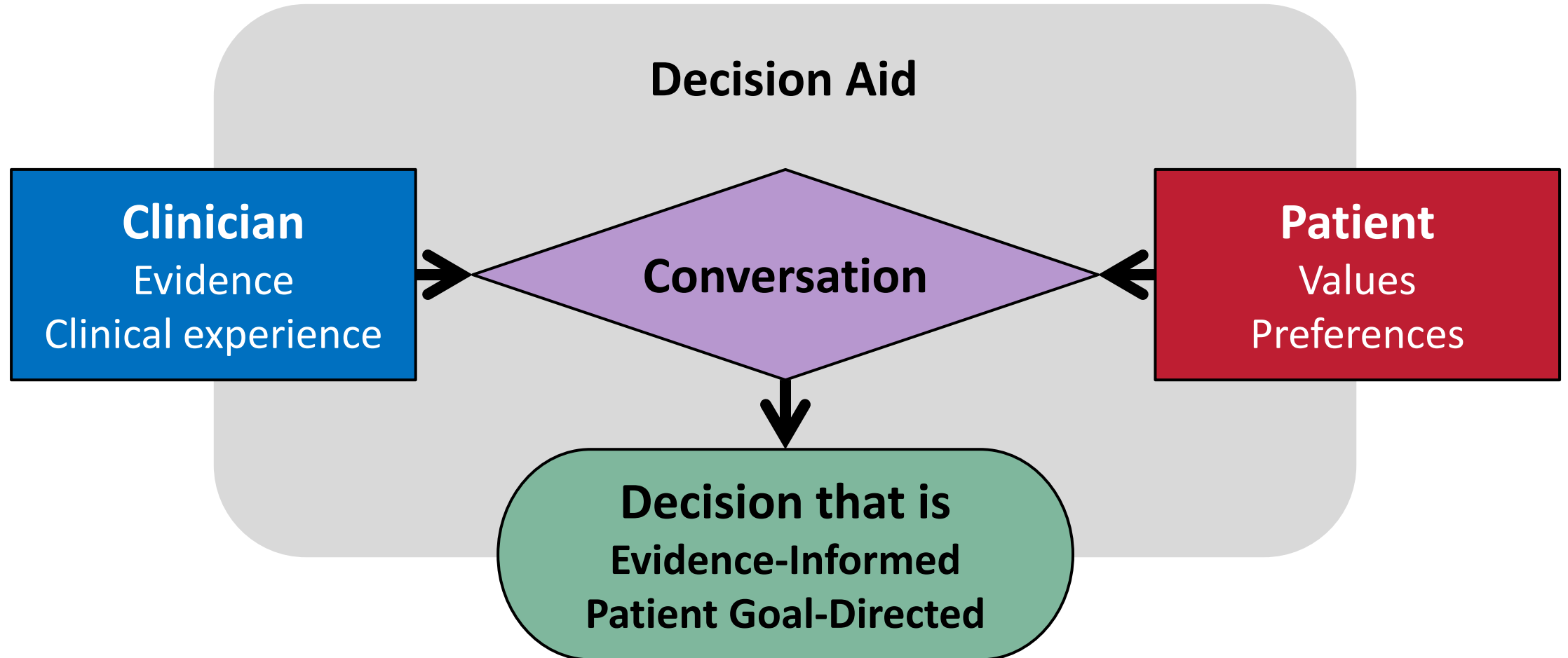
(and lessons learned from researching shared decision-making in heart failure)



Pharmacists: Champions of shared decision-making



Decision aids are tools that facilitate shared decision-making



Pharmacists are key developers of decision aids

SPARCTool - Stroke Prevention in Atrial Fibrillation Risk Tool

for estimating risk of stroke and benefits & risks of antithrombotic therapy in patients with chronic nonvalvular atrial fibrillation

Developed by Peter Loewen, ACPR, Pharm.D., FCSHP



peerevidence.ca/toolbox/

PEER Decision Aid Toolbox

Select a Decision Aid



Diabetes Decision Aid



Pain Calculator

★ James McCormack/Pascal Pfiffner, 2017 ★

Framingham US Data, 10 Year Risk Heart attacks + angina/coronary insufficiency + heart failure + strokes + intermittent claudication	QRISK[®]2-2014 UK Data, 10 Year Risk Heart attacks + strokes	ACC/AHA ASCVD US Data, 10 Year Risk CHD death + nonfatal heart attacks + fatal/nonfatal strokes	PREDICT New Zealand Data, 5 Year Risk Heart attacks + angina + heart failure + strokes/TIAs + peripheral vascular disease
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Age: 50 years

Gender: Male Female

Smoker: Yes No
CVD risk is reversed after 5-10 years of no smoking

Diabetes: Yes No

Systolic Blood Pressure: 120 mmHg
Enter present blood pressure regardless of treatment
 120 mmHg is used for baseline risk

On treatment for BP: Yes No
Click YES if taking blood pressure medication
 Only applies if SBP is greater than 120 mmHg

Total Cholesterol: 3 mmol/L
Cholesterol should be prior to drug treatment
 3 mmol/L is used for baseline risk.
[Click to change to mg/dL.](#)

HDL Cholesterol: 1.3 mmol/L
HDL should be prior to drug treatment
 1.3 mmol/L is used for baseline risk.

Chronic Kidney Disease: Yes No
CKD status is not part of the risk algorithm but is used for calculating the benefit of certain therapies

Relative Benefit: 0%

Benefit often has *nothing* to do with the effect on the surrogate marker. At present, you can only select one intervention at a time.

Physical Activity

Mediterranean Diet vs Low fat

Vitamin/Omega-3 supplements

BP meds (not atenolol/doxazosin)

Low-mod intensity statins

High intensity statins

Fibrates

Niacin

Ezetimibe

Metformin

Sulfonylureas

Insulins

Glitazones

GLPs

DPP-4s

Meglitinides

SGLT2

Smoking Cessation

ASA

[Benefit Estimate Details](#)

Risk Time Period: 10 years

	97.9%	No event
	2.1%	Total with an event
	0.0%	Number who benefit from treatment
NNT	∞	Number needed to treat
	2.1%	Baseline events using baseline factors alone
	0.0%	Additional events "caused" by risk factors

As with all risk calculators, calculated risk numbers are +/- 5% at best. [More information.](#)

[Print Report](#)

The **HFMedChoice.com** story

- The pitch: **Web-based decision aid for clinicians & patients to use together to make shared decisions about HF medications**
 - Individualized estimates of benefits – mortality & hospitalizations
 - Balanced with RCT-based info on side-effects, & other treatment considerations (\$\$\$, routine, etc)
- Developed by a team of HF pharmacists & cardiologists, & shared decision-making academicians



Welcome to HFMedChoice.com

This tool is intended to assist clinicians and their patients in discussions on the potential benefits and harms of medical therapies for heart failure (HF).

Step 1: Assess current risk

MAGGIC

Risk of death at 1 & 3 years



BCN Bio-HF

Risk of death & HF hospitalization at 1-5 years

Demographics

Age 65 years

Sex Male Female

Weight 85 kg

Height 172 cm

BMI 28.7 kg/m²

HF Information

HF Duration 18 months

NHYA Class 1 2 3 4

Ejection Fraction 30 %

Medical History & Labs

Diabetes Yes No

Current smoker Yes No

COPD Yes No

Systolic BP 112 mmHg

Serum creatinine 100 umol/L

Current HF Therapies

ACEI, ARB, ARNI

Beta blocker Yes No

Step 2: Select drug therapy options

Cumulative relative benefit:
24%
(for 3-year mortality)

ACE-I/ARB (below target dose)
[already taking]

ACE-I/ARB (target dose)

Sacubitril-valsartan

Beta blocker
[already taking]

Spironolactone/eplerenone

SGLT2 inhibitor (e.g. dapagliflozin, empagliflozin)

Digoxin

Fish oil (omega-3 FA)

Hydralazine-nitrate
(in black patients; see FAQ)

Ivabradine

Vericiguat

Step 3: Estimated benefits & harms

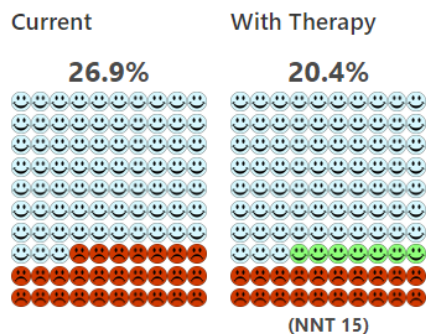
Endpoint: Mortality HF hospitalization The MAGGIC risk score only estimates mortality at 1 and 3 years

Time period: 1 2 3 4 5 year(s)

[Generate Note for EMR](#)

[Save/Share](#)

Risk of dying within 3 years:



No Event Treatment Benefit Event



☹ Possible Side Effects

Displayed percentages represent the absolute risk increase compared to placebo (except for sacubitril-valsartan, which was compared to ACE inhibitor). Only differences found to be statistically significant in randomized controlled trials are shown.

Spironolactone/eplerenone

Decrease in kidney function (1.6%)

High potassium (7.2%)

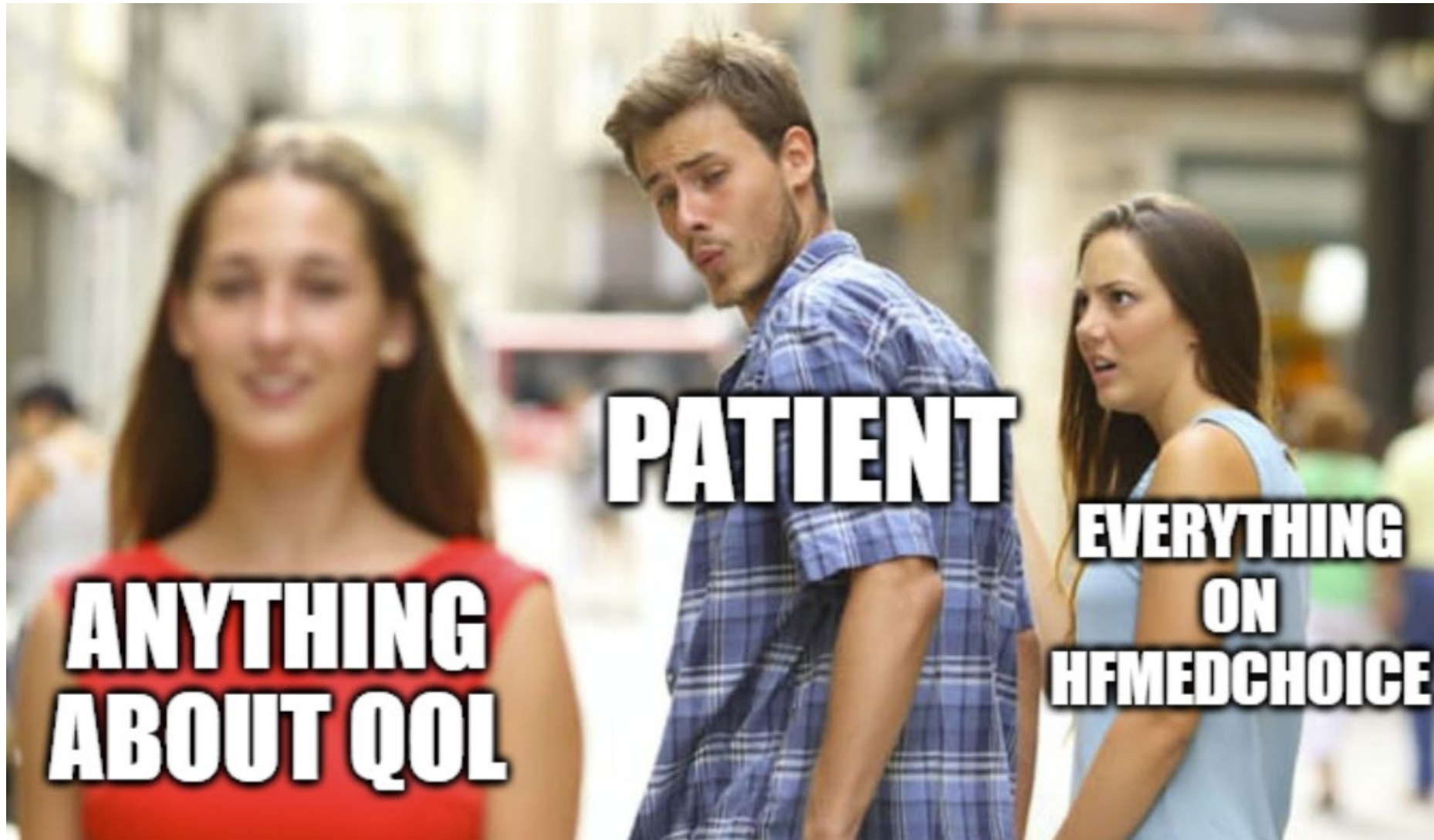
Breast growth/tenderness (spironolactone only) (9%)

📘 Other Treatment Information

Spironolactone/eplerenone

- **Cost:** Spironolactone: About \$25 for 100 days (or \$100/year); Eplerenone: \$215 for 100 days (or \$790/year)
- **Daily routine:** One pill once a day

Who'd have thought... patient engagement is key to developing a patient decision aid



That one conversation sprouted an entire research program

Pharmacotherapy for heart failure with reduced ejection fraction and health-related quality of life: a systematic review and meta-analysis

Ricky D. Turgeon^{1,2*}, Arden R. Barry^{3,4}, Nathaniel M. Hawkins⁵, and Ursula M. Ellis⁶

Patient Educational Needs and Treatment Preferences for Heart Failure Medications

Anmol R. K. Dosanjh¹, Marc Bains², Jillianne Code³, Sean Virani⁴, Ricky D. Turgeon (ricky.turgeon@ubc.ca)⁵

Evaluation of Online Written Medication Educational Resources for People Living With Heart Failure

Simroop Ladhar, BSc,^a Sheri L. Koshman, PharmD,^b Felicia Yang, PharmD,^c and Ricky Turgeon, PharmD^a

Decisional Needs and Patient Treatment Preferences for Heart Failure Medications: A Scoping Review

Blair J. MacDonald, BA, PharmD, Arden R. Barry, BSc, BSc(Pharm), PharmD, ACPR, and Ricky D. Turgeon, BSc(Pharm), ACPR, PharmD

Objectives

Project 1 (year 1)

To identify the decisional needs of patients and clinicians when considering medication options for HFrEF

Project 2 (year 1-2)

(1) To elicit patient treatment preferences and values regarding HFrEF medications
(2) to identify potentially actionable preference pattern subgroups (“preference phenotypes”)

Project 3 (year 2-3)

To create a web-based decision aid for use at the point-of-care by clinicians and patients making HFrEF pharmacotherapy decisions

Project 4 (year 3-5)

To assess the impact of the HFrEF medication decision aid on decision quality