Managing Depression in Heart Failure

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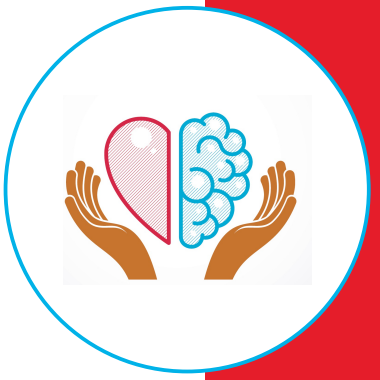
Conflict of Interest Disclosures

- **Karen Harkness – None**
- **Heather Tulloch – None**

Objectives

- Recognize the intersectionality of mental health and chronic disease
- Identify tools that can assist in the diagnosis of depression
- Understand treatment options for depression among patient living with HF



Living with heart failure is emotional.

“ Sometimes you get very, very low. I just sit back and watch the old girl do it. That hits me here, thinking I should be doing that. I know up here that I can't’ and you get very depressed. “

“. This morning after I got into the office for a while I just, uh, cried a little bit, a sense of hopelessness….I’m not capable of doing the walking that I used to…I feel a sense of inadequacy…
Sometimes you just get fed up and think that was a day I just had a real down spiraling. I just ate what I wanted. I put salt on everything, and I didn’t care”

Harkness K et al., J CV Nurs 2015 30:121-35
Deckker R:. J Cardiovasc Nurs 2014; 29(1)

Mr. B

- 64-year-old man with ICM
- MI & CABG 15 years ago, depression after this event
- Current LVEF = 25%
- Recent chest pain
- Reduced exercise tolerance
- Recently separated; 2 adult children
- Alcohol – increased, 3 glasses of wine daily
- Self-employed, recently sold his business
- Isolated due to covid

What is Clinical Depression?

Depression is diagnosed by the presence, for at least 2 weeks, of major depressive symptoms (depressed mood or loss of interest) combined with at least 4 associated symptoms:

- Change in appetite or weight
- Change in sleep behaviour
- Psychomotor impairment
- Fatigue
- Worthlessness or guilt
- Concentration impairment
- Thoughts of death or suicide

Pop Quiz

Approximately 20-50 % of patients with HF meet diagnostic criteria for Major Depressive Disorder.

a) 10%
b) 20%
c) 35%
d) 50%
e) 65%

Prevalence of Depression Among HF patients

- Among Community-dwelling adults in the US = 17% (stable HF patients)
- Outpatient Hospital HF patients – 43% depressed; of which 22% were severely depressed (Freedland et al., 2022)
- Global Rates (>20 countries) – 149 studies; “any” depression 42%; moderate to severe depression = 28% (Moradi et al., 2022)
- SA example - Tertiary care (most class I) – 52.4% met criteria, with 11.6% with “extremely severe depression” (Tsabedze et al., 2021)
- 10-trend in depression among HF patients has remained stable (Chobufo et al., 2020), but both HF and Depression are expected to rise dramatically in the next few years

Moradi et al., Curr Probl. Cardiol, 2022; Tsabedze et al., Int J Mental Health Sys, 2021; Chobufo et al., 2020

Who is at Risk?

- Younger patients (<60); other data says older!
- Women (elderly) – 1.5 times as likely to develop depression
- Marital status (single) or social isolation
- Lower Economic status
- Previous depressive episodes
- HF severity – odds of depression 2.5 times more likely in class 3 or 4, than 1 or 2
- HFpEF vs. HFrEF – Limited data; most studies shows similar rates; 2 recent studies reported higher prevalence rates for HFpEF patients

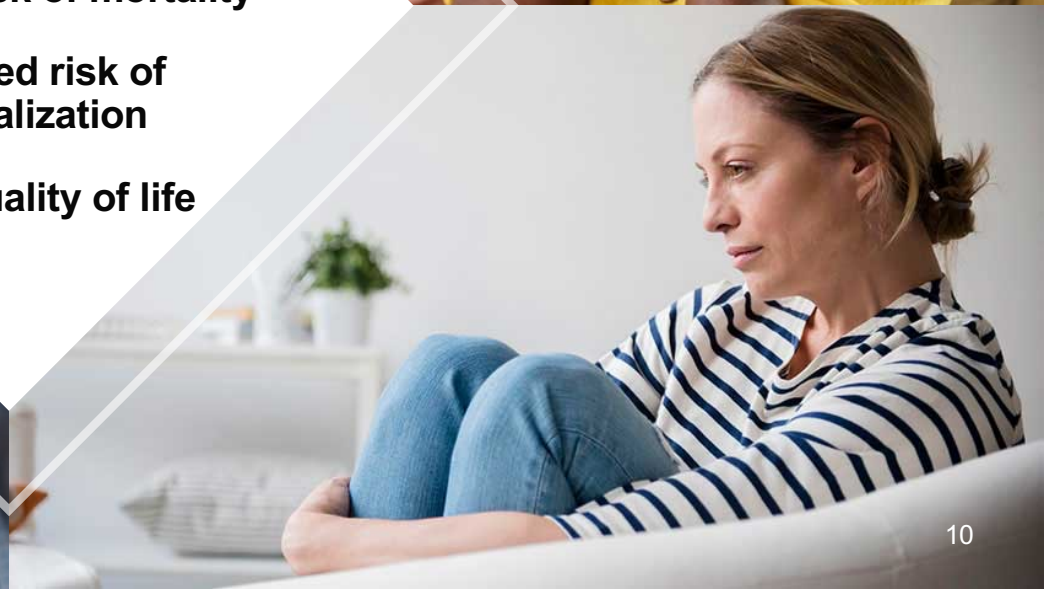
Bekfani et al., 2021; Vu et al., 2021; Chobufo et al., 2020; Moradi et al., 2022

Depression in heart failure is associated with an:

Increased risk of mortality

Increased risk of hospitalization

Worse quality of life



Health care resource utilization, QOL and exercise capacity according to PHQ-9

Health care resource utilization, quality of life, and exercise capacity according to PHQ-9 at baseline.

Outcome	Total N = 308	Minimal (PHQ-9 0–4) N = 152	Mild (PHQ-9 5–9) N = 76	Mod-severe (PHQ-9 10–27) N = 80	P[a] for trend
Healthcare resource utilization					
All-cause admission rate, per 100 person-years	101	87	102	129	0.008
All-cause in-hospital days, per 100 person-years	445	350	563	518	0.055
HF admission rate, per 100 person-years	40	30	39	59	0.024
HF in-hospital days, per 100 person-years	269	182	405	312	0.034
Emergency department visits, per 100 person-years	58	49	58	75	0.15
Health-related QoL					
KCCQ – overall score	66 ± 24	80 ± 20	60 ± 19	45 ± 21	<0.001
KCCQ – overall score <45, %	23.8%	2.6%	26.3%	60.0%	<0.001
KCCQ – clinical score	71 ± 22	83 ± 16	66 ± 19	53 ± 22	<0.001
Exercise capacity					
Six-minute walk distance, m	355 ± 106	370 ± 93	340 ± 112	337 ± 123	0.031

HF: Heart failure, KCCQ: Kansas City Cardiomyopathy Questionnaire.

[a] Adjusted for age, gender, body mass index, race, ejection fraction, HF etiology, diabetes mellitus, systolic blood pressure, sodium and creatinine levels, and HF treatment (devices and medications) at baseline.

Bhatt KN, et al. Depression in Heart Failure: Can PHQ-9 help? Int J Cardiol 2016; 246-250

Interplay between depression and heart failure

There are direct and indirect mechanisms contributing to relationship between heart failure and depression

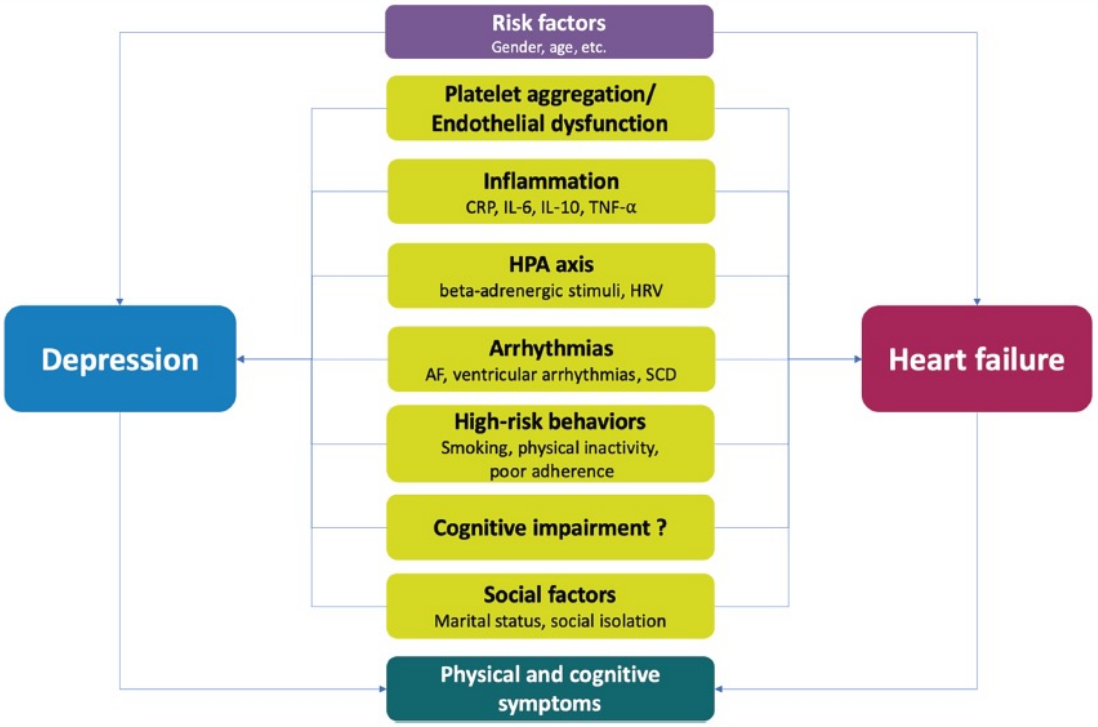
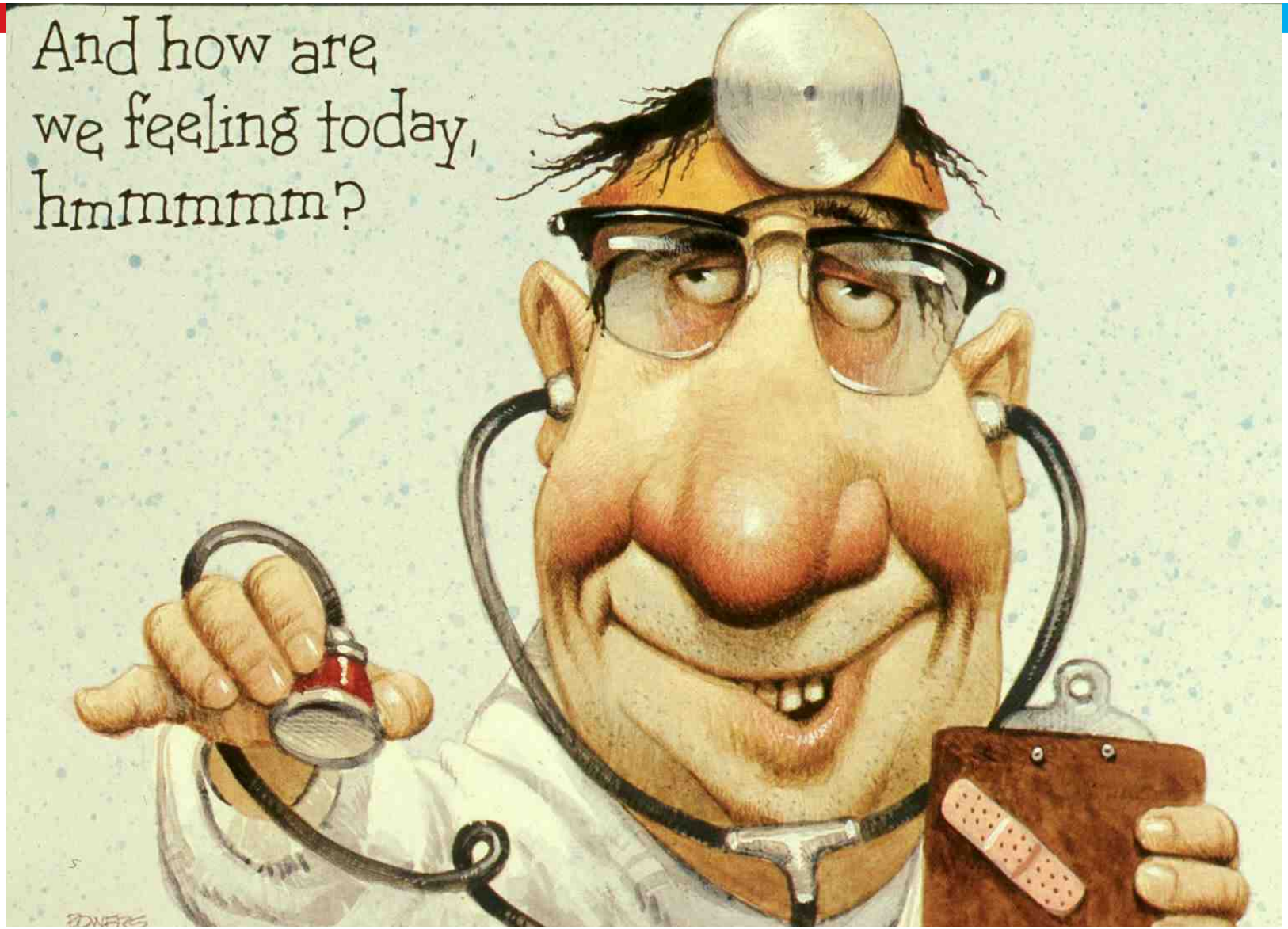


Figure 1 The pathophysiological interplay between depression and heart failure. AF, atrial fibrillation; CRP, C-reactive protein; HPA, hypothalamic–pituitary–adrenal; HRV, heart rate variability; IL-6, interleukin-6; IL-10, interleukin-10; SCS, sudden cardiac death; TNF-α, tumour necrosis factor alpha.

Sbolli M et al., E J Heart Failure 2020; 22: 2007-2017


And how are
we feeling today,
hmmmmm?

Depression Screening Measures

Name	No. of items	Time (min)	Score	Advantages	Disadvantages
Patient Health Questionnaire-2 (PHQ-2)	2	<1	0 to 3-point scale	Short and simple screening tool	• Self-reporting diagnostic instruments • Low sensitivity in patients with CAD
Patient Health Questionnaire-9 (PHQ-9)	9	2–5	0 to 3-point scale	• Based on the nine DSM criteria • Could be used for diagnosis and evaluation of symptom severity	Self-reporting diagnostic instruments
Hospital Anxiety and Depression Scale (HADS)	14 (7 for depression and 7 for anxiety)	2–5	0 to 3-point on Likert scale (0 to 21)	• Simple and short • Reliable screening tool • Focus on anhedonia	• Lack of evaluation of physical symptoms, cognitive symptoms, and suicidal ideation • Not ideal for cardiac units
Beck Depression Inventory-II (BDI-II)	21	10–15	0 to 3-point scale	• Simple, clear and short • Could evaluate physical and cognitive symptoms • Could be used for evaluation of symptom severity • Good test–retest reliability	Self-reporting Not suitable as diagnostic tool
Hamilton Rating Scale for Depression (HAM-D)	17 (updated to 21)	15	Either 0 to 4 or 0 to 2 point scale	• Short • Based on DSM criteria • Could be used for the evaluation of symptom severity and response to treatment	• Test–retest reliability is controversial • Requires trained interviewers • Lack of symptom domains related to depression
Geriatric Depression Scale (GDS)	15 or 30	5–7	0 to 1-point scale (yes/no)	• Easy and simple • Suitable for primary care-based depression screening	• Risk of underestimation of depression by excluding somatic symptoms
Cardiac Depression Scale (CDS)	26	5	0 to 3-point scale	• Easy • Valid and reliable cardiac specific measure for depression • Screening instrument for early identification	Self-reporting

Table 2 from Sboli et al., EJHF, 2020

Patient Health Questionnaire-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

PHQ-2 includes these first two items only. Consider additional screening with the PHQ-9 if item 1 or 2 is checked as at least ‘ more than half the days’ or PHQ-2 total score is 3

To score the PHQ-9 instrument:

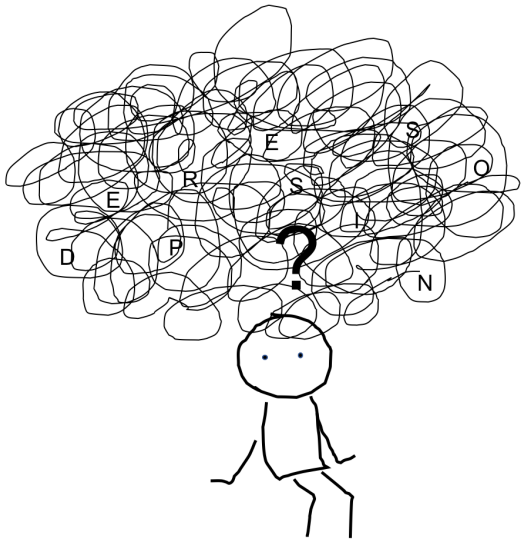
- Tally the numbers of all the checked responses under each heading.
- Add the numbers together to total the score of the questionnaire.

Score	Depression Severity
0 - 4	None-minimal
5 - 9	Mild
10 - 14	Moderate
15 - 19	Moderately severe
20 - 27	Severe

The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606-613

When should we screen for depression?

a) During an acute hospital admission
b) Early post-discharge
c) 1 month post discharge
d) Outpatient clinical visits
e) All of the above

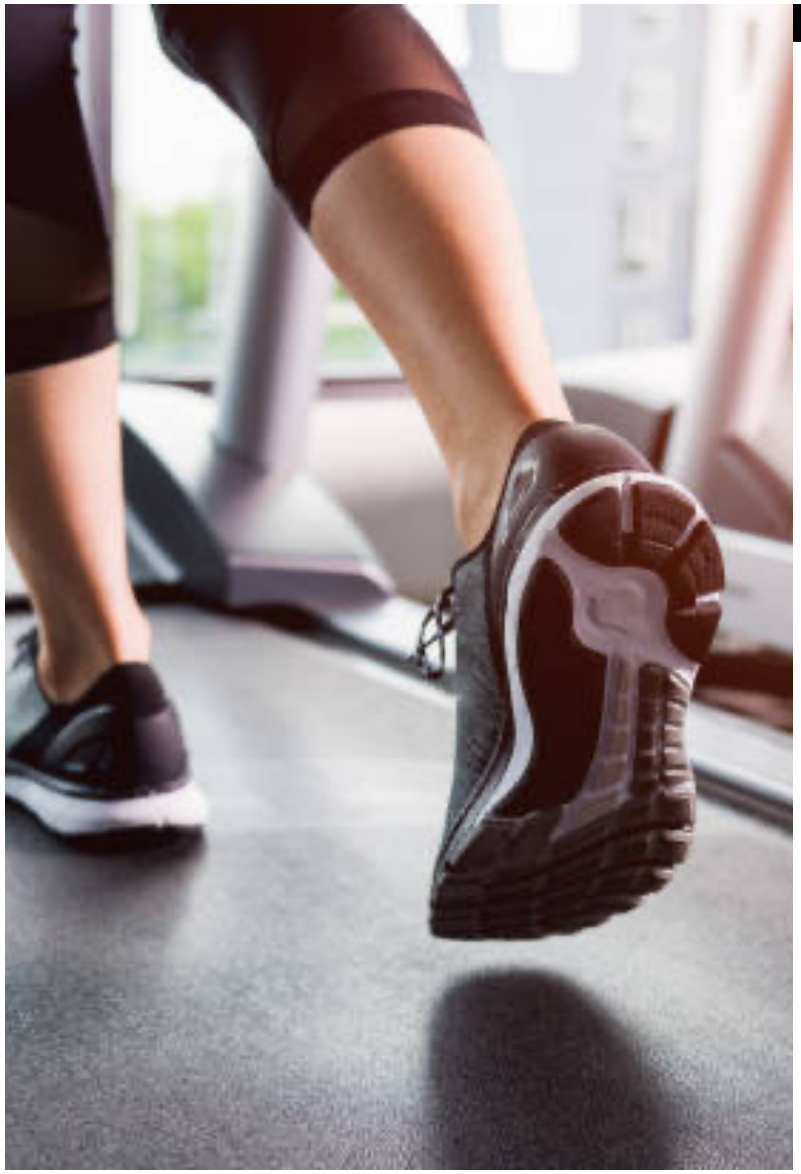


Treatment Options

Non-pharmacological Interventions

- Exercise
- Psychotherapy

Pharmacological Interventions



Effects of Exercise Training

- Systematic Review and Meta-Analyses
- 19 RCT, N=3447 patients with HF
- Walking, cycling; moderate intensity
- **Results:**
  - Exercise led to significant reductions in the symptoms of depression (SMD = – 0.38)
  - Consistent finding across age, EF (< 50), location of training (e.g., home, centre), program duration

Tu et al., 2014

TaiChi and Qigong for Depressive Symptoms

- TQP – slow, gentle movements synchronized with regulation and meditation to stretch and relax the muscles
- Systematic Review & Meta-Analysis
- 8 RCTs, N=481 patients with HF
- **Results:**
  - TQP contribute to depression remission (SMD = -0.66)
  - Moderately depressed benefited more than mildly depressed patients
  - HFrEF greater benefit than HFpEF

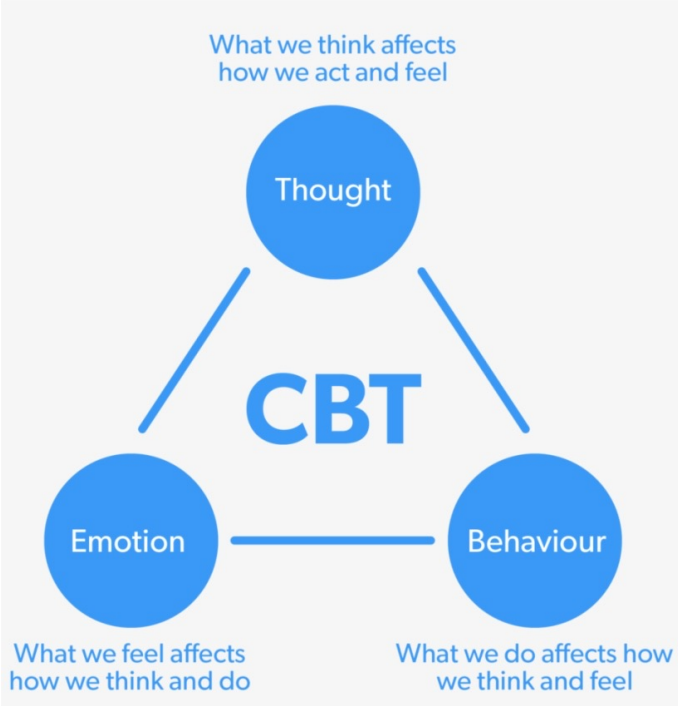
Jiang et al., 2021

Psychosocial Interventions for HF

- Systematic review and Meta-Analysis
- Evaluate the ability of psychosocial interventions to reduce depression
- 15 RCTs, CBT or SMT
- N=1370 patients

Results:

- Standard mean difference = -0.41
- Interventions produced lower rates of hospitalization
- More effective for women with NYHA class I/II
- Longer duration = better results (12 weeks vs 6 weeks)



Chernoff et al., Psychosomatic Medicine, published ahead of print

Pharmacotherapy

Study	Medication	Mean follow-up	Results	Notes
Gottlieb pilot[1] (N=28)	Paroxetine	12 weeks	Paroxetine > placebo (69% vs. 23% recovery, BDI <10)	Small sample, no other studies since??
Fragus[2] (N=37)	Citalopram	8 weeks	Depression improved in both groups; no sig diff	Mild depression Short follow-up
SADHART-CHF[3] (N=469)	Sertraline	12 weeks	Depression improved in both groups; no sig diff	mild depression low doses
MOOD-HF[4] (N=372)	Escitalopram	24 months	Depression improved in both groups; no sig diff	

1. Gottlieb et al., 2007; 2. Fragus et al., 2009; 3. O'conner et al., 2010; 4. Angermann et al., 2016

Safety

- SSRIs – Overall, well tolerated, but some inconsistent findings
- Recent Meta-analysis (He et al., 2020)
  - 2 RCTs + 6 observational studies found an increased risk of all-cause mortality in HF patients treated with antidepressants
- Risks for HF patients
  - Increase the risk of bleeding among those with antiplatelet or anticoagulant therapy
  - Increase the risk of QT prolongation
    - citalopram and escitalopram lead to greatest prolongation
  - Risk of interactions with other CVD meds
    - sertraline, citalopram and escitalopram have lower risk of interactions, while paroxetine have higher risk
- Tricyclics are contraindicated in patients with CVD
  - Risk of hypotension, arrhythmia, MI
- Polypharmacy is also high; patients opt out of another medication

He et al., 2020

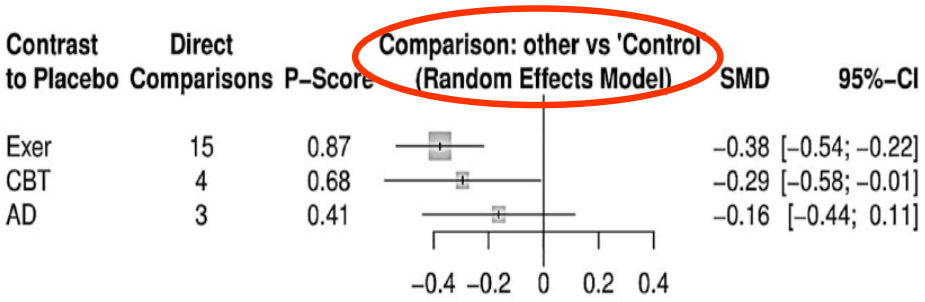
Comparing Exercise, CBT & Antidepressants

- 21 RCTs: 15 exercise, 4 CBT, 3 antidepressants, all compared to placebo or usual care
- 4563 patients with HF
- Primary outcome: change in depressive symptoms

Exercise Training			
0.08 [-0.23;0.40]	Cognitive Behavioural Therapy		
0.21 [-0.10;0.53]	0.13 [-0.26;0.53]	Antidepressants	
0.38 [0.22;0.54]	0.29 [0.01; 0.58]	0.16 [-0.11;0.44]	Placebo/Usual Care

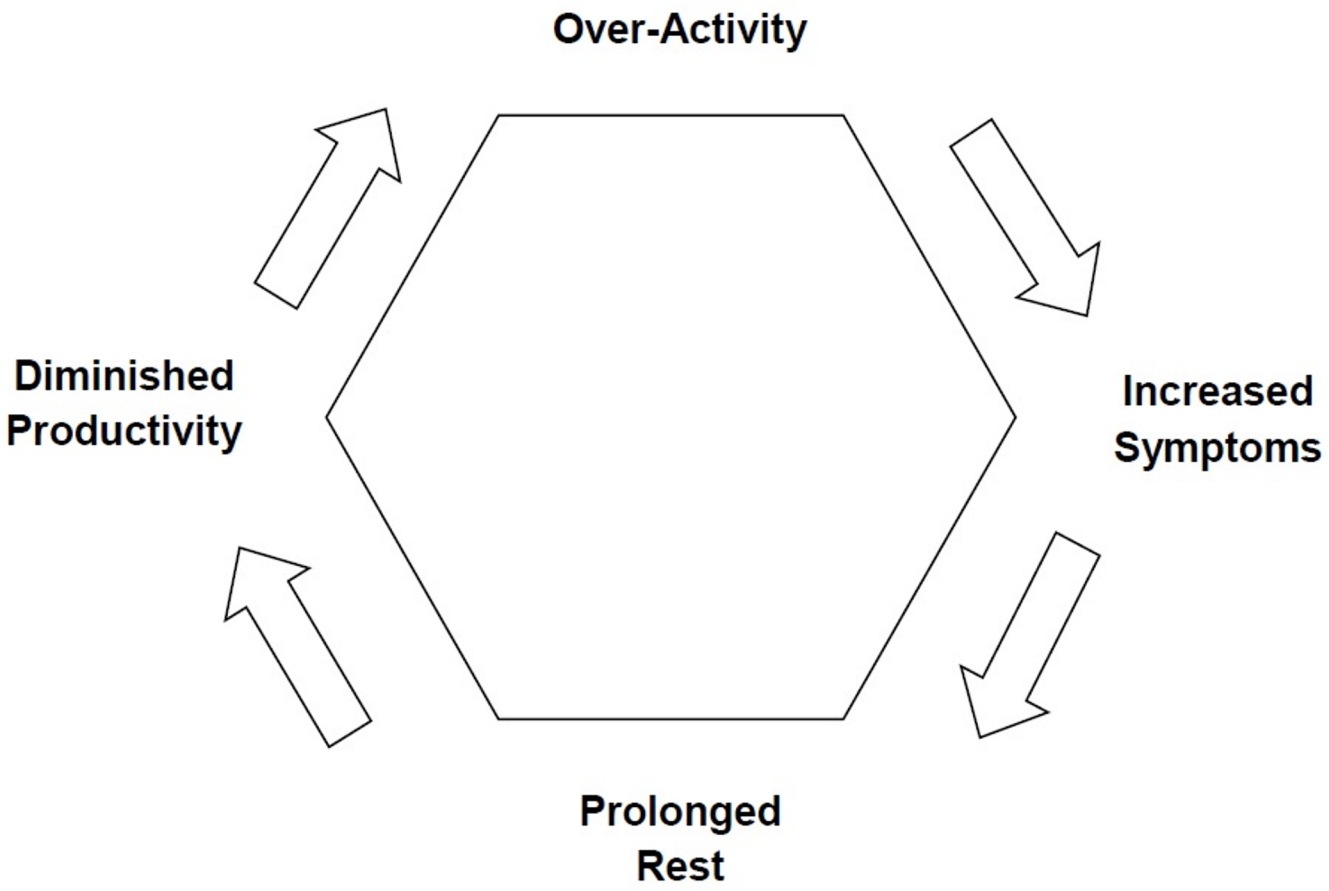
Results:

- Exercise and CBT led to reduced depression, but not antidepressants
- No differences between the 3 groups
- Subgroup analyses: Exercise has a better therapeutic effect among younger than older patients



Das et al., J Psychiatric Res, 2019

The Activity-Inactivity Cycle:



Manage Symptoms with Pacing

- Pacing = do something at a speed that is steady and that allows one to continue without becoming too tired
- Plan for activity and rest so that you can maintain an even level of energy throughout the day (think about having a pacer in a marathon)
- This prevents waiting for a good day and then push oneself too hard with activities, then paying for it!!
- Proper pacing requires planning and thought – Personal values will help patients to plan successfully

4 P's of Pacing

- Prioritize – select the most important activities, then do them first when you have the most energy
- Plan – your days, weeks and even months; space out your activities
- Pace –break bigger jobs into smaller tasks; give yourself more time
- Position – sit for some tasks to use less energy

Strategies for Screening and Treatment

- Standardized screening protocol
- Embed the screener into the EMR
- Provide triage algorithm with clear steps for follow-up
- Refer for treatment, as required
- Create a list of mental health resources to provide to patients

HF Resources

- **Heartandstroke.ca/connect** – online peer support and newsletter (facebook)
  - Community of survivors
  - Care supporters' community

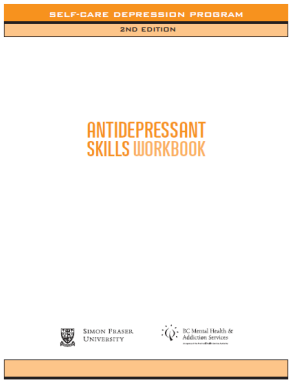
- **Living with Heart failure** – brochure from HSF
  - https://www.heartandstroke.ca/-/media/pdf-files/canada/health-information-catalogue/en-living-with-heart-failure.pdf

- **Heartlife foundation** – engage, educate and empower to improve QoL of patients.
  - www.heartlife.ca

Self-Management Workbooks

Antidepressant Skills Workbook

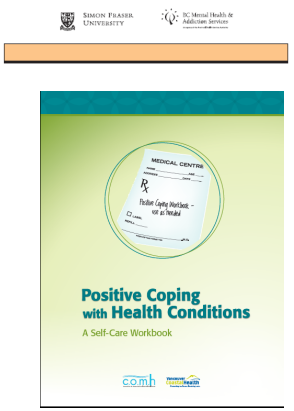
- available in multiple languages;
- download free
- https://www.sfu.ca/carmha/publications/antidepressant-skills-workbook.html



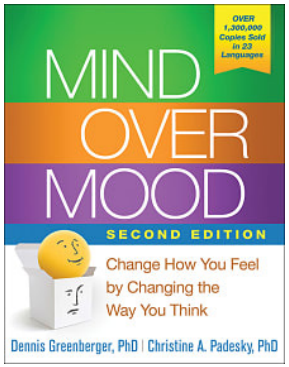
Positive living with Health Conditions

- Download free

https://psychhealthandsafety.org/pcwhc/



Other Workbooks (fee):



Online Resources

- **Wellness together Canada**: online resources; trained volunteers and MHP: https://www.wellnesstogether.ca/en-CA

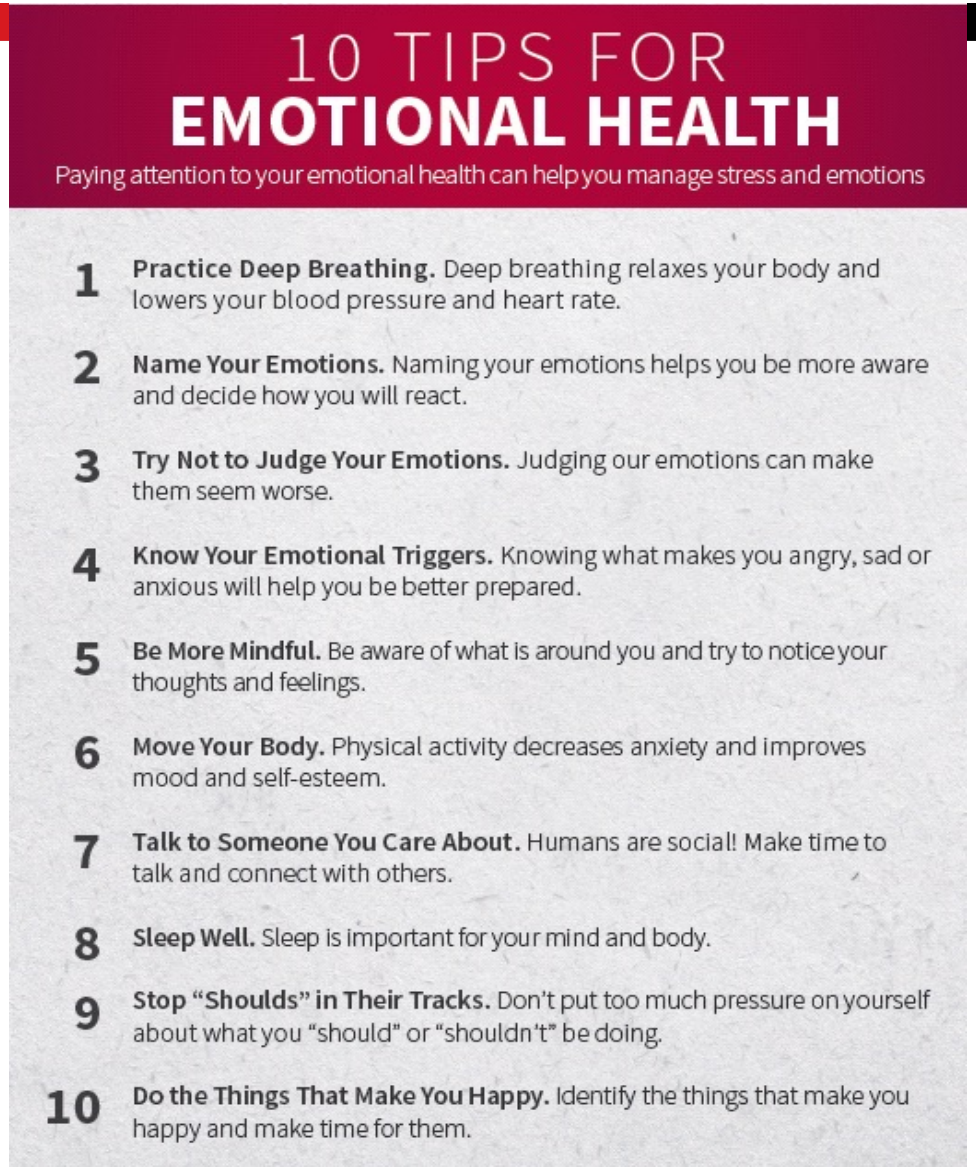
- **Anxiety Canada:** online, self-directed CBT, free https://www.anxietycanada.com/

- **Affordable Therapy Network** – a directory of therapists offering low-cost and sliding scale rates across Canada https://affordabletherapynetwork.com/

- **Kelty's Key**: online, self management, free: https://www.keltyskey.com/self-help/

- **Mindbeacon**:therapist-guided CBT skills programs, free for those living in ON: https://www.mindbeacon.com/

- **AbilitiCBT**: therapist-guided CBT skills programs, free for those living in ON https://myicbt.com/home

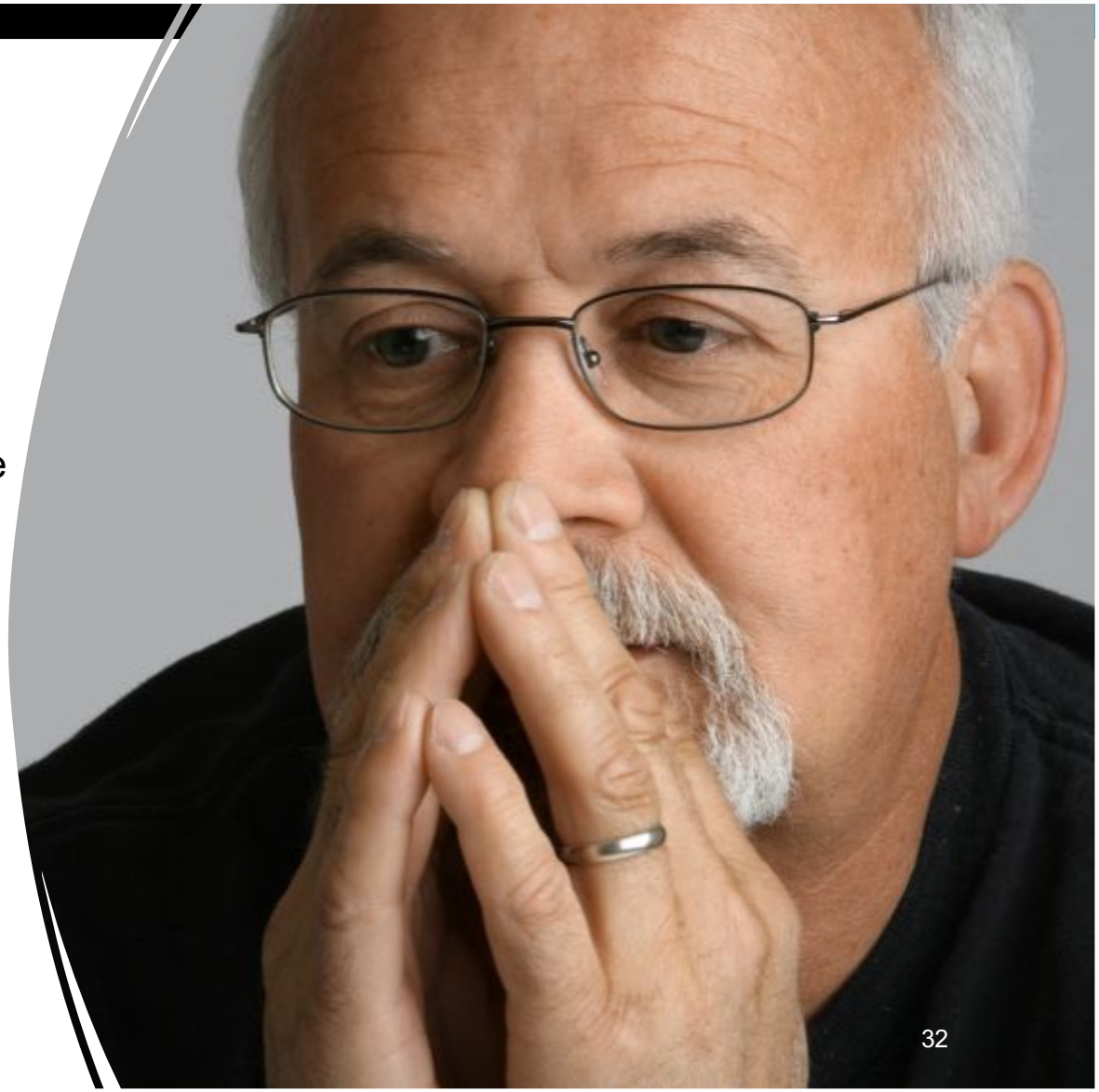


A series of "10 tips" available at:

https://www.ottawaheart.ca/patients-visitors/tools-and-resources/cardiac-rehabilitation-top-10-tips

Mr. B

- Participated in CR – increased his exercise tolerance
- Participated in our Managing Emotions program, CBT-based treatment group for patients with depression and CVD
- 6-month follow-up – mood had improved
- Arranged longer-term in community

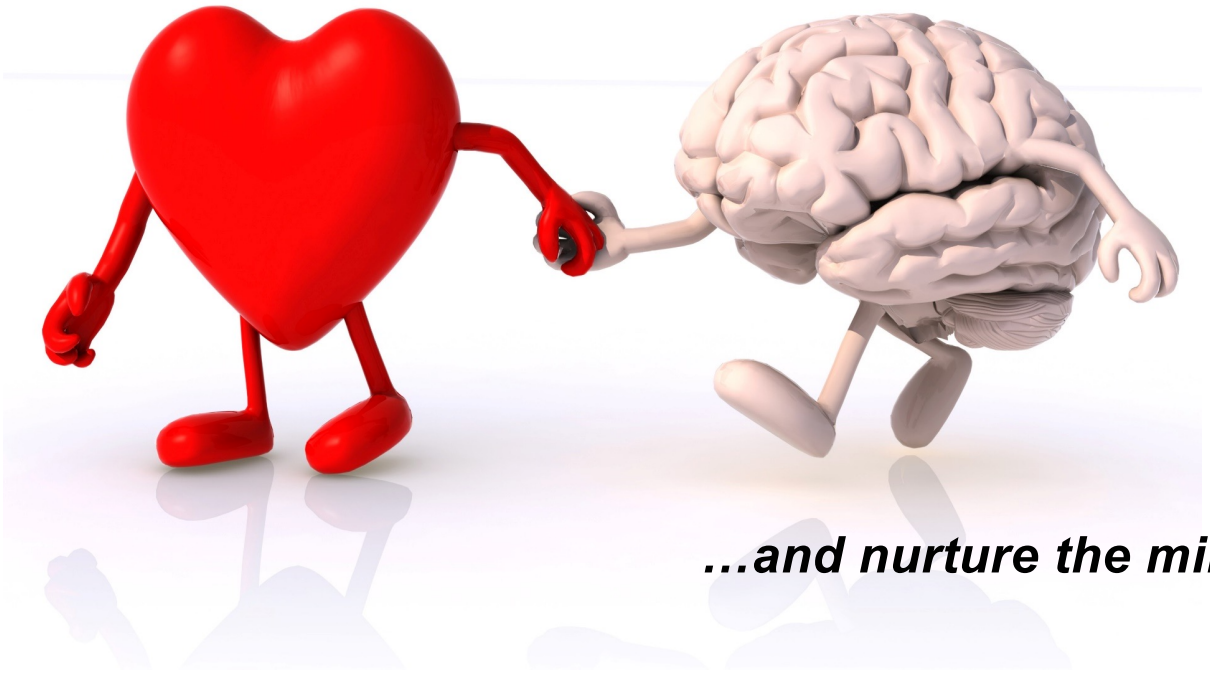


Take Home Messages

- Depression is prevalent, but under-recognized, under-diagnosed and under-treated
- Strong link between depressive symptoms and HF symptoms and course
- Systematic screening is warranted; PhQ-2
- Treatment initiation is key – Exercise and Psychotherapy are best!

Thank you!

We need to treat the heart…



…and nurture the mind.

Contact: Dr. Heather Tulloch – hetulloch@ottawaheart.ca; Karen Harkness: karen.harkness@ontariohealth.ca