



Troubled Hearts, Troubled Minds

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NO CONFLICTS OF INTEREST TO DECLARE







Projected top 10 diseases with the largest disease burden worldwide in

2020

	Disease	DALYs	%
1	Ischemic heart disease	82.3	5.9
2	Depression	78.7	5.7
3	Road traffic collisions	71.2	5.1
4	Cerebrovascular disease	61.4	4.4
5	Chronic obstructive pulmonary disease	57.6	4.2
6	Lower respiratory tract infections	42.7	3.1
7	Tuberculosis	42.5	3.0
8	War	41.3	3.0
9	Diarrhea	37.1	2.7
10	HIV	36.3	2.6

A clinical practice example







- A 65-year old male with severe heart failure and comorbid diabetes
- Severely limited in his daily functioning due to edema and breathlessness
- Difficulties with compliance
- His wife died 3 years ago; his son lives abroad limited network



Suspicision that patient is depressed

What is the evidence for depression in heart disease?





European Guidelines on cardiovascular disease prevention in clinical practice (version 2012)

The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of nine societies and by invited experts)

3.4 Psychosocial risk factors

Key messages

- Low socio-economic status, lack of social support, stress at work and in family life, depression, anxiety, hostility, and the type D personality contribute both to the risk of developing CVD and the worsening of clinical course and prognosis of CVD.
- These factors act as barriers to treatment adherence and efforts to improve lifestyle, as well as to promoting health and wellbeing in patients and populations. In addition, distinct psychobiological mechanisms have been identified, which are directly involved in the pathogenesis of CVD.

Recommendation regarding psychosocial factors

Recommendations	Class ^a	Level ^b	GRADE	Ref ^c
Psychosocial risk factors should be assessed by clinical interview or standardized questionnaires. Tailored clinical management should be considered in order to enhance quality of life and CHD prognosis.	lla	В	Strong	84–86

CHD = coronary heart disease. ^aClass of recommendation. ^bLevel of evidence. ^cReferences.

Guidelines

Psychosocial risk factors for coronary heart disease

A consensus statement from the National Heart Foundation of Australia

2	National Heart Foundation of Australia evidence statements regarding
	psychosocial stressors and coronary heart disease (CHD)

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	μ.
C*	11
D*	11
D*	IIt
в*	1
B	11-31
в	117
D	H
с	III-3†
с	III-2†
	B* B D C C

MI = myocardial infarction.* Clinical impact is unclear. † Using National Health and Medical Research Council (NHMRC) aetiology hierarchy.³ ‡ Using NHMRC prognosis hierarchy.³ Appendix: Definition of National Health and Medical Research Council (NHMRC) grades of recommendations and evidence hierarchy*

Definition of NHMRC grades of recommendations

Grade Description

Sidde	beschption								
A	Body of evidence can be trusted to guide practice								
в	Body of evidence can be trusted to guide practice in most situations								
С	Body of evidence provides some support for recommendation(s) but care should be taken in its application								
D	Body of evidence is weak and recommen	dation must be applied	with caution						
NHMR	C evidence hierarchy: designation of lev	vels of evidence							
Level	Intervention	Prognosis	Aetiology						
1	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies						
11	A randomised controlled trial	A prospective cohort study	A prospective cohort study						
III-1	A pseudorandomised controlled trial (ie, alternate allocation or some other method)	Allornone	All or none						
11-2	A comparative study with concurrent controls: Non-randomised, experimental trial Cohort study Case-control study Interrupted time series with a control group	 Analysis of prognostic factors among persons in a single arm of a randomised controlled trial 	 A retrospective cohort study 						
II-3	A comparative study without concurrent controls: Historical control study Two or more single arm study Interrupted time series without a parallel control group	 A retrospective cohort study 	 A case- control study 						
IV	Case series with either post-test or pre-test/post-test outcomes	Case series, or cohort study of persons at different stages of disease	A cross-sectional study or case series						

Glozier et al. Med J Aust 2013;199:179-80

* From NHMRC additional levels of evidence and grades for recommendations for developers of guidelines.3 •

AHA Scientific Statement

Depression as a Risk Factor for Poor Prognosis Among Patients With Acute Coronary Syndrome: Systematic Review and Recommendations A Scientific Statement From the American Heart Association

- Background—Although prospective studies, systematic reviews, and meta-analyses have documented an association between depression and increased morbidity and mortality in a variety of cardiac populations, depression has not yet achieved formal recognition as a risk factor for poor prognosis in patients with acute coronary syndrome by the American Heart Association and other health organizations. The purpose of this scientific statement is to review available evidence and recommend whether depression should be elevated to the status of a risk factor for patients with acute coronary syndrome.
 Methods and Results—Writing group members were approved by the American Heart Association's Scientific Statement and Manuscript Oversight Committees. A systematic literature review on depression and adverse medical outcomes after acute coronary syndrome was conducted that included all-cause mortality, cardiac mortality, and composite outcomes for mortality and nonfatal events. The review assessed the strength, consistency, independence, and generalizability of the published studies. A total of 53 individual studies (32 reported on associations with all-cause mortality, 12 on cardiac
- mortality, and 22 on composite outcomes) and 4 meta-analyses met inclusion criteria. There was heterogeneity across studies in terms of the demographic composition of study samples, definition and measurement of depression, length of follow-up, and covariates included in the multivariable models. Despite limitations in some individual studies, our review identified generally consistent associations between depression and adverse outcomes.
- Conclusions—Despite the heterogeneity of published studies included in this review, the preponderance of evidence supports the recommendation that the American Heart Association should elevate depression to the status of a risk factor for adverse medical outcomes in patients with acute coronary syndrome.

Lichtman et al. 2014;129:1350-69

Diagnostic criteria for major depression

- 5 (or more) symptoms (at least one of (1) or (2) present for 2 weeks (most of the day, nearly every day):
- (1) Depressed mood (sadness, emptiness, hopelessness)*
- (2) Diminished interest / pleasure in daily activities*
- (3) Weight loss (>5%)
- (4) Insomnia or hypersomnia
- (5) Psychomotor agitation or retardation
- (6) Fatigue or loss of energy
- (7) Feelings of worthlessness and inappropriate guilt
- (8) Trouble concentrating, making decisions
- (9) Recurrent thoughts of death, suicidal ideation



Distinction - clinical diagnosis and depressive symptoms

Depressive symptoms:

- More broadly defined
- All patients with a clinical diagnosis depression have depressive symptoms
- But not all patients with depressive symptoms have major depression

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the <u>last 2 weeks</u> , how often have you been bothered by any of the following problems? (Use """ to indicate your answer)	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	
 Feeling bad about yourself — or that you are a failure or have let yourself or your family down 	0	1	2	3	
 Trouble concentrating on things, such as reading the newspaper or watching television 	0	1	2	3	
 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	
 Thoughts that you would be better off dead or of hurting yourself in some way 	0	1	2	3	

Prevalence of depression in patients with heart disease



- Major depression: 16% to 23%
- Depressive symptoms: 22% to 40%



Subset of patients: 1 in 4 (25%)

Thombs et al. J Gen Intern Med 2006;21:30-8 Magyar-Russel et al. J Psychosom Res 2011;71:223-31 Depression and death/MI: <u>PCI patients</u> Even minimal symptoms predict prognosis...

PHQ-2* cut-off ≥ 2 (range 0-6)



- 1. Little interest or pleasure in doing things
- 2. Feeling down, depressed, or hopeless

Pedersen et al. J Gen Intern Med 2009;24:1037-1042



Depression and mortality: <u>CABG patients</u>



Fig. 2. Forest plot of preoperative depression and survival following CABG.

Depression and mortality: ICD patients



(N = 430)

Figure 2. Cumulative survival curve for all-cause mortality.

Mastenbroek, Pedersen et al. Psychosom Med 2014;76:58-65

Depressive symptoms and mortality: <u>Atrial fibrillation</u>

(N = 947)

Comorbid AF-CHF

- Rate-control (i.e., beta-blockers and digoxin) versus rhythm-control (i.e., antiarrhythmic medications and electrical cardioversion)
- 32% had BDI-II scores 14 (mild to moderate symptoms of depression)



Depression and all-cause mortality: <u>Peripheral arterial disease</u>





Depression and mortality: Chronic heart failure

Fig. 2. (A) All-cause mortality by 2-item Patient Health Questionnaire (PHQ-2) status. At 12 months follow-up, 20% of PHQ-2 positive and 8% of PHQ-2—negative patients died (P = .007). (B) Cardiovascular mortality by PHQ-2 status. At 12 months follow-up, 14% of PHQ-2—positive and 6% of PHQ-2—negative patients died (P = .05).

N = 471



Rollman et al. J Cardiac Fail 2012;18:238-45

Increase in depressive symptoms post MI is a risk factor for new events

(N = 767)



Zuidersma M, De Jonge P et al. Psychol Med 2012;42:683-93

Cardiac rehabilitation reduces symptoms of anxiety and depression



Figure 1. Changes in the CR and comparison groups in relationship to the percentage of participants classified as clinically depressed or clinically anxious at each time point. CR = cardiac rehabilitation.

But there is a paradox...

... non-completers and early dropouts have more distress and poorer quality of life

	Completers $(n = 190)$	All noncompleters $(n = 190)$	Early dropouts $(n = 68)$	
Beck Depression	8.6 (7.5)	11.7 (8.9)	12.8 (9.3)	
Beck Anxiety	7.9 (7.6)	9.4 (9.6)	11.6 (9.9)	
SF-36v2 PCS	39.2 (8.5)	35.7 (9.1)	35.4 (9.1)	
SF-36v2 MCS	47.6 (11.5)	43.4 (12.9)	40.9 (11.8)	
Walk test (ft)	3021.3 (724.1)	2921.1 (847.1) (n = 122)	NA	
Completers & all nor	completers	Completers &	early dropout noncompleters	
MANOVA $F_{4,336} =$	6.3; <i>P</i> = .0001	MANOVA F	$A_{4,228} = 4.9; P = .001$	
Significant difference	between groups	Significant diffe	erence between groups	
BDI-II: $F = 13.6; I$	P = .001	BDI-II: $F = 1$	1.1; P = .001	
SF-36v2 PCS: $F =$	13.5; <i>P</i> = .001	BAI: $F = 8.0$; $P = .005$		
SF-36v2 MCS: F =	10.1; <i>P</i> = .002	SF-36v2 PC	S: $F = 8.0; P = .005$	
		SF-36v2 MC	S: $F = 13.5$; $P = .0001$	

Abbreviations: BAI, Beck Anxiety Inventory; BDI-II, Beck Depression Inventory-II; SF-36v2 MCS, SF-36 version 2 Mental Component Summary; SF-36v2 PCS, SF-36 version 2 Physical Component Summary.

McGrady et al. J Cardiopulm Rehab Prevention 2009;29:358-64

Impact of depression in heart disease

- Decreased health-related quality of life
- Poor compliance, attrition from CR
- Doctor-patient communication
- Attenuated **health-care costs**



- Associated with other cardiac risk factors clustering (e.g. anxiety, social isolation, etc.)
- Enhanced **morbidity**
- Increased **mortality** (2-fold risk)

Lichtman et al. Circulation 2014;129:1350-69 Pedersen, von Känel et al. Eur J Prev Cardiol 2017;24:108-15

Biological and behavioral pathways linking psychosocial factors to CVD prognosis



- Both types of mechanisms also contribute to the manifestation of traditional CVD risk factors
- Studies show 'so-called' independent associations, but there are intricate interactions across mechanisms and pathways

Pedersen, von Känel et al. Eur J Prev Cardiol 2017;24:108-15

Psychosocial factors in perspective...

Parameters	First Author (Ref. #)	л	Endpoin t	Adjusted Risk Estimates (95% CI)*
Conventional CHD risk fac	ctors			
Smoking	Jha (45)	88,496 ment	ACM	2.80 (2.40-3.10)
Passive smoking	He (46)	637,814	CVD/MI	1.25 (1.17-1.32)
Elevated	Emerging	302,430	CVD	1.50 (1.39-1.61)
Non-HDL-C	RFC (47)			
Diabetes mellitus	Emerging	820,900	Vascular deaths	2.32 (2.11-2.56)
Low fitness	Kodama (49)	102,980	CHD/CVD	1.56 (1.39-1.79)
BMI 30-34.9 kg/m ²	Berrington de Gonzalez (50)	1,460,000	ACM	1.44 (1.38-1.50)
sychosocial CHD risk fac	tors			
Insomnia	Sofi (3)	122,501	CHD/CVD	1.45 (1.29-1.62)
Short sleep	Cappuccio (4)	474,684	CHD/CVD	1.48 (1.22-1.80)
Depression	Nicholson (6)	146,538	CVD/MI	1.90 (1.49-2.52)
Anxiety	Roest (7)	67,187	CVD	1.48 (1.14-1.92)
Psychological distress (GHQ >6)	Russ (51)	68,222	CVD	1.72 (1.44-2.06)
Anger	Chida (21)	67,187	CHD/CVD	1.19 (1.05-1.35)
Positive social integration	Holt-Lunstad (28)	309,849	ACM	1.91 (1.63-2.23)

Rozanski. J Am Coll Cardiol. 2014;64:100-10

BMI – body mass index; CHD – incidence of coronary heart disease; CI – confidence interval; CVD – cardiovascular death; GHQ – General Health Questionnaire; HDL-C – high-density lipoprotein cholesterol; RFC – Risk Factor Collaboration.

Sufficient evidence that depression (psychosocial factors) kills patients prematurely...







Should we screen patients for depression?





Identifying depression in patients: Which measure to use?







Depression measures: From A-Z

Advisory computer system Salomon **Beck Depression Inventory Composite International Diagnostic Interview Diagnostic Interview Schedule Edinburgh Depression Scale Ethological observation** Fenfluramine challenge test Geriatric Depression Scale Hospital and Anxiety Depression Scale IDS Johns Hopkins Depression Scale Kids Schedule for Affective Disorders and Schizophrenia ICSd-7 Mood Disorders Questionnaire

Newcastle Depression Diagnostic Scales One-mg dexamethasone suppression test Patient Health Questionnaire Present State Examination Quality of life domain depression **Reynolds Adolescent Depression Scale** Structured Clinical Interview for DSM-IV Trails Preschool Behavior Ouestionnaire Use of anti-depressants Visual Analogue Mood Scale Wakefield Depression Inventory X-chromosome screen Yesavage-Brinck geriatric depression scale Zung Self Assessment Depression Scale

And clinical diagnostic interviews...





AHA Science Advisory

Depression and Coronary Heart Disease

Recommendations for Screening, Referral, and Treatment A Science Advisory From the American Heart Association Prevention Committee of the Council on Cardiovascular Nursing, Council on Clinical Cardiology, Council on Epidemiology and Prevention, and Interdisciplinary Council on Quality of Care and Outcomes Research

Endorsed by the American Psychiatric Association Judith H. Lichtman, PhD, MPH, Co Chair, J. Thomas Bigger, Jr, MD;

James A. Blumenthal, PhD, ABPP; Nancy Frasure-Smith, PhD; Peter G. Kaufmann, PhD; François Lespérance, MD; Daniel B. Mark, MD, MPH; David S. Sheps, MD, MSPH; C. Barr Taylor, MD; Erika Sivarajan Froelicher, RN, MA, MPH, PhD, Co-Chair

<u>Routine screening</u> for <u>depression</u> in patients with <u>CHD</u> in various settings, including the hospital, physician's office, clinic, and cardiac rehabilitation center. The <u>opportunity to screen for</u> and <u>treat</u> <u>depression</u> in cardiac patients should <u>not be missed</u>, as effective <u>depression treatment</u> may <u>improve</u> <u>health outcomes</u>.

Lichtman et al. Circulation 2008;118;1768-75

AHA advisory - screening recommendation



Lichtman et al. Circulation 2008;118;1768-75



Depression Screening and Patient Outcomes in Cardiovascular Care

A Systematic Review

Brett D. Thombs, PhD	Context Several practice guidelines recommend that depression be evaluated and
Peter de Jonge, PhD	treated in patients with cardiovascular disease, but the potential benefits of this are
James C. Coyne, PhD	unclear.
Mary A. Whooley, MD	Objective To evaluate the potential benefits of depression screening in patients with
Nancy Frasure-Smith, PhD	ments; (2) the effect of depression treatment on depression and cardiac outcomes;
Alex J. Mitchell, MSc, MRCPsych	and (3) the effect of screening on depression and cardiac outcomes in patients in car-
Marij Zuidersma, MSc	The diovascular care settings.
Chete Eze-Nliam, MD, MPH	 Data Sources (MEDLINE, PsycINEO, CINAHL, EMBASE, ISI, SCOPOS, and Coch- rane databases from inception to May 1, 2008; manual journal searches; reference list
Bruno B. Lima	reviews; and citation tracking of included articles.
Cheri G. Smith, MLS	Study Selection We included articles in any language about patients in cardiovas-
Karl Soderlund, BS	 cular care settings that (1) compared a screening instrument to a valid major depres- sive disorder criterion standard; (2) compared depression treatment with placebo or
Roy C. Ziegelstein, MD	usual care in a randomized controlled trial; or (3) assessed the effect of screening on
	depression identification and treatment rates depression or cardiac outcomes

"<u>No clinical trials have assessed whether screening for depression improves depressive</u> symptoms or cardiac outcomes in patients with cardiovascular disease."



CONS

- No clinical trials have evaluated if screening for depression reduces symptoms and improves CVD outcomes
- Antidepressant use is associated with only mild improvement in depressive symptoms
- False-positive screening results
- Considerable resources to mount large screening effort - comes at expense of other efforts

- CAD and depression among top 10 burden diseases in 2020
- 1 in 4 patients are depressed
- risk morbidity and mortality
- \downarrow compliance
- \downarrow quality of life
- Influences doctor-patient communication
- Increased health care costs
- Use of SSRIs is safe

Feasibility and results of systematic screening

73.3% (3,504/4,783) inpatients screened with PHQ-2 by nurses



* Distribution of positive PHQ-2 scores: PHQ-2=3 (N = 71; 2.0% of total), PHQ-2=4 (N = 92; 2.6%), PHQ-2=5 (N = 27;0.8%), PHQ-2=6 (N = 112; 3.2%)

Rate of positive PHQ-2 screens (PHQ-2 \geq 3) and positive PHQ-9 screens (PHQ-9 \geq 10) among eligible patients screened with the PHQ-2 and PHQ-9, respectively.

Sowden et al. Am Heart J 2010;159:780-7

Accuracy and Prognostic Value of American Heart Association–Recommended Depression Screening in Patients With Coronary Heart Disease Data From the Heart and Soul Study

Table 5.Association Between Depression Status and Cardiovascular Events Based on Results of
American Heart Association–Recommended Screening Instrument and Diagnostic Interview for Major
Depressive Disorder

	No. of Participants	Age-Adjusted Annual Rate of Events	Age-Adjusted HR (95% Cl)	<i>P</i> Value	Fully Adjusted* HR (95% Cl)	<i>P</i> Value
True-negatives	727	6.3%	1.0 (reference)		1.0 (reference)	
(screen-, MDD-)						
False-negatives	105	7.3%	0.89 (0.61-1.30)	0.55	0.99 (0.68-1.44)	0.96
(screen-, MDD+)						
False-positives	69	8.6%	1.45 (1.02–2.07)	0.04	1.20 (0.84–1.73)	0.31
(screen+, MDD-)						
True-positives	117	10.0%	1.56 (1.14-2.14)	0.005	1.60 (1.16-2.21)	0.004
(screen+, MDD+)						

HR indicates hazard ratio; CI, confidence interval; and MDD, major depressive disorder.

*Adjusted for age, sex, body mass index, history of hypertension, myocardial infarction, diabetes, heart failure, and high-density lipoprotein.

WHAT THE STUDY ADDS

- This article found that the American Heart Association-recommended screening method has high specificity (91%) but poor sensitivity (54%) as compared with a gold standard interview for depression.
- This article also demonstrated that a positive American Heart Association depression screen predicts adverse cardiovascular outcomes, regardless of the presence or absence of major depressive disorder.



To screen or not to screen?

Where does this leave current cardiovascular practice with regard to depression screening? To date, there is no evidence that screening plus collaborative care improves cardiovascular outcomes (2). Importantly, absence of evidence does not equal evidence of absence, and there is also no evidence that screening plus collaborative care has any negative effects on cardiovascular outcomes. However, until we can demonstrate that screening plus collaborative care improves cardiovascular outcomes, the responsibility for screening will continue to remain with the primary care provider.

<u>Comparison of Depression Interventions after Acute</u> <u>Coronary Syndrome: Quality of Life (COPES-QOL)</u>

- Evaluate the 2008 AHA depression screen advisory
- Sample size: 1500 ACS patients
- 3 groups:
 - AHA depression screen and treat (CBT and/ or antidepressants)
 - No depression screening control group
 - Depression screen and notify (primary care provider) minimally enhanced group
- Trial duration: 18 months
- Endpoints: QALYs and cost-effectiveness





Collaborative care in CABG patients with depression

- <u>8-months</u> telephone- and nursing-delivered <u>collaborative</u> <u>care</u>
- <u>Real world treatment package</u> (e.g. education about illness, self-management, etc. and consideration of patient preferences)

Table 3. Proportion Achieving \geq 50% Decline From Baseline HRS-D Score at 8-mo Follow-up^a

8 34	Interve (n =	ention 150)	Usu (n =	al Care = 152)	Effect Size (95% Cl)	NNT (95% CI)	P Value
All (N = 302)	75/150	(50.0)	45/15	2 (29.6)	0.42 (0.19 to 0.65)	4.9 (3.2 to 10.4)	<.001
Men (n = 177)	49/8	(60.5)	32/9	6 (33.3)	0.55 (0.26 to 0.85)	3.4 (2.4 to 7.7)	<.001
Women (n = 125)	26/69	(37.7)	13/5	6 (23.2)	0.32 (-0.04 to 0.67)	6.9 (3.3 to ∞)	.08
11.1	A 4				And the second		

Abbreviations: CI, confidence interval: NNT, number needed to treat.

^aMultiple imputation used to address missing 8-mo follow-up assessments (17%; 50/302).

N = 302

Collaborative care in CABG patients with depression

Table 2. Baseline to 8-Month Mixed Model Estimates of Mean Change Scores

 by Randomization Status

	Mear	n (SE)		
All Patients (n = 302)	Intervention (n = 150)	Usual Care (n = 152)	Between-Group Difference (95% CI)	<i>P</i> Value
SF-36 MCS				
Baseline	43.1 (1.0)	42.5 (1.0)		
8-mo follow-up	50.0 (1.0)	46.2 (1.1)		
Δ Baseline to 8-mo	6.8 (1.0)	3.6 (1.0)	3.2 (0.5 to 6.0)	.02
HRS-D				
Baseline	16.6 (0.6)	16.0 (0.6)		
8-mo follow-up	9.0 (0.7)	11.4 (0.7)		
Δ Baseline to 8-mo	7.6 (0.6)	4.5 (0.6)	3.1 (1.3 to 4.9)	.001
SF-36 PCS				
Baseline	31.2 (0.8)	30.3 (0.8)		
8-mo follow-up	44.0 (0.8)	41.4 (0.8)		
Δ Baseline to 8-mo	12.8 (0.8)	11.1 (0.8)	1.6 (-0.5 to 3.8)	.14
DASI				
Baseline	7.1 (0.9)	7.9 (0.9)		
8-mo follow-up	25.2 (1.0)	21.4 (1.0)		
Δ Baseline to 8-mo	18.1 (1.0)	13.5 (1.0)	4.6 (1.9 to 7.3)	.001

N = 302

Impact of cognitive behavioral therapy and <u>recurrent cardiac events</u> in CHD

- Nonfatal first recurrent CVD events: HR:
 0.59 [95% CI: 0.42-0.83] <u>41% reduction</u>
- Recurrent acute myocardial infarctions: HR: 0.55 [95% CI: 0.36-0.85] - <u>45%</u> reduction
- All-cause mortality: HR: 0.72 [0.40-1.30] <u>28% reduction (NS)</u>

Impact of psychological intervention on depression

Based on 62 studies 17,397 patients

"Psychological treatments work in CHD patients, although the effects are very small".

Dickens et al. Psychosom Med 2013;75:211-21

Recent Cochrane review examining efficacy...

Comparison 1. Psychological intervention (alone or with other rehabilitation)

"...however, the GRADE assessments suggest considerable uncertainty surrounding these effects, including who would benefit and the specific components of successful interventions."

Outcome or subgroup title	No. of studies	No. of participants	Statistical n	Effect size
1 Total mortality	23	7776	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.77, 1.05]
2 Cardiac mortality	11	4792	Risk Ratio (M-H, Random, 95% CI)	0.79 [0.63, 0.98]
3 Revascularisation (coronary artery bypass graft surgery and percutaneous coronary intervention combined)	13	6822	Risk Ratio (M-H, Random, 95% CI)	0.9 <mark>4 [</mark> 0.81, 1.11]
4 Non-fatal myocardial infarction	13	7845	Risk Ratio (M-H, Random, 95% CI)	0.82 [0.64, 1.05]
5 Depression	19	5825	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.39, -0.15]
6 Anxiety	12	3161	Std. Mean Difference (IV, Random, 95% CI)	-0.24 [-0.38, -0.09]
7 Stress	8	1251	Std. Mean Difference (IV, Random, 95% CI)	-0.56 [-0.88, -0.24]

Richards et al. Cochrane Database Syst Rev 2017 Apr 28;4:CD002902. doi: 10.1002/14651858.CD002902.pub4.

Some evidence that psychosocial interventions work...

But it depends on which outcome we consider sufficient and relevant:

- Depression / Anxiety
- Quality of life
- Rehospitalization
- Mortality

"Epidemiological studies over the last decade demonstrate generally <u>strong dose-response relationships</u> between an expanding number of <u>psychosocial risk factors and CHD</u>.... To date, however, there has been <u>relatively little translation of</u> <u>these findings into cardiac practice</u>."

Could the minimal efficacy and in some cases lack of evidence be one of the reasons?

Rozanski. J Am Coll Cardiol. 2014;64:100-10

Barriers for implementation

- 1. Society
- 2. Health-care system
- 3. Patients

1. Barriers: Society

- Number of patients with complex disease and multi-morbidities increased exponentially
- In 2020, ischemic heart disease and depression the top contributors to the disease-burden worldwide
- Co-morbid somatic and psychological disease worse health outcomes for patients

RISING HEALTH CARE COSTS

Willingness to invest in psychosocial interventions

2. Barriers: Health-care system

- Focus on treatment of underlying disease
- Less focus on treating body and mind in concert
- Absence of mental health professionals as part of the multi-disciplinary team
- Organisation: Busy clinical practice and limited resources
- Lack of understanding of some health care professionals

Requires a re-organisation and a new way of thinking

3. Barriers: Patients

AHA Scientific Statement

Depression

- Lack of faith that interventions will work
- Limited knowledge and understanding
- Lack of trust in health care professionals
- Age e.g. interventions that are digital
- Lack of reimbursement and access to care
- Race / ethnicity
- Low socio-economic status
- Low health literacy

Social Determinants of Risk and Outcomes for Cardiovascular Disease A Scientific Statement From the American Heart Association

"Interventions that improve self-care behavior, risk factor control, or cardiovascular outcomes in those with low health literacy or numeracy are generally lacking".

> Lack of evidence

From the patient's perspective interventions may be...

- Associated with stigma e.g. seeing a psychologist
- Too abstract e.g. CBT, psychotherapy, mindfulness
- Not meet their needs and preferences

One-size does not fit all...

Precision medicine...

*Individual Patient Programs: These solutions are not mutually exclusive and are tailored to individual needs. Aging adults and children require special attention to dose and type of drug

**Treatments being used in Brain Resource's International Personalized Medicine Depression Study (Escitalopram, Venlafaxine, Sertraline)

In order to move the field forward and overcoming barriers...

We need to...

- Elucidate contribution of demographic characteristics (e.g. SES, age, and ethnicity) and their interaction with psychological factors to influence cardiovascular outcomes – help us to design interventions
- Change emphasis of treatment focus on treating body and mind together
- Move away from one-size fits all to a more precision medicine approach
- Develop interventions targeted and relevant to the socially disadvantage
- Evaluate the effects of individual interventions (e.g educational tools) on patients with low health literacy
- Evaluation of both clinical efficacy and cost-effectiveness
- Close collaboration with clinical practice and patients what is possible to implement, barriers to logistics, technological (IT), resources, preferences

... and we need to...

- **Reconcile** all the **stakeholders** (society, hospital setting, health-care system, and patients)
- Integrate their interests and their limitations (e.g. budget cuts)
- Work together in a multi-disciplinary team with respect for our individual expertise

 integrated care

Troubled minds, troubled hearts: Is there a connection?

Iceland

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