Review article

Depression screening in patients with coronary heart disease: A critical evaluation of the AHA guidelines

Mehrul Hasnaina,⁎, W. Victor R. Viewegb,c, Edward J. Lesnefskyd, Ananda K. Pandurangib

a Department of Psychiatry, Memorial University of Newfoundland, St. John's, Newfoundland, Canada
b Departments of Psychiatry, Virginia Commonwealth University, Richmond, VA
c Internal Medicine, Virginia Commonwealth University, Richmond, VA
d Medical Service, Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA

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Abstract

Objective: We lack evidence that routine screening for depression in patients with coronary heart disease (CHD) improves patient outcome. This lack has challenged the advisory issued by the American Heart Association (AHA) to routinely screen for depression in CHD patients. We assess the AHA advisory in the context of well-established criteria of screening for diseases.

Methods: Using principles and criteria for screening developed by the World Health Organization and the United Kingdom National Screening Committee, we generated criteria pertinent to screening for depression in CHD patients. To find publications relevant to these criteria and clinical setting, we performed a broadly based literature search on “depression and CHD,” supplemented by more focused literature searches.

Results: Evidence for an association between depression and CHD is strong. Despite this, the AHA advisory has several limitations. It did not account for the complexity of the association between depression and CHD. It acknowledged there was no evidence that screening for depression leads to improved outcomes in cardiovascular populations but still recommended routine screening without providing an alternative evidence-based explanation. It ignored the paucity of literature about the safety and cost-effectiveness of routine screening for depression in CHD and failed to define the nature and extent of resources needed to implement such a program effectively.

Conclusion: We conclude that the AHA advisory is premature. We must first demonstrate the efficacy, safety, and cost-effectiveness of screening and define the resources necessary for its implementation and monitoring. Meanwhile, organizations representing cardiologists, psychiatrists, and general practitioners must coordinate efforts to manage depression and CHD through collaborative care, and work with the policy makers to develop the necessary infrastructure and services delivery system needed to optimize the outcome of depressed and at-risk-for-depression patients suffering from CHD.

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Introduction

In October 2008, a Science Advisory from the American Heart Association (AHA) 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 published recommendations for screening, referral, and treatment of depression in patients with coronary heart disease (CHD) [1]. These recommendations, referred to as the AHA guidelines, were endorsed by the American Psychiatric Association. Key elements of the AHA advisory are summarized in Table 1.

Soon after the release of this advisory, Thombs et al. [2] published a systematic review of depression screening and patient outcomes in cardiovascular care. They did not find...
Introduction

- Depression is ≥3 times more common in patients after an acute myocardial infarction (AMI) than in the general community. Prevalence estimates are similar in patients hospitalized for unstable angina, angioplasty, bypass surgery, and valve surgery, with slightly higher levels reported in patients with congestive heart failure.
- Major depression and elevated depressive symptoms are also considerably higher among people with CHD living in the community as compared with individuals without CHD.
- Depression is associated with at least a doubling in risk of cardiac events over 1 to 2 years after an MI.
- Both biological and behavioral mechanisms have been proposed to explain the link between depression and CHD.
- Depression is associated with poor treatment adherence, reduces the chances of successful modifications of other cardiac risk factors and participation in cardiac rehabilitation and is associated with higher healthcare utilization and costs and greatly reduced quality of life.

Assessment of depression and depressive symptoms

- Administer 2-item Patient Health Questionnaire (PHQ-2). For patients who respond “yes” to either item, administer 9-item Patient Health Questionnaire (PHQ-9).
- For patients with minimal symptoms of short duration (PHQ score <10, offer support, education and follow-up within one month. Refer to a mental health specialist if symptoms persist or get worse.
- For patients with mild to moderate symptoms of depression (PHQ score 10–19) or major depression (PHQ score ≥20, a nurse or physician should review the answers with the patients. These patients should be referred for a more comprehensive clinical evaluation by a professional qualified to evaluate and determine a suitable individualized treatment plan.
- Immediate evaluation for suicidality if patient responds “yes” to question 9 (“suicidal”) on PHQ-9.
- Cardiologists should take depression into account in the management of CHD, regardless of whether they treat the depression or refer the patient to a healthcare provider who is qualified in the assessment and treatment of depression, which often may be the patient’s primary care provider.
- Although there is currently no direct evidence that screening for depression leads to improved outcomes in cardiovascular populations, depression has been linked with increased morbidity and mortality, poorer risk-factor modification, lower rates of cardiac rehabilitation, and reduced quality of life.

Depression treatment

- Sertraline and citalopram are the first-line antidepressant drugs for patients with CHD. Patients with recurrent depression who previously tolerated and responded well to another antidepressant may resume taking that agent instead, unless it is now contraindicated.
- If pharmacological treatment is initiated, patients should be observed closely for the first 2 months and regularly thereafter to monitor suicidal risk, ensure medication compliance, and detect and manage adverse effects.
- Cognitive behavioral therapy may be an alternative for cardiac patients who cannot tolerate antidepressants or who may prefer a nonpharmacological approach to treatment. Also, many patients with moderate to severe depression may respond better to the combination of an antidepressant and psychotherapy than to either treatment alone.
- Aerobic exercise and cardiac rehabilitation can reduce depressive symptoms in addition to improving cardiovascular fitness.
- There is no evidence that treatments for depression are differentially effective in cardiac versus other patients.
- Evidence suggests that depressed patients who are not responsive to treatment for depression may be at greater risk for adverse cardiac events.

Summary

- Routine screening for depression in patients with CHD in various settings, including the hospital, physician’s office, clinic, and cardiac rehabilitation center.
- Patients with positive screening results should be evaluated by a professional qualified in the diagnosis and management of depression.
- Patients with cardiac disease who are under treatment for depression should be carefully monitored for adherence to their medical care, drug efficacy, and safety with respect to their cardiovascular as well as mental health.
- Coordination of care between healthcare providers is essential in patients with combined medical and mental health diagnoses.
context of a collaborative care treatment program.” More recently, Thombs et al. [6], in an editorial, again emphasized that the AHA advisory was not built upon scientific evidence and suggested that AHA reconsider its recommendations.

Screening is a public health concept based on the premise that secondary prevention (early detection of conditions which have already produced pathological change but which have not so far reached a stage at which medical aid is sought spontaneously) will improve patient outcome [7]. It includes (i) identification of individuals at risk, (ii) identifying individuals with undiagnosed disease, and (iii) identifying members of a specific group who might be helped more by further testing or treatment [8] (Chapter 2, pages 35–36). Determination of practical viability and utility of screening takes into account factors including prevalence of the given condition, effectiveness of the screening method(s) to detect the condition, benefits and risks that screening may offer or pose to the individual and the public, acceptance of the screening method(s) by patients and practitioners, the resources required to implement the program, and the overall cost-effectiveness of the program. Additionally, the screening program should be monitored to ensure its appropriate implementation and ongoing need. A screening program that does not take these factors into account may inadvertently harm the patient, public, and the relationship between the public and the health professionals [7,8]. Given the controversy arising from the publications commenting on the AHA guidelines about depression screening in patients with CHD, we undertook a critical evaluation of these guidelines utilizing the World Health Organization (WHO) [7] and United Kingdom National Screening Committee (UKNSC) [9] criteria and current evidence.

Methods

We generated criteria pertinent to screening for depression in patients with CHD (Table 2), using two well-known sets of screening criteria, developed by WHO [7] and UKNSC, respectively [9]. The WHO published “principles and practice of screening for diseases” in 1968 that took into account literature originating in the United States. The UKNSC criteria that incorporate the principles laid down by the WHO are more precise and were last updated in June 2009.

We performed a literature search on May 31, 2010, through PubMed for English language publications with abstracts published over the last 10 years using the term “depression” in combination with the terms “coronary heart disease, coronary artery disease, angina, chest pain, myocardial infarction (MI), coronary artery bypass graft, coronary artery bypass surgery, coronary angioplasty, congestive heart failure, or cardiovascular disease.” From the titles of the search results, we identified over 300 publications that appeared relevant to our review. We read the abstracts of these publications and identified over 100 publications that spoke directly to the issues discussed here. We reviewed these publications for the purpose of this evaluation and most of them are cited in this review. We also performed focused literature searches pertinent to questions arising during the writing of this review. Our findings are discussed below under headings specific to the criteria listed in Table 2, which also provides a summary of our findings.

Results

1. The “condition”

1.1. Is the condition a major public health problem?

The “condition” is “depression in patients with CHD.” There is extensive and diverse literature [10,11] suggesting that depression is two to three times more prevalent in individuals with CHD than it is in the general population. Both CHD and depression are associated with significant health burden worldwide [12] making the “condition” a significant clinical and public health concern.

1.2. How well do we understand the epidemiology and natural course of the condition?

The epidemiological association of depression and CHD is well supported from literature and well understood. The extensive literature in this regard [10,11,13,14] consistently shows a bidirectional association between these two conditions. The prevalence of depression is two to three times greater in individuals with CHD than those without CHD. It is also fairly well established that depression is associated with poor prognosis of CHD in a “dose-response” manner [15,16].

Several studies [17–20] have reported that a depressive episode commencing after an acute coronary syndrome (ACS) hospitalization is associated with worse cardiovascular outcome, while other studies [21,22] have found precoronary event depression to also be associated with poor cardiac prognosis. Regarding the impact of course of depressive symptoms on cardiac prognosis, evidence suggests that depressive symptoms post-MI, whether they persist or subside, are associated with worse cardiac prognosis [23]. Post-MI depressed subjects with significant and increasing depressive symptoms are at particular risk of new adverse cardiac events [24], and the severity of depression within the first few weeks or failure of depression to improve in 6 months after an ACS predicts mortality [25]. However, Carney et al. [26] suggest that the first episode of depression after the coronary event may have a stronger cardiac prognostic impact than recurring depression with previous onset. Also, it is not clear if depression arising within a few months of an ACS has the same cardiac prognostic implications as depression arising several months or a year later [27,28]. Both the period of onset of depression relative to the onset of CHD and the trajectory of depressive symptoms impact prognosis. The effect of depression across the entire course of CHD is well understood, but whether
Table 2
A summary of the criteria for appraising the viability, effectiveness and appropriateness of a screening program [7,9] and level of evidence for the AHA guidelines meeting these criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Level of evidence</th>
</tr>
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<tbody>
<tr>
<td>1. The “Condition”</td>
<td>Strongly supported from the literature.</td>
</tr>
<tr>
<td>1.1 The condition should be an important public health problem.</td>
<td>The epidemiological association of depression comorbid with CHD is well understood.</td>
</tr>
<tr>
<td>1.2 The epidemiology and natural course of the condition should be</td>
<td>Further clarity is needed on clinical aspects of depression that may affect</td>
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<td>adequately understood.</td>
<td>treatment choice and patient outcome.</td>
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<tr>
<td>1.3 All the cost-effective primary prevention interventions should have</td>
<td>Literature on the primary prevention of depression following CHD is quite</td>
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<tr>
<td>been implemented as far as practicable.</td>
<td>limited.</td>
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<tr>
<td>2. The “Test”</td>
<td>The suggested tests are simple and cheap but their safety and acceptability</td>
</tr>
<tr>
<td>2.1 There should be a simple, safe and cheap test that is acceptable to</td>
<td>by patients has not been specifically studied.</td>
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<td>patients.</td>
<td>Validity of the recommended tools is well established in a variety of settings</td>
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<tr>
<td>2.2 The test must be validated before it is applied to case-finding.</td>
<td>and supportive data is emerging for this specific setting.</td>
</tr>
<tr>
<td>2.3 There should be an agreed policy on the further diagnostic</td>
<td>The guidelines provide a general guidance in this regard. It cannot be</td>
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<tr>
<td>investigation of individuals with a positive test result and on the</td>
<td>considered as an agreed upon policy in view of the literature challenging the</td>
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<tr>
<td>choices available to those individuals.</td>
<td>validity of the guidelines</td>
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<tr>
<td>3. The “Treatment”</td>
<td>Availability of resources has not been systematically studied for the</td>
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<tr>
<td>3.1 Resources should be available for provision for diagnosis, follow-up</td>
<td>cardiology settings in which screening is being recommended.</td>
</tr>
<tr>
<td>and treatment.</td>
<td>Strongly supported from literature.</td>
</tr>
<tr>
<td>3.2 There should be an accepted and effective treatment for patients with</td>
<td>Depression accompanying CHD is heterogeneous. The guidelines or the existing</td>
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<td>recognized disease.</td>
<td>literature do not provide a direction for individualized treatment plans to achieve</td>
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<tr>
<td>3.3 There should be agreed evidence based policies covering which</td>
<td>the best possible outcome.</td>
</tr>
<tr>
<td>individuals should be offered treatment and the appropriate treatment to</td>
<td>It has been known for over two decades that patients with CHD are high risk</td>
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<tr>
<td>be offered.</td>
<td>for depression but there is no evidence of concerted efforts having been</td>
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<tr>
<td>3.4 Clinical management of the condition and patient outcomes should be</td>
<td>made to optimize their clinical care.</td>
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<tr>
<td>optimized in all health care providers prior to participation in a</td>
<td>There are no studies showing that screening for depression in CHD patients</td>
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<td>screening program.</td>
<td>reduces mortality or morbidity.</td>
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<tr>
<td>4. The “Program”</td>
<td>Health professionals with expertise on the subject of depression in patients</td>
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<tr>
<td>4.1 There should be evidence from high quality randomized controlled</td>
<td>with CHD have expressed dissatisfaction with the guidelines. Acceptability of the</td>
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<tr>
<td>trials that the screening program is effective in reducing mortality or</td>
<td>routine screening by patients with CHD has not been well studied. Physical and</td>
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<td>morbidity.</td>
<td>psychological safety of routine screening for depression in CHD patients has not</td>
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<td>4.2 There should be evidence that the complete screening program (test,</td>
<td>been studied. Screening will improve recognition and treatment of depression.</td>
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<tr>
<td>diagnostic procedures, treatment/intervention) is clinically, socially</td>
<td>Cost-effectiveness of the screening program has not been documented. Studies</td>
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<td>and ethically acceptable to health professionals and the public.</td>
<td>assessing physical and professional resources required to effectively implement</td>
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<tr>
<td>4.3 The benefit from the screening program should outweigh the physical</td>
<td>the screening program were not carried out prior to the release of the guidelines.</td>
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<td>and psychological harm caused by the test, diagnostic procedures and</td>
<td>The guidelines do not provide guidance in this regard. Literature is available</td>
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<td>treatment.</td>
<td>to formulate evidence-based information that can be provided to the patients.</td>
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<tr>
<td>4.4 There should be evidence for the cost-effectiveness of the program.</td>
<td>There is no indication that one or more organizations releasing these</td>
</tr>
<tr>
<td>4.5 Adequate staffing and facilities for testing, diagnosis, treatment</td>
<td>guidelines or any health care agency plans to manage or monitor the screening</td>
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<tr>
<td>and program management should be available prior to the commencement of</td>
<td>program need to be in place to ensure the guidelines or agency plans to manage or</td>
</tr>
<tr>
<td>the screening program.</td>
<td>monitor the screening program are being effectively implemented.</td>
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<td>4.6 Evidence-based information, explaining the consequences of testing,</td>
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<tr>
<td>investigation and treatment, should be made available to potential</td>
<td></td>
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<tr>
<td>participants to assist them in making an informed choice.</td>
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<tr>
<td>4.7 There should be a plan for managing and monitoring the screening</td>
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<td>program and an agreed set of quality assurance standards.</td>
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there is a differential prognostic effect between various onset periods and trajectories is still under examination.

1.3. Have the primary care cost-effective interventions been implemented?

In that onset of CHD is the major risk factor for the increased likelihood of depression, the primary preventions would involve efforts at decreasing the incidence of CHD. Current literature [29] suggests this is feasible with aggressive efforts. Other factors that may mediate the relationship between depression and CHD include anxiety, perceived low social support, “distressed” (Type-D) personality and personality traits of anger and hostility [30–34]. These factors may be potential targets for primary prevention of depression following CHD but specific studies in this regard are lacking. Literature on prevention of depression in general [35] may also describe interventions to minimize depression risk after the onset of CHD.
2. The “test”

2.1. Is a simple, cheap, and safe test acceptable to patients available?

The AHA guidelines indicate that other scales and questionnaires mentioned elsewhere [36] could provide initial useful information but specifically suggest administering the two-item Patient Health Questionnaire (PHQ-2) as an initial screen followed by the administration of the 9-item Patient Health Questionnaire (PHQ-9) if patient responds “yes” to either or both questions of PHQ-2. Both these “tests” are simple and cheap to administer. Safety of these tests in this setting and their acceptability by the patients has not been systematically studied.

2.2. Has the “test” been validated?

A study [37] of CHD patients using PHQ-2 as a simple yes/no screen as suggested in the AHA guidelines has reported it to be 90% sensitive and 69% specific. This high sensitivity is desirable and low specificity acceptable [7] considering PHQ-2 is the first of the two sequential screening tests suggested in the AHA guidelines [1].

PHQ-9 lists all nine symptoms of DSM-IV major depression as individual questions [38]. Response to each question is scored 0 (not at all), 1 (several days), 2 (more than half the days) or 3 (nearly every day) over the last 2 weeks. A 10th “stand alone” question assesses the degree of functional disability. PHQ-9 yields both a provisional diagnosis of depression and a severity score that can be used to monitor progression or response to treatment. The AHA guidelines suggest that a PHQ-9 score of ≥10 indicates “high probability of depression” This is consistent with the literature emerging on the use of PHQ-9 in patients with CHD [37,39,40].

The two-step screening method suggested by the AHA is effective in other clinical settings [41] but has not been studied specifically in comorbid depression and CHD.

2.3. Is there an agreed upon policy on the further workup of and choices available to those testing positive?

The AHA guidelines suggest that screening for depression in patients with CHD should occur in various settings, including the hospital, physician’s office, clinic, and cardiac rehabilitation center. Patients with minimal symptoms of short duration (PHQ-9 score <10 are to be offered support, education and follow-up within one month, and referred to a mental health specialist if symptoms persist or worsen. Patients with high probability of depression (PHQ-9 score ≥10 should be referred for a more comprehensive clinical evaluation by a professional qualified to evaluate and determine a suitable individualized treatment plan. The guidelines thus provide broad guidance on monitoring, management and/or disposition of individuals screening positive. These guidelines could not be considered as an “agreed upon policy” due to reasons discussed in Section 4.2.

3. The “treatment”

3.1. Are resources available to provide diagnosis, follow-up and treatment?

The AHA guidelines were built upon the MacArthur Initiative on Depression and Primary Care. The setup and resources of various cardiology settings, e.g., inpatient cardiology services, outpatient cardiology consultation services, and cardiology rehabilitation services differ from those in primary care. Also, staff comfort in administering the scales, expertise of those further assessing and managing patients screening positive, and access to mental health services may vary between cardiology and primary care settings. The AHA guidelines did not comment upon how these differences might impact upon the screening program.

Literature that may help us is very limited.

3.2. Are accepted and effective treatments available for those screening positive?

Depression is the primary outcome measure while treating depressed patients with comorbid CHD. The major interventional trials [primary intervention(s) employed] include the Sertraline Antidepressant Heart Attack Randomized Trial [sertraline] [42], the Enhancing Recovery in Coronary Heart Disease Patients Randomized Trial [cognitive behavioral therapy (CBT), sertraline or another antidepressant in those significantly depressed or not responding to CBT] [43], the Canadian Cardiac Randomized Evaluation of Antidepressant and Psychotherapy Efficacy Trial [citalopram or interpersonal therapy] [44] and the Myocardial Infarction and Depression—Intervention Trial [mirtazapine] [45,46]. Findings of these studies suggest a modest beneficial effect of antidepressant drug treatment and CBT on depression in patients with CHD. Three smaller studies employing fluoxetine [47], sertraline [48], and paroxetine (compared with nortriptyline) [49] have also reported the beneficial effect of antidepressant treatment on depression.

CHD itself is the secondary outcome measure. Current evidence suggests that treating depression in patients with CHD does not improve outcome of CHD. Nonresponse to treatment for depression is specifically associated with poor cardiac outcome [50,51].

The AHA guidelines also suggest exercise and participation in cardiac rehabilitation as interventions to improve depression in patients with CHD. Emerging evidence supports these interventions in depressed individuals with CHD [52,53]. Among other interventions, telephonic counseling after ACS [54–56] and home-based case management after MI have been found to reduce emotional distress but not consistently [57,58].

Treating depression in patients with CHD improves quality of life [59] and compliance with medications [60]; however, evidence that treatment of depression will improve adherence to post-ACS recommendations that improve cardiac outcome [61]. Overall, the AHA
recommendations on how to treat depression are consistent with available evidence.

3.3. Are there agreed-upon evidence based policies covering which individuals should be offered treatment and the appropriate treatment to be offered?

The AHA guidelines defer further evaluation and management of patients with high probability of depression (PHQ-9 score ≥10) to professionals qualified to do so. The guidelines point out that comprehensive evaluation of these patients should include assessment for other mental disorders (e.g., anxiety) associated with adverse outcomes in cardiac patients but there is no guidance on how presence or lack of such comorbidity would affect individualized treatment plan. Depression associated with CHD is not homogenous (as discussed in Section 1.2). There is no literature to guide on matching specific clinical scenarios with specific interventions to achieve the best possible outcome.

3.4. Was clinical management of the condition optimized prior to the screening program?

For almost 2 decades, we have known that patients with CHD are at high risk of depression [62]. Evidence is lacking that clinical care of depressed patients with CHD was optimized in primary care, cardiology or psychiatric settings prior to the issuance of AHA guidelines, which are intended as a step in that direction.

4. The “program”

4.1. Is there evidence that the screening program is effective in reducing mortality or morbidity?

No clinical trials have shown that screening for depression in patients with CHD improves outcome of depression or CHD [2], nor that screening would improve outcome of depression or CHD anymore than treating depression detected in routine clinical encounters.

4.2. Is the program acceptable to health professionals and the public?

Publications critiquing routine screening of depression in patients with CHD [2,4,6] are reflective of the AHA guidelines not having achieved acceptance among the clinicians. In terms of a broad-based clinical acceptance, anecdotal experience from the primary care setting is not impressive where, despite repeated endorsements for almost 2 decades, screening for depression has not become routine practice.

There is no data to substantiate or refute the assumption that the recommendation of routine screening for depression in patients with CHD will be acceptable to the patients with CHD. Holzapfel et al. [63] reported on their routine screening program in the heart-failure outpatient department of a university hospital setting. The program used PHQ-9 and 36-item Short-Form Health Survey. They reported a patient participation rate of 80% and did not specify the reason(s) why the remaining 20% did not participate.

4.3. Does the benefit from the screening program outweigh the physical and psychological harm?

The screening program should improve detection and treatment of depression in patients with CHD resulting in improved quality of life [59] and compliance with medications [60]. A recent review [64] that included major depression-CHD intervention studies found the commonly used antidepressants to be safe in patients with CHD. The nonpharmacological treatment modalities specified in the AHA guidelines are also not associated with any specific risks to patients with CHD [43,52]. So far there is no literature specifically looking into the safety of administering the screening questionnaires to patients with CHD.

4.4. Is the screening program cost-effective?

No information is available on whether routine screening in patients with CHD is the most cost-effective and efficient means to accomplish the best possible patient outcome.

4.5. Were adequate staffing and facilities for testing, diagnosis, treatment and program management available prior to the commencement of the screening program?

The expectation reflected in the AHA guidelines is that patients with CHD would be screened in various clinical settings, a system would be in place to follow-up on those with “mild symptoms,” a physician or nurse would be available to review the answers with patients who have “high depression scores,” and a professional qualified to evaluate and determine a suitable individualized treatment plan would be accessible to further evaluate and manage those with a PHQ score ≥10.

No pilot projects tell us how the screening program might affect the available resources and what resources would be required to ensure that individuals testing positive could receive further assessment and/or treatment in a timely manner. A study [65] on screening of patients for depression in a cardiology clinic has expressed concern about its impact on effective utilization of resources. In this study, 109 patients (12% of the sample) reported suicidal ideas and required immediate psychiatric assessment. Only four of these 109 patients required hospitalization for suicidal intent. Some recent studies [63,65,66] reporting on the feasibility of screening CHD patients for depression had access to resources not routinely available in clinical practice.

4.6. Is evidence-based information available to potential participants to assist them in making an informed choice?

The AHA guidelines do not tell us what “evidence-based” information must be communicated to the patients to properly guide their decision to accept or reject screening. Literature is available (e.g., that on the comorbidity between depression and CHD, effectiveness of interventions for depression, and outcome of both conditions after treatment
of depression) that can be used to formulate evidence-based information to be provided to the patient.

4.7. What is the plan to manage and monitor the screening program?

Management and monitoring of a screening program is essential to ensure that the program is practical and safe, and is accomplishing the desired goal in a cost-effective manner. We could not find any literature suggesting that one or more of the organizations issuing the guidelines plan to monitor the program. The guidelines also do not comment on quality assurance standards.

Discussion

In our evaluation, the AHA guidelines either do not meet or only partially meet many of the established criteria for a screening program (Table 2). AHA guidelines acknowledge “there is currently no direct evidence that screening for depression leads to improved outcomes in cardiovascular populations.” It is, therefore, perplexing why an intervention would be recommended without any evidence that the intervention leads to tangible benefit. This is a serious deficiency in the AHA guidelines that has been identified by others [2,4].

Literature on what resources would be needed to implement depression screening in diverse cardiology settings is quite limited. Two studies [63,65] on routine screening for depression in outpatient cardiac settings found about 12% of patients reported suicidal ideas on the PHQ-9. Both of these studies had access to resources for further immediate assessment of these patients. In the study by Holzepfah et al., [63] 28.8% of the sample scored ≥9 on PHQ-9. Of these, 32.6% opted for a same-day outpatient psychiatric assessment that the researchers had access to. Recently, Sowden et al. [66] reported that systematic screening was feasible in cardiac inpatients. A “study social worker” administered PHQ-9 in this study. Besides, the study setting involved “collaborative care” with access to and input from a psychiatrist. Such resources are not routinely available in cardiology care settings. Further research is needed to understand and address the challenges that routine screening for depression in patients with CHD may pose in various practice settings.

Another “setting-related” difference that can potentially impact upon the outcome of screening is the timing of screening relative to ACS. Onset of ACS can generate a grief and adjustment response with patients experiencing a range of psychological phenomena including anxiety, depression, grief, denial, trauma, guilt and anger [67]. Symptoms of depression and anxiety arising soon after a cardiac event or procedure may subside in many patients within a few months [68–70]. Screening too close to the cardiac event or intervention (e.g., inpatient cardiology setting) would likely categorize a larger number of patients as depressed than it might if it was done later (e.g., as an outpatient). Risk stratification of patients who screen positive for depression soon after an acute cardiac event is essential to prevent unnecessary interventions. Future research should try to discern when and how often screening for depression after ACS should occur to achieve its optimal outcome without over-burdening the resources.

Depression comorbid with CHD is heterogeneous and more complex than in patients without CHD. We have discussed elsewhere methodological limitations confound our understanding of the association between depression and CHD [71]. The timing of onset of depression relative to CHD, comorbidity of depression with other adverse psychosocial factors, symptom dimensions of depression, and the trajectory of depressive symptoms are likely to impact upon the outcome of depression as well as CHD [17–20,26,31,34,72–80]. Considering the “dose-response” effect of depression on CHD [15,16], patients with depressive symptoms may also be potential candidates for psychosocial interventions [55,81,82]. There is a need to study these variables in relation to various interventions to determine the best match between the presentation and the intervention(s) in terms of patient outcome.

There are no data on the safety of screening for depression post-ACS. Onset of an ACS is a frightening experience for the patients, with 4% to 8% exhibiting symptoms of acute stress disorder [83]. Emotional stress can trigger an ACS [84] and anxiety independent of depression can cause in-hospital complications [85]. Negative perception of health status post-ACS is associated with poor health outcome and quality of life [86,87]. A screening program could over-burden the available resources that would be highly undesirable if the program is not associated with tangible benefits. This burden could compromise the overall quality of care and add to the existing negative public view about the professional care for emotional problems [88]. There is a need to study the safety of the screening program in terms of patient outcome, impact on available resources and patient satisfaction with the care.

Two decades of experience of depression screening in primary care settings has shown that screening alone is unlikely to accomplish much unless systems are in place to support management and follow-up of those screening positive [89,90]. The recent report by the US Preventive Services Task Force suggests routine screening of adults for depression should be preferably done only when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up [91]. The recent guidelines by the National Institute for Health and Clinical Excellence on treatment and management of depression in adults highlight the importance of collaborative or enhanced care for best patient outcome [92]. Whooley et al. [93] have recently supported this approach describing collaborative care as one in which a designated depression care manager, in consultation with a supervising psychiatrist, support the patient’s primary care provider or treating medical specialist by providing education, patient activation,
close follow-up, symptom monitoring, and treatment intensification as necessary. Findings from recent studies on depression comorbid with CHD [54,94] suggest that the same approach might work in screening for depression in cardiology settings. Such an approach to care has been suggested in the AHA guidelines but this management system is not optimized in CHD clinical facilities.

Several epidemiological studies [11] have identified depression as a CHD risk factor and some [95] have estimated its impact to be greater than that of the traditional risk factors. The European guidelines on cardiovascular disease prevention [96] identify depression and other psychosocial factors as risk factors offering guidance on their clinical assessment and management. The guidelines from the United States, however, do not identify depression (or other psychosocial factors) as a CHD risk factor [97]. There is a need to re-assess this, especially considering that many of the behavioral factors (e.g., smoking, non-adherence with medical advice, etc.) that are of concern for secondary prevention in depressed individuals with CHD are also of relevance to primary prevention of CHD in individuals with depression [98,99].

Conclusion

Simply extending the screening recommendation from primary care settings to cardiology settings without evidence that screening will improve patient outcome safely and cost-effectively, and without defining the resources that would be needed for its success and acceptance is too simplistic an approach to address the serious clinical and public health concern of depression-CHD comorbidity. We believe concerted efforts to improve clinical recognition of depression and related psychosocial factors accompanied by development of collaborative care models are better approaches given the state of current knowledge and evidence. Research is needed to better define the association between anxiety, depression, psychosocial factors and CHD, and to specifically identify interventions that improve patient outcome. Further studies are also needed on collaborative care specifically in CHD clinical facilities to get guidance on putting a cost-effective system in place that delivers results. Organizations representing cardiologists, psychiatrists and general practitioners should work closely to periodically provide a comprehensive evidence-based review of depression and CHD, put mechanisms in place to improve expertise on depression and CHD across these professional groups and work with the policy makers to develop a system that can achieve the needs of our patients.

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