Depression screening and patient outcomes in cancer: a systematic review

CRD summary
This review found no evidence on the effectiveness of depression screening in cancer patients, either alone or in the context of optimal depression care. One trial of depression treatment reported modest improvement in depressive symptoms. These conclusions reflect the available evidence and are likely to be reliable.

Authors’ objectives
To assess the accuracy of depression screening instruments in patients with cancer and to determine the effectiveness of depression screening and treatment of depression in reducing depressive symptoms.

Searching
MEDLINE, EMBASE, ISI, CINAHL, PsycINFO, SCOPUS and The Cochrane Library (databases not specified) were searched to January 2011. Search terms were reported. Google Scholar, clinical trials registers and the bibliographies of included studies and systematic reviews were screened for additional studies. No language restrictions were applied.

Study selection
Studies on the accuracy of depression screening tools were included if they compared screening results to a reference standard of Diagnostic and Statistical Manual of Mental Disorders (DSM) or International Classification of Diseases (ICD) diagnosis of major depressive disorder, based on a validated structured or semi-structured interview administered within two weeks of the screening tool and reported sufficient data for the calculation of sensitivity, specificity, positive predictive value and negative predictive value.

Studies on the effectiveness of depression treatment were included if they were randomised controlled trials (RCTs) that compared pharmacological, psychotherapeutic, or other interventions with placebo or usual care in cancer patients diagnosed with major depressive disorder, based on a validated diagnostic interview and DSM or ICD criteria.

Studies on the effectiveness of depression screening were included if they were RCTs that compared depression outcomes between cancer patients who underwent depression screening and those who did not. Studies were required to include a case identification strategy, based on a pre-defined depression screening tool score, which was used to make decisions regarding further assessment or treatment. Studies in which psychosocial service providers in the intervention group had access to the results of psychosocial questionnaires and studies that administered multiple screening tools for multiple problems were excluded.

Most test accuracy studies were conducted in the UK, USA or Australia. Approximately half were of patients with breast cancer and the remainder were of patients with a mixture of cancer diagnoses. Where reported, the mean age of participants ranged from 51 to 68 years. The prevalence of major depression ranged from 3 to 40%. Depression screening tools assessed varied widely; the most frequently assessed tool was the Hospital Anxiety and Depression Scale. The only included RCT assessed nurse intervention, compared with usual care, for the treatment of depression; participants had mixed cancer diagnoses, a mean age of 57 years and 30% were male.

Two reviewers independently assessed studies for inclusion and any disagreements were resolved by consensus.

Assessment of study quality
The methodological quality of test accuracy studies was assessed using the 14-item QUADAS tool and the methodological quality of RCTs was assessed using the Cochrane risk of bias tool.

Two reviewers independently assessed study quality and any disagreements were resolved by consensus.

Data extraction
For diagnostic accuracy studies, estimates of sensitivity, specificity and positive and negative predictive values, with 95% confidence intervals (CIs) were extracted for the diagnostic thresholds specified by the authors.
For RCTs, the primary outcomes for each study were extracted, followed by observer-rated scales, then self-report measures. Post-intervention effect sizes were reported using the Hedges’ g statistic.

Two reviewers independently extracted data and any disagreements were resolved by consensus.

**Methods of synthesis**  
Studies were summarised in a narrative synthesis.

**Results of the review**  
Nineteen diagnostic accuracy studies (a total of 3,253 participants) and one RCT of depression treatment (200 participants) were included in the review. No RCTs that assessed the effectiveness of depression screening were identified.

Seventeen of the 19 diagnostic accuracy studies included patients who were already diagnosed with depression or receiving depression treatment. In addition, six studies did not clearly report selection criteria, ten did not report timing of the screening tool and diagnostic interview administration, 11 were not blinded or did not report sufficient information to determine blinding, 19 did not describe handling of missing data, and eight did not report explanations for study withdrawals.

Reported sensitivities varied widely, from 7% (95% CI 2 to 22%) for the depression sub-scale of Hospital Anxiety and Depression Scale using a diagnostic threshold of 11 or above, to 100% (95% CI 82 to 100%) for the Patient Care Monitor Acute Distress Scale using a diagnostic threshold of 61 or above. Six studies assessed Hospital Anxiety and Depression Scale and used receiver operating characteristic (ROC) curves to identify the optimum diagnostic threshold (15 to 20); the reported sensitivities for Hospital Anxiety and Depression Scale ranged from 68% (95% CI 47 to 84%) to 87% (95% CI 70 to 95%) and the reported specificities ranged from 67% (95% CI 56 to 76%) to 96% (95% CI 91 to 99%). Twelve studies assessed the depression sub-scale of Hospital Anxiety and Depression Scale, of which nine used ROC analyses to determine the optimum diagnostic threshold scores (5 to 11). For all twelve studies, the reported sensitivity estimates ranged from 7% (2 to 22%) to 90% (74 to 97%) and the reported specificity estimates ranged from 59% (52 to 66) to 98% (95 to 99%). Accuracy results for other instruments were reported in the article.

The only RCT of depression treatment compared a nurse intervention of up to ten one-to-one sessions (mean seven), delivered over three months, with usual care. Sessions included education about depression and its treatment, problem-solving and coping strategies, and communication with physicians about depression management. Post-intervention depression scores were significantly reduced compared to the usual care group (Hedges’ g=0.37). The study was rated as high quality.

**Authors’ conclusions**  
One trial of depression treatment reported modest improvement in depressive symptoms, but no evidence was found on the effectiveness of depression screening in cancer patients, either alone or in the context of optimal depression care.

**CRD commentary**  
This review reported three, clearly stated research questions and defined appropriate inclusion criteria for each. A range of sources were searched for relevant studies and no language restrictions were applied. Measures to minimise error and bias were applied throughout the review process and appropriate instruments were used to assess the methodological quality of included studies. The use of a narrative synthesis was appropriate given the apparent clinical and statistical heterogeneity of the included studies. The authors' conclusions reflect the available evidence and are likely to be reliable.

**Implications of the review for practice and research**  
**Practice:** The authors stated that there was currently an absence of evidence to support recommendations for the incorporation of routine depression screening into standard cancer care.

**Research:** The authors stated that depression screening in cancer should be evaluated in an RCT in which all patients identified as depressed, either through screening or via physician recognition and referral in a control group, had access to comprehensive depression care.
**Funding**
Canadian Breast Cancer Research Alliance; Canadian Institutes for Health Research.

**Bibliographic details**

**PubMedID**
22110613

**DOI**
10.1371/journal.pone.0027181

**Original Paper URL**
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0027181

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Depressive Disorder, Major /complications /diagnosis /therapy; Humans; Neoplasms /complications; Prognosis; Sensitivity and Specificity

**AccessionNumber**
12011007568

**Date bibliographic record published**
11/04/2012

**Date abstract record published**
17/08/2012

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.