CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

MOOD, COGNITION AND FATIGUE FOLLOWING STROKE

EVIDENCE TABLES

Post-Stroke Depression: Screening and Assessment

Update 2019

Lanctôt KL, Swartz RH (Writing Group Chairs) on Behalf of the Canadian Stroke Best Practice Recommendations Mood, Cognition and Fatigue following Stroke Writing Group and the Canadian Stroke Best Practice and Quality Advisory Committee, in collaboration with the Canadian Stroke Consortium

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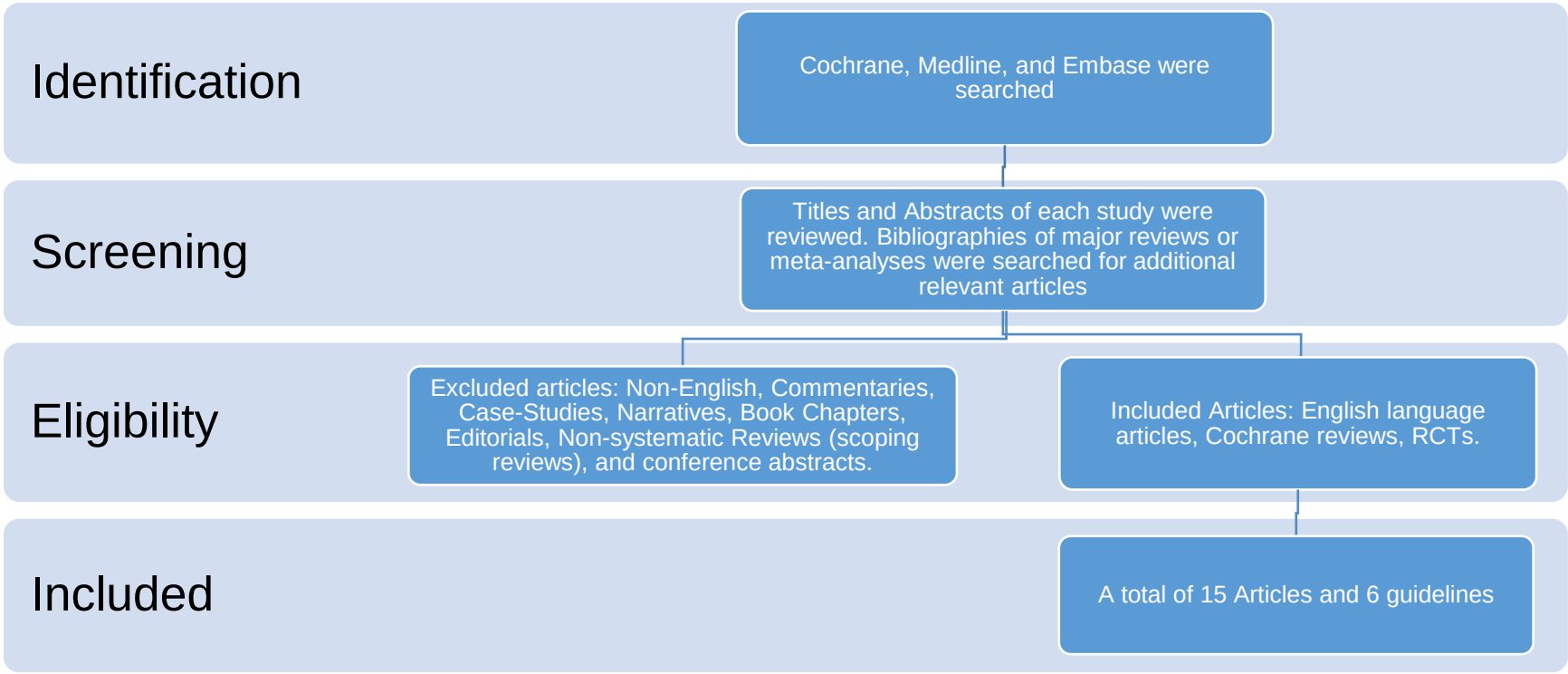
Search Strategy



The Medline, Embase, PsycInfo, and Cochrane databases were searched using the terms [stroke OR cerebrovascular disorders] and [depression OR depressive disorders OR anxiety OR anxiety disorders OR emotional incontinence]. The title and abstract of each article was reviewed for relevance. Bibliographies were reviewed to find additional relevant articles. Articles were excluded if they were: non-English, commentaries, case-studies, narrative, book chapters, editorials, non-systematic review, or conference abstracts. Additional searches for relevant best practice guidelines were completed and included in a separate section of the review. A total of 15 articles and 6 guidelines were included and were separated into categories designed to answer specific questions.

Published Guidelines

Guideline	Recommendations
Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch EC, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN, Southerland AM, Summers DV, Tirschwell DL; on behalf of the American Heart Association Stroke Council. **2018 Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association.** ***Stroke.* 2018; Mar;49(3):e46-e110**	**4.9. Depression Screening** Administration of a structured depression inventory is recommended to routinely screen for poststroke depression, but the optimal timing of screening is uncertain. Class I; LOE B-NR.
Stroke Foundation. Clinical Guidelines for Stroke Management 2017. Melbourne Australia. (Part 6)	Practice points • Stroke survivors with suspected altered mood (e.g. depression, anxiety, emotional lability) should be assessed by trained personnel using a standardised and validated scale. • Diagnosis should only be made following clinical interview
Winstein CJ, Stein J, Arena R, Bates B, Cherney LR, Cramer SC, Deruyter F, Eng JJ, Fisher B, Harvey RL, Lang CE, MacKay-Lyons M, Ottenbacher KJ, Pugh S, Reeves MJ, Richards LG, Stiers W, Zorowitz RD; on behalf of the American Heart Association Stroke Council, Council on Cardiovascular and Stroke Nursing, Council on Clinical Cardiology, and Council on Quality of Care and Outcomes Research. **Guidelines for adult stroke rehabilitation and recovery: a guideline for healthcare professionals from the American Heart Association/American Stroke Association.** ***Stroke* 2016;47:e98–e169.** **(selected)**	Administration of a structured depression inventory such as the Patient Health Questionnaire-2 is recommended to routinely screen for poststroke depression. Class I; LOE B Periodic reassessment of depression, anxiety, and other psychiatric symptoms may be useful in the care of stroke survivors. Class IIa; LOE B Consultation by a qualified psychiatrist or psychologist for stroke survivors with mood disorders causing persistent distress or worsening disability can be useful. IIa; LOE C
Intercollegiate Stroke Working Party. National clinical guideline for stroke, *5th* edition. London: Royal College of Physicians, 2016	**Anxiety, depression and psychological distress** A. People with stroke with one mood disorder (e.g. depression) should be assessed for others (e.g. anxiety). F. People with severe or persistent symptoms of emotional disturbance after stroke should receive specialist assessment and treatment from a clinical neuropsychologist/clinical psychologist. **Emotionalism** A. Any patient who persistently cries or laughs in unexpected situations or who is upset by their fluctuating emotional state should be assessed by a specialist or member of the stroke team trained in the assessment of emotionalism.
National Stroke Foundation. Clinical Guidelines for Stroke Management 2010 Recommendations. Melbourne Australia.	**Mood disturbance** 1. All patients should be screened for depression using a validated tool (GPP) 2. Patients with suspected altered mood (e.g., depression, anxiety, emotional lability) should be assessed by trained personnel using a standardized and validated scale (B) 3. Diagnosis should only be made following clinical interview (GPP)

Guideline	Recommendations
VA/DoD clinical practice guideline for the management of stroke rehabilitation 2010.	**Assessment of emotional and behavioral state** 1. Initial evaluation of the patient should include a psychosocial history that covers pre-morbid personality characteristics, psychological disorders, pre-morbid social roles, and level of available social support. 2. Brief, continual assessments of psychological adjustment should be conducted to quickly identify when new problems occur. These assessments should also include ongoing monitoring of suicidal ideation and substance abuse. Other psychological factors deserving attention include: level of insight, level of self-efficacy/locus of control, loss of identity concerns, social support, sexuality, and sleep. 3. Review all medications and supplements including over the counter (OTC) medications that may affect behavior and function. 4. Inclusion of collateral information (e.g., spouse, children) is recommended to obtain a comprehensive picture of the patient's pre-morbid functioning and psychological changes since the stroke. 5. There is insufficient evidence to recommend the use of any specific tools to assess psychological adjustment. Several screening and assessment tools exist. (See Appendix B for standard instruments for psychological assessment.) 6. Post-stroke patients should be assessed for other psychiatric illnesses, including anxiety, bipolar illness, SUD, and nicotine dependence. Refer for further evaluation by mental health if indicated. **Use of standardized assessments** 1. Recommend that all patients should be screened for depression and motor, sensory, cognitive, communication, and swallowing deficits by appropriately trained clinicians, using standardized and valid screening tools. [C] 2. If depression, or motor, sensory, cognitive, communication, or swallowing deficits are found on initial screening assessment, patients should be formally assessed by the appropriate clinician from the coordinated rehabilitation team. [C]

Evidence Tables

Incidence, Prevalence and Predictors of Post-Stroke Depression

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Salinas et al. 2017 **USA** **Prospective study**	NA	1,424/161,808 postmenopausal women included in the Women's Health Initiative, aged 50-70 years, without a baseline history of stroke or depression (based on no antidepressant use or self-reported depression at enrollment) and who subsequently were diagnosed with an ischemic stroke, excluding TIA and minor stroke not requiring hospitalization.	The development of new onset post-stroke depression (NPSD) was established based on Burnam screening score ≥5, administered a minimum of 3 times during the study or the initiation of treatment for depression, within 5 years after incident stroke. The relationship between NPSD and pre-stroke psychosocial factors was examined.	**Primary outcome:** NPSD over 5 years post stroke **Secondary outcomes:** Sub group analysis based on stroke subtype, stroke severity, and predictors of the NPSD	NPSD occurred in 21.4% (305) of participants. Median time from stroke to NPSD was 16.0 months (range=33 days–5 years). NPSD varied by stroke severity ranging from 16.7% of those with good recovery to 31.6% of those with severe disability. Participants with total anterior circulation infarction had the highest proportion of NPSD compared with those with lacunar infarcts, who had the lowest (31.4% vs. 16.1%). Among women with good recovery (i.e those able to

					return to work or school), the odds of NPSD within 5 years were significantly lower among those who were moderately optimistic those who had experienced fewer adverse life events.
Ayis et al. 2016 **UK** **Prospective study**	NA	761 patients without communication problems, recruited between 1998 and 2013 from the South London Stroke Register, with first-ever stroke, who were followed for a minimum of 4 years. Mean age was 65 years, 56% were men.	Patients were screened for depression 3 months after stroke and annually thereafter. New prescriptions for SSRIs were recorded.	**Primary outcome:** Developmental trajectories for depression over 5 years	4 developmental trajectories of depression symptoms were identified. Four patterns of symptoms (Groups I–IV) were identified: 6.31% of patients had severe symptoms that improved in the early years following stroke and then worsened (mean predicted HADS score was 15.7), 28.7% of patients had moderate symptoms, with a tendency towards worsening over time (mean predicted HADS score of 7.4), 49.5% of patients had mild symptoms with a tendency towards worsening (mean predicted HADS score of 3.9), 15.5% of patients had no depressive symptoms, and remained symptom free over time. SSRI use was lowest for patients without depression (1.1%) and highest in patients with severe depression (35%).
Guiraud et al. 2016 **France** **Prospective Study *Depression Predictors after Ischemic Stroke (DEPRESS)***	NA	251 patients, aged ≥18 years, consecutively admitted to a stroke unit with a recent (<14 days) ischemic stroke. Patients with current depression or with moderate or severe cognitive impairment, were excluded.	Patients were screened for depression at baseline and at 2 and six-month visits, using The Patient Health Questionnaire (PHQ-9). The diagnosis was confirmed by a psychiatrist using the Mini International Neuropsychiatric Interview. In severely aphasic patients, depression was diagnosed using the Aphasic Depression Rating Scale (ADRS) and the Visual Analog Mood Scale (VAMS).	**Primary outcomes:** Incidence and predictors of depression at 6 months post stroke	Incidence of depression was 3% (n=7) at baseline, 19% (n=50) at 2 months and 24.3% (n=61) at 6 months. Independent predictors of depression included female gender, prior history of depression, physical disability (mRS score >2 at discharge), pathologic crying, and prior history of stroke. The presence of ≥2 predictors identified 62% of depressed patients. 15 patients could not be assessed at six months
Jorgensen et al. 2016 **Denmark** **Retrospective study**	NA	157,243 admissions for first-ever stroke or TIA among persons aged ≥15 years between 2001 and 2011, representing all stroke admissions to hospitals in Denmark. At baseline, 21,826 patients had current depression A population-based sample of 160,236 persons, matched for age, sex and municipality was used for comparison. At	The incidence of new-onset depression over 2 years was compared between persons with first-ever stroke and the general population. Early depression was defined as occurring between 0-3 months, intermediate depression between 3 months and one year and late depression between 1 and 2 years after study	**Primary outcomes:** Incident depression, risk factors for depression and association between depression and mortality	The risk of incident depression was significantly higher among persons recovering from stroke at all assessment points. Analyses were adjusted for age, sex, education, cohabitation status, somatic comorbidities and previous depression Early depression: 13.1% vs. 1.7%, adj HR=8.53, 95% CI 8.17-8.91 Intermediate depression: 11.4% vs. 3.0%, adj HR=3.84, 95% CI 3.70-3.98 Late depression: 6.4% vs. 3.4%, adj HR=1.82, 95% CI

		baseline, 14,737 persons had current depression.	entry.		1.75-1.89 All incident depression during 2 years: 25.4% vs. 7.8%, adj HR=4.09, 95% CI 4.00-4.18 Independent predictors of depression for both stroke and reference groups included older age, female sex, living alone, basic education, diabetes, high levels of comorbidity and a history of depression. Greater stroke severity was an additional predictor for the stroke group. The risk of mortality within 2 years among persons with new onset depression was significantly higher in the reference group (adj HR=3.75, 95% CI 3.51-4.00 vs. 1.89, 95% CI 1.83-1.95, p<0.01).
Maaijee et al. 2016 **The Netherlands** **Retrospective study**	NA	511/1,005 participants in the FUTURE study who were available for follow-up approximately 10 years following the index event. Persons with first-ever ischemic stroke or TIA or ICH, aged 18-50 years comprised the stroke group 147 persons matched for age, sex and geographic location comprised the control group	Participants were invited to complete The Hospital Anxiety and Depression Scale (HADS), in person. Functional data (mRS and Instrumental Activities of Daily Living [IADL]), and vascular risk factors were collected at the same visit. 68 participants could not attend in person and filled out questionnaires, instead. The prevalences of depression and anxiety were compared between groups	**Primary outcomes:** Prevalences of depression or anxiety (defined as sub HADS scores >7) **Secondary outcome:** Association between depression/anxiety and poor functional outcome (mRS>2 or IADL<8)	The prevalence of depression in persons with stroke/TIA was significantly higher (16.8% vs. 6.1%, p=0.001). The odds of depression were significantly higher for persons with ischemic stroke (OR=4.7, 95% CI 2.0-11.0, p=0.003) and TIA (OR=2.8, 95% CI 1.2-6.6, p=0.02), compared with controls. The prevalence of anxiety in persons with stroke/TIA was significantly higher (23.0% vs. 12.2%, p<0.001). The odds of depression were significantly higher for persons with ischemic stroke (OR=3.0, 95% CI 1.6-5.8, p=0.001) and TIA (OR=2.8, 95% CI 1.5-5.8, p=0.002), compared with controls. Depression and anxiety were both associated with poor functional outcome, after adjustment for age, sex, education and stroke severity at baseline and follow-up.
Hackett & Pickles 2014 **Australia** **Systematic review**	NA	61 prospective studies (n= 25,488 participants) including adult (>18 years) stroke survivors, who had undergone an assessment of depression or depressive symptom burden, performed at a pre-specified time-point. 30 studies were hospital based, 19 studies were rehabilitation based, 12 studies were population based. In most studies, all stroke types were included. A portion of the studies excluded participants with a history of depression, aphasia and/or recurrent stroke	Update to 2005 review (n=51 studies)	**Primary outcome:** Incidence of: depressive disorder, depressive symptoms, or 'psychological distress and major/minor post-stroke depression	The overall pooled frequency estimate of PSD was 31%, 95% CI 28% to 35%. Timing of assessment (months post stroke): 0-1 month: 28%, 95% CI 23% to 33%, n=4,466 2-5 months: 36%, 95% CI 29% to 43%, n= 18,254 6-9 months: 31%, 95% CI 26% to 37%, n= 2,224 1 year: 33%, 95% CI 26% to 39%, n=4,001 2-4 years: 25%, 95% CI 16% to 33%, n=2,408 5 years: 23%, 95% CI 14% to 31%, n=1,845 Sub group analyses History of depression: 31%, 95% CI 27 to 35% (48 studies, n=23,654 people) Aphasia: 34%, 95% CI 29 to 39% (25 studies, n=19,218 people) First-ever stroke: 33%, 95% CI 28 to 38 (25 studies, n=5,658 people)

Kutlubaev & Hackett 2014 **Australia** **Systematic review**	NA	23 studies (n=18,374 participants) in which there was prospective consecutive recruitment of people with a clinical diagnosis of stroke, with an attempt to assess the variables associated with, or predictive of, the development of depression, or explored the influence of depression on stroke outcome.	Update to 2005 review (n=20 studies)	**Primary outcomes:** Predictors of depression, impact of depression on stroke outcome	The most consistently reported predictors of post-stroke depression were increased stroke severity, early disability and later disability. 14 studies examined the effect of depression on stroke outcome. The most consistent finding was that depression had a negative effect on functional recovery.
Ayerbe et al. 2011, 2013a **UK** **Prospective study**	NA	3,689 patients registered in the South London Stroke Register 1995 to 2006, following first stroke.	Development of depression was assessed at 3 months, 1, 3, and 5 years, using Hospital Anxiety and Depression Scale (HADS-D). Scores of >7 indicated depression, scores of >10 indicated severe depression. Data collected at follow-up also included accommodation, employment, cognitive level, family support, activities of daily living, and activity.	**Primary outcomes:** Frequency of depression, and predictors	The percentage of participants who were depressed: 1 month: 33%, 95% CI 33–36%, n=1,821 1 year: 28%, 95% CI 25-30%, n=1,752 3 years: 32%, 95% CI 30-35%, n=1,353 5 years: 31%, 95% CI 27-34%, n=742 The percentage of participants with severe depression: 1 month: 15%, 95% CI 13-17% 1 year: 13%, 95% CI 11-15% 3 years: 15%, 95% CI 13-17% 5 years: 12%, 95% CI 9-15% 48% of patients were not depressed at any time point; 49% to 55% of patients, depressed at 1 assessment remained depressed at follow-up; and 15% to 20% of patients at each assessment were new cases. Independent predictors of depression at 1 month, and 1-year post stroke were: GCS score 13-15, dysphagia, incontinence, impaired cognition (MMSE <24), inability to work and Barthel Index score of 20. Pre-stroke treatment for depression was an independent predictor at 3 months. Independent predictors of depression at 3 years post stroke were: dysphagia, incontinence, impaired cognition and Barthel Index score of 20. Independent predictors of depression at 5 years post stroke were: pre-stroke treatment for depression, impaired cognition and Barthel Index score of 20. **Up to 15-year follow-up** (1995-2009; n=4,022) From years 6-10, the incidence of post-stroke depression ranged from 13.2%-19.5%. From years 11-13, the incidence of post-stroke depression ranged from 15.9%-20.9%. At year 14, 1/15 patients at risk had incident

					depression. At year 15, 1/7 patients at risk had incident depression. Over 15 years, the prevalence of depression ranged from 29%-39%. Most cases of depression developed during the first 3 months post stroke (32.8%, 95% CI 30.0–35.6%). There were no new cases after 10 years.
Ayerbe et al. 2013b **UK** **Systematic review & meta-analysis**	NA	50 studies published from 1983 to 2011, reporting the prevalence, incidence, cumulative incidence, duration, predictors or outcomes of depression after stroke. In all studies assessment of depression was conducted after stroke, without knowledge of pre-stroke depression status.	Pooled analyses were conducted to estimate the prevalence of depression post stroke, 1) classified by timing of assessment: acute phase (≤ 1 month of stroke); medium-term phase (1–6 months); long-term phase (6 months to 1 year); very long-term phase (>1 year after stroke) and 2) classified as population, hospital or rehabilitation studies.	**Primary outcome:** Prevalence of post-stroke depression	The overall prevalence of post-stroke depression was 29% (95% CI 25%–32%). Prevalence based on timing post stroke ≤1 month: 28% (95% CI 23%–34%) 1-6 months: 31% (95% CI 24%–39%) 6 months-1 year: 33% (95% CI 23%–43%) >1 year: 25% (95% CI 19%–32%) Prevalence based on setting: Population studies: 22% (95% CI 17%–28%) Hospital studies: 30% (95% CI 24%– 36%), Rehabilitation studies: 30% (95% CI 25%–36%) Major predictors of depression included greater disability, depression pre-stroke, cognitive impairment, increasing stroke severity and anxiety.

Formal Screening Tools to Identify Possible Cases of Post-Stroke Depression

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Swartz et al. 2017 **Canada** **Feasibility study**	NA	1,503 patients attending a stroke prevention clinic between 2012-2014. Diagnoses included persons with stroke (29%) and TIA (34%). Persons were also referred for other non-stroke/TIA events. Mean age was 64 years, 53% were female.	The integrated DOC screening tool includes items to screen for obstructive sleep apnea (DOC-apnea), depression (DOC-mood) and cognitive impairment (DOC-Cog). The depression items included the PHQ-2 (scored 0-6). The reference standard was a Structured Clinical Interview for depression within 3 days of screening (minor and major depression)	**Primary outcome:** Feasibility (defined as 85% of patients completing the entire screen in ≤5 minutes) **Secondary outcome:** Validity	Feasibility: all patients completed the DOC screen 89% of patients completed the screen in less than 5 minutes. Mean time for completion was 4.2 minutes (range 1.6-15.8 minutes) Validity: 421 patients completed a SCID. The prevalence of any depression was 20.4%. 248 patients (59%) scored 0 and were considered to be at low risk of depression; 132 patients (31%) scored 1-3 and were considered to be at intermediate risk of depression and 42 persons (10%) scored ≥4 and were considered to be at high risk of depression. Using 2 cut-points, a score of 4-6 (high-risk) was

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
					associated with a specificity of 99% and PPV of 90%; a score of 0 (low-risk) was associated with a sensitivity of 92% and a NPV of 97%. AUC was 0.898, which increased to 0.902 after controlling for age, sex and education.
Prisnie et al. 2016 **Canada** **Prospective study**	NA	122 adult patients with stroke or TIA, consecutively recruited from an outpatient stroke prevention clinic, without severe aphasia, dementia or moderate/severe developmental delay. Mean age was 60.1 years, 55.7% were female. Mean time from index event onset was 3.6 months.	Participants completed a demographic questionnaire and 4 depression screens (assigned in random order), including Patient Health Questionnaire (PHQ)-9, the PHQ-2, the Hospital Anxiety and Depression Scale (HADS-D), and Geriatric Depression Scale (GDS-15. Each participant then completed the Structured Clinical Interview for DSM-IV (SCID) by telephone, conducted within 2 weeks of questionnaire completion, which was used to assess the presence of: current and past major depressive episode (MDE), current and past manic episode, dysthymic disorder, and adjustment disorder.	**Primary outcomes:** Sensitivity (SN), specificity (SP), positive predictive value (PPV), negative predicative value (NPV), +/- likelihood ratios (LR) and Area under curve (AUC), based on optimal cut-points for each screening tool	The prevalence of SCID-diagnosed current major depressive episodes was 9.8% (n=12). 4 patients had MDE, 7 patients with depression had a previous history of depression. No patients had a current manic episode or an adjustment disorder. **Diagnostic Accuracies** PHQ-9 (cut point 13): SN: 81.8%; SP: 97.1%; PPV: 75.0%; NPV: 98%; +LR: 28.1; overall accuracy: 95.6% PHQ-2 (cut point 3): SN: 75.0%; SP: 96.3%; PPV: 96.2%; NPV: 97.2%; +LR: 20.1; overall accuracy: 94.1% HADS-D (cut point 10): SN: 63.6%; SP: 98.1%; PPV: 77.8%; NPV: 96.3%; +LR: 33.4; overall accuracy: 94.8% GDS-15 (cut point 7): SN: 45.5%; SP: 84.8%; PPV: 25.0%; NPV: 93.3%; +LR: 3.0; overall accuracy: 80.9% AUC: PHQ-9 86.6%, PHQ-2 86.7%, HADS-D 85.9%, and GDS-15 66.3%.
Meader et al. 2014 **UK** **Systematic review**	NA	24 studies (n=2,907 participants) in which persons were screened for post-stroke depression. Sample sizes ranged from 27 to 423. Mean ages ranged from 55 to 80 years. The median prevalence for any depression was 18% (range 8–46%).	The performance of 18 previously validated screening tools to detect depression and major depression, using the International Classification of Disease or Diagnostic and Statistical Manual diagnosis of depression, as the reference standard.	**Primary outcomes**: Sensitivity (SN), specificity (SP), positive predictive values (PPVs) and negative predictive values (NPVs) and clinical utility, calculated using the clinical utility index (CUI)	**For the Identification of any depression** Meta-analysis was possible for 9 scales Including: Beck Depression Inventory (BDI); Center of Epidemiological Studies-Depression Scale (CES-D); Geriatric Depression Scale (GDS); Hospital Anxiety and Depression Scale (HADS), total and depression sub scores; Hamilton Depression Rating Scale (HDRS); Montgomery Asberg Depression Rating Scale (MADRS) and Patient Health Questionnaire (PHQ). The 3 best performing scales included: CES-D (SN 0.75; 95% CI 0.60 to 0.85; SP 0.88; 95% CI 0.71 to 0.95), HDRS (SN 0.84; 95% CI 0.75 to 0.90; SP 0.83; 95% CI 0.72 to 0.90) and the PHQ-9 (SN 0.86, 95% CI 0.70 to 0.94; SP 0.79, 95% CI 0.60 to 0.90). All scales were rated as fair to poor for their Rule-in

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
					CUI. 7/9 scales were rated as good for their Rule-out CUI. **For the Identification of major depression** Meta-analysis was possible for 6 scales The 2 best performing scales included: HDRS (SN 0.86; 95% CI 0.72 to 0.93; SP 0.89; 95% CI 0.79 to 0.96) and the PHQ-9 (SN 0.86, 95% CI 0.70 to 0.94; SP 0.79, 95% CI 0.60 to 0.90). All scales were rated as fair to poor for their Rule-in CUI. 7/9 scales were rated as good for their Rule-out CUI.

Feasibility of Early Screening to Identify Possible Cases of Post-Stroke Depression

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Karamchandani et al. 2015 **USA** **Retrospective study**	NA	303 patients admitted to a single institution over a 2.5-month period with ischemic or hemorrhagic stroke. Mean age was 63.9 years, 45% were female. Median NIHSS score was 9.	Patients who were deemed to be potentially eligible for depression screening were identified. A modified version of the Patient Health Questionnaire (PHQ-9), was used to screen for potential depression (defined as score >4) before hospital discharge or transfer to another service.	**Primary outcome:** Feasibility (defined as >75% of eligible patients screened)	211 (70%) patients were eligible for screening. Of these, 75% (158) were screened. Median time from admission to screening was 2.5 days. 92 patients were not eligible for screening due to aphasia (n=30) or medical condition (n=62) including death, hospice/comfort measures, or prolonged intubation. 48 potentially eligible patients were missed (screen not ordered, or ordered and not completed) and in 5 patients, screening was attempted, but could not be completed. 56 patients (35%) were identified as depressed PHQ-9 scores 33 patients (20.9%) scored 0 69 patients (43.7%) scored 1-4 49 patients (31.0%) scored 5-14 7 patients (4.4%) scored ≥14
Lees et al. 2014 **UK**	NA	146 patients ≥18 years, admitted consecutively to an acute stroke unit, without a current major psychiatric	Patients' suitability for depression screening was established informally by the treating team members.	**Primary outcomes:** Feasibility, and test accuracy	102 patients were suitable for screening, of whom 69 agreed to participate. All 69 patients completed the HAD at baseline, with

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Prospective study		disorder, following ischemic or hemorrhagic stroke or TIA, (excluding SAH)	Patients were screened for depression using the Hospital Anxiety and Depression Scale (HADS) and the Depression Intensity Scale Circles (DISCs). Screening was repeated at 1-month follow-up. Depression diagnosis was confirmed at one month using the Mini-International Neuropsychiatric Interview (MINI)		some (45%) requesting assistance. Using HADS, anxiety and depression were identified in 16% and 13%, respectively, (cut-off score of ≥11 for each sub scale). Using DISCs, depression was identified in 37%, (cut-off of ≥2). 61 patients completed 1-month follow-up assessments. Using MINI, anxiety and depression were diagnosed in 10% and 20% of patients, respectively. The accuracy of HADs to identify patients with depression or anxiety at either baseline or one month was poor (sensitivities ranged from 17%-33%), while their accuracy to rule out anxiety or depression was better (specificities ranged from 85%-96%). The sensitivity and specificity of the DISCs to identify a mood disorder was better (92% and 78%).

Reference List

Ayerbe L, Ayis S, Rudd AG, Heuschmann PU and Wolfe CD. Natural history, predictors, and associations of depression 5 years after stroke: The South London Stroke Register. *Stroke* 2011; 42: 1907-11.

Ayerbe L, Ayis S, Crichton S, Wolfe CD and Rudd AG. The natural history of depression up to 15 years after stroke: The South London Stroke Register. *Stroke* 2013a; 44: 1105-10.

Ayerbe L, Ayis S, Wolfe CD and Rudd AG. Natural history, predictors and outcomes of depression after stroke: systematic review and meta-analysis. Br J Psychiatry*:* 2013b; 202: 14-21.

Ayis SA, Ayerbe L, Crichton SL, Rudd AG, Wolfe CD. The natural history of depression and trajectories of symptoms long term after stroke: The prospective south London stroke register. *J Affect Disord* 2016;194:65-71.

Guiraud V, Gallarda T, Calvet D, et al. Depression predictors within six months of ischemic stroke: The DEPRESS Study. *Int J Stroke* 2016; 11: 519-25.

Hackett ML and Pickles K. Part I: frequency of depression after stroke: an updated systematic review and meta-analysis of observational studies. *Int J Stroke 2014*; 9: 1017-25.

Jorgensen TS, Wium-Andersen IK, Wium-Andersen MK, et al. Incidence of Depression After Stroke, and Associated Risk Factors and Mortality Outcomes, in a Large Cohort of Danish Patients. *JAMA Psychiatry* 2016; 73: 1032-40.

Karamchandani RR, Vahidy F, Bajgur S, et al. Early depression screening is feasible in hospitalized stroke patients. *PloS One* 2015; 10: e0128246.

Kutlubaev MA and Hackett ML. Part II: predictors of depression after stroke and impact of depression on stroke outcome: an updated systematic review of observational studies. *Int J Stroke* 2014; 9: 1026-36.

Lees R, Stott DJ, Quinn TJ and Broomfield NM. Feasibility and diagnostic accuracy of early mood screening to diagnose persisting clinical depression/anxiety disorder after stroke. *Cerebrovasc Dis* 2014; 37: 323-9.

Maaijwee NA, Tendolkar I, Rutten-Jacobs LC, et al. Long-term depressive symptoms and anxiety after transient ischaemic attack or ischaemic stroke in young adults. *Euro J Neurol* 2016; 23: 1262-8.

Meader N, Moe-Byrne T, Llewellyn A and Mitchell AJ. Screening for poststroke major depression: a meta-analysis of diagnostic validity studies*. J Neurol Neurosurg Psychiatry* 2014; 85: 198-206.

Prisnie JC, Fiest KM, Coutts SB, et al. Validating screening tools for depression in stroke and transient ischemic attack patients. *Int J Psychiatry Med* 2016; 51: 262-77.

Salinas J, Ray RM, Nassir R, et al. Factors Associated with New-Onset Depression Following Ischemic Stroke: The Women's Health Initiative. *J Am Heart Assoc* 2017;6(2):e003828.

Swartz RH, Cayley ML, Lanctôt KL, Murray BJ, Cohen A, Thorpe KE, Sicard MN, Lien K, Sahlas DJ, Herrmann N. The “DOC” screen: Feasible and valid screening for depression, Obstructive Sleep Apnea (OSA) and cognitive impairment in stroke prevention clinics. *PloS One* 2017;12(4):e0174451.