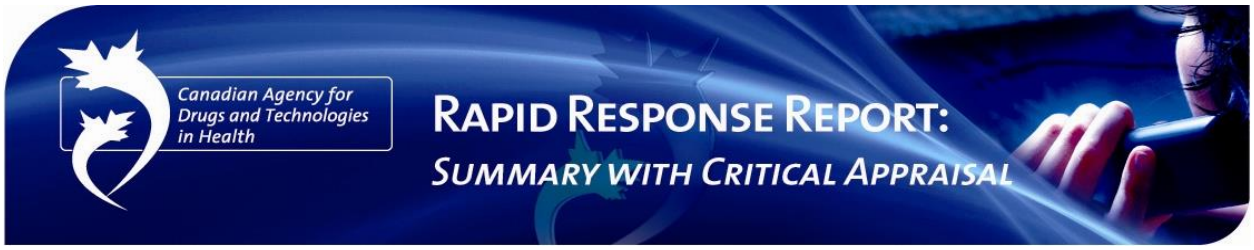


TITLE: Diagnosing, Screening, and Monitoring Depression in the Elderly: A Review of Guidelines

DATE: 8 September 2015

CONTEXT AND POLICY ISSUES

Depression disorders are one the most common and burdensome mental health problems. The lifetime prevalence of major depressive disorder was estimated as 10.8% in Canadians.[1] This condition is more prevalent in people's later life, particularly in older physically ill patients, who suffer from other illnesses, such as heart disease, low thyroid activity, rheumatoid arthritis, cancer and diabetes, take medications, have chronic or severe pain, lack a supportive network of family/friend/community, experience recent death of a loved one, and have a history of depression or suicide attempts.[2,3] Depressive symptoms were recorded in 10% to 15% of elderly patients who needed medical attention in the Canadian community.[4] Also, British and American studies reported a prevalence of substantial depressive symptomatology in 14.7% to 20% of elderly living in the community.[5]

Even though elderly patients are more vulnerable to depression, it is difficult to identify this condition because the typical symptoms such as sadness may not be the main symptom presented in these patients. Furthermore, they may not be as willing to discuss their feelings or seek help from a health professional.[6,7] If left unmanaged, depression will compromise the treatment of other conditions, increase the risk of prolonged disability or early death, leave the patients more susceptible to developing other serious health problems such as heart disease, negatively impact the patient's family and healthcare providers, and increase the risk of suicide.[3]

Screening tests may be helpful in the early detection of depression in primary care and other healthcare settings. The results may be translated into timely treatment and lead to better health outcomes and a quicker recovery.[8] Several tools have been developed for screening and assessing depression in older patients in various settings, such as the Brief Assessment Schedule for the Elderly (BASDED), the SELFCARE (D) and the Center for Epidemiological Studies – Depression scale (CES-D).[5] Geriatric Depression Scale (GDS).[4,5] Different versions of GDS are available, where the number of possible items range from four of 30.[4]

The purposes of this review is to summarize the guidelines that are relevant to the diagnosis, screening and monitoring in elderly patients with depression.

RESEARCH QUESTIONS

What are the evidence-based guidelines associated diagnosing, screening, and monitoring depression in the elderly?

KEY FINDINGS

Two systematic reviews examined the diagnostic accuracy of the available screening tools. Cut-off points of one screening instrument for disease diagnosis were suggested in one systematic review. Three evidence-based practice guidelines suggested that depression screening should be conducted. GDS or other screening instruments can be used among elderly patients. Guidelines regarding monitoring treatment response in elderly patients were not identified.

METHODS

Literature Search Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, Canadian and major international health technology agencies, as well as a focused Internet search. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, and meta-analyses, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and July 30, 2015.

Selection Criteria and Methods

One reviewer screened citations and selected studies. In the first level of screening, titles and abstracts were reviewed and potentially relevant articles were retrieved and assessed for inclusion. The final selection of full-text articles was based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Elderly patients ≥65 years of age (i.e., subpopulation: the frail elderly) in any setting (e.g., home, long-term care, hospital) with depression
Intervention	Diagnostic guidelines: screening and monitoring tools
Comparator	No comparator
Outcomes	Guidelines
Study Designs	Health technology assessments (HTAs)/ Systematic reviews (SRs)/Meta-analysis(MAs) and evidence-based clinical practice guidelines

Exclusion Criteria

Articles were excluded if they did not meet the selection criteria outlined in Table 1, were duplicate publications, or were published prior to 2010. Evidence-based guidelines were

excluded if there was incomplete reporting of methodology or if they were superseded by a more recent, rigorous, or updated review or guideline.

Critical Appraisal of Individual Studies

The included SRs were critically appraised using the AMSTAR checklist and the methods used when conducting the literature search, study selection, quality assessment, data extraction, and for summarizing the data were assessed.[9] Guidelines were assessed with the AGREE II instrument.[10] The scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence were evaluated. Summary scores were not calculated for the included studies; rather, a narrative summary of the strengths and limitations of each included study is provided.

SUMMARY OF EVIDENCE

Details of study characteristics, critical appraisal, and study findings are located in Appendices 2, 3, and 4, respectively.

Quantity of Research Available

A total of 616 citations were identified in the literature search. Following screening of titles and abstracts, 605 citations were excluded, and 11 potentially relevant reports from the electronic search were retrieved for full-text review. Three potentially relevant publications were retrieved from the grey literature search. Of these potentially relevant articles, nine publications were excluded for various reasons, while two systematic reviews[2,7] and three clinical practice guidelines[4,11,12] met the inclusion criteria and were included in this report. Appendix 1 describes the PRISMA flowchart of the study selection.

Additional references of potential interest are provided in Appendix 5.

Summary of Study Characteristics

Study Design

Two SRs[2,7] and three evidence-based guidelines[4,11,12] were identified. The two SRs, published in 2010[7] and 2012[2] concerned the diagnostic accuracy of available depression screening tools and searched evidence published from inception to 2009. The former included studies published in the English language only. Fourteen diagnostic test studies in one SR[2] and 69 diagnostic test studies in another SR[7] were summarized in varying degrees of detail. Mitchell et al. evaluated the quality of the included individual studies in the SR with the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) tool.[13]

Three evidence-based guidelines,[4,11,12] published between 2010 and 2012, included recommendations regarding which screening tools to use for depression detection in elderly patients.

Country of Origin

Both SRs were conducted in the United Kingdom.[2,7] The three guidelines were conducted in the United States[11,12] and Canada.[4]

Patient Population

In one SR,[2] the population was limited to inpatients, and the number of study participants ranged from 46 to 221. In the second SR, inpatients, outpatients and those living in nursing homes were enrolled.[7] The number of patients ranged in the include studies from 28 to 715, respectively. One of the guideline focused on patients in the long-term care setting.[12]

Interventions and Comparators

Dennis et al. compared the diagnostic accuracy of 13 depression screening instruments with the "gold standard" in depression diagnosis, such as the International Classification of Diseases (ICD-10), the Diagnostic and Statistical Manual (DSM), or a clinical interview and diagnosis by a psychiatrist.[2] Among the 14 studies, GDS was the most frequently examined, with GDS_{30} in seven studies, GDS_{15} in four and the shortest GDS_5 in one. Most of the other instruments were assessed in one single study.

In the SR by Mitchell et al., the validity of various depression screening instruments was investigated in 69 studies. All the study participants had been diagnosed with depression by semi-structured psychiatric interview. Similar to the SR by Dennis et al.,[2] GDS was the most commonly examined instrument (e.g., GDS_{30} in 21 studies, GDS_{15} in 12 studies, and GDS_4/GDS_5 in three studies).

In the clinical practice guidelines, recommendations were provided with respect to the use of depression screening instruments including GDS, Cornell Scale for Depression in Dementia (CSDD), and Patient Health Questionnaire (PHQ).

Outcomes

Both SRs evaluated the effect of various screening tools on identifying depression. The outcomes in the SRs were diagnostic accuracy measures, including sensitivity and specificity. Meta-analyses were performed when appropriate.[2,7]

In the clinical practice guidelines, the recommendations surrounding the diagnosis and screening of depression were generated. Depression screening was based on the diagnostic accuracy of the screening tools.[4,11,12] There was no explicit recommendations developed for depression monitoring.

Summary of Critical Appraisal

Both SRs stated their objectives and selection criteria. It was unknown if the grey literature was searched. The quality of the included studies was reported in one SR.[2] The patient characteristics were reported briefly in the two SRs. Meta-analyses were conducted in both SRs, and the point estimates and corresponding 95% confidence intervals were reported. Publication bias was not examined in either SR.

In the clinical practice guidelines, the objectives and target population were explicit. A comprehensive literature search was performed in all three guidelines. The level of evidence was provided, as well as the links between recommendations and the supporting evidence. Moreover, the guidelines described the methods of recommendation development. All three guidelines were updates of previous guidelines, and they all indicated a plan for future update.

Summary of Findings

What are the evidence-based guidelines associated diagnosing, screening, and monitoring depression in the elderly?

GDS was the most common screening tool investigated in both SRs. Dennis et al.[2] suggested a cut-off of 10/11 for the GDS_{30} in diagnosing depression in elderly patients in a general hospital setting. With this cut-off, the sensitivity and specificity of this diagnostic instrument were 85% and 82%, respectively. For the GDS_{15}, a cut-off of 5/6 was suggested, and corresponded to a sensitivity of 79% and specificity of 77% in diagnosing depression. Mitchell et al. presented the results of sensitivity and specificity for various versions of the GDS used in different settings.[7] Similar outcomes for the diagnostic accuracy were observed across GDS_{30}, GDS_{15} and $GDS_{4/5}$. The results should be interpreted with caution due to the number of studies (n=3) evaluating $GDS_{4/5}$.

The guidelines suggested that GDS was an appropriate screening tool for identifying depression in older patients. In the long-term care facilities, elderly residents should be screened for depression, and the risk factors for depression such as the history of depression, concomitant medical conditions and medications need to be considered.

Limitations

There is a lack of clear guidance on the clinically meaningful cut-off points in the screening instruments for depression for the study population. One SR suggested cut-off points for the GDS series based on limited number of studies. Among them, one study (n=60) contributed to the cut-off for the GDS_5. In addition, the quality assessment of the included studies was not reported; therefore we were unable to determine the internal validity of these studies.[2]

The clinical practice guidelines recommended screening for depression for the elderly in various settings. No further details were available to facilitate guideline implementation, such as how often this needs to be done and which screening tools are appropriate for the elderly patients.

GDS was the most commonly investigated tool in the included SRs and in the evidence that supported the recommendations in the clinical practice guidelines. There was insufficient evidence available to assess the usefulness of other depression screening tools.

Furthermore, we did not identify guidelines on monitoring in depression in older patient population.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

The clinical evidence regarding diagnosing and screening depression in the elderly patients was limited. Two SRs examined the diagnostic accuracy of the available screening tools, such as GDS. Cut-off points for GDS for disease diagnosis were suggested in one SR; however these findings had an insufficient evidence base and must be interpreted with caution. Three evidence-based clinical practice guidelines suggested that depression screening using GDS or other instrument should be conducted among the elderly. There was no guidance on monitoring depression in the target population.

PREPARED BY:
Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
www.cadth.ca

REFERENCES

1. Kennedy SH, Lam RW, Parikh SV, Patten SB, Ravindran AV, editors. Clinical guidelines for the management of major depressive disorder in adults [Internet]. Toronto: Canadian Network for Mood and Anxiety Treatments (CANMAT); 2009. [cited 2015 Aug 26]. Available from: http://www.canmat.org/resources/canmat%20depression%20guidelines%202009.pdf J Affect Disord. 2009 Oct. 117(Suppl 1):S1-S64.

2. Dennis M, Kadri A, Coffey J. Depression in older people in the general hospital: a systematic review of screening instruments. Age Ageing [Internet]. 2012 Mar [cited 2015 Aug 17];41(2):148-54. Available from: http://ageing.oxfordjournals.org/content/41/2/148.full.pdf+html

3. Depression in elderly [Internet]. Guelph (ON): Mood Disorders Society of Canada; 2010. 9 p. [cited 2015 Aug 31]. Available from: http://www.mooddisorderscanada.ca/documents/Consumer%20and%20Family%20Support/Depression%20in%20Elderly%20edited%20Dec16%202010.pdf

4. Caregiving strategies for older adults with delirium, dementia and depression [Internet]. Toronto: Registered Nurses Association of Ontario (RNAO); 2004 Jun. 36 p. (Nursing Best Practice Guideline). [cited 2015 Aug 26]. Available from: http://rnao.ca/sites/rnao-ca/files/Caregiving_Strategies_for_Older_Adults_with_Delirium_Dementia_and_Depression.pdf

5. National guidelines for seniors' mental health: the assessment and treatment of depression [Internet]. Toronto: Canadian Coalition for Seniors' Mental Health; 2006. 60 p. [cited 2015 Aug 26]. Available from: http://www.ccsmh.ca/en/natlguidelines/depression.cfm

6. Older adults and depression [pamphlet on the Internet]. Bethesda (MD): National Institute of Mental Health, U.S. Department of Health and Human Services; 2015. 8 p. Report No.: NIH publication No. Qf 11-7697. [cited 2015 Aug 31]. Available from: http://www.nimh.nih.gov/health/publications/older-adults-and-depression/older-adults-and-depression_141998.pdf NIH publication no. Qf 11-7697.

7. Mitchell AJ, Bird V, Rizzo M, Meader N. Which version of the geriatric depression scale is most useful in medical settings and nursing homes? Diagnostic validity meta-analysis. Am J Geriatr Psychiatry. 2010 Dec;18(12):1066-77.

8. Kouwenhoven SE, Kirkevold M, Engedal K, Kim HS. Depression in acute stroke: prevalence, dominant symptoms and associated factors. A systematic literature review. Disabil Rehabil. 2011;33(7):539-56.

9. Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Med Res Methodol [Internet]. 2007 [cited 2015 Sep 4];7:10. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1810543/pdf/1471-2288-7-10.pdf

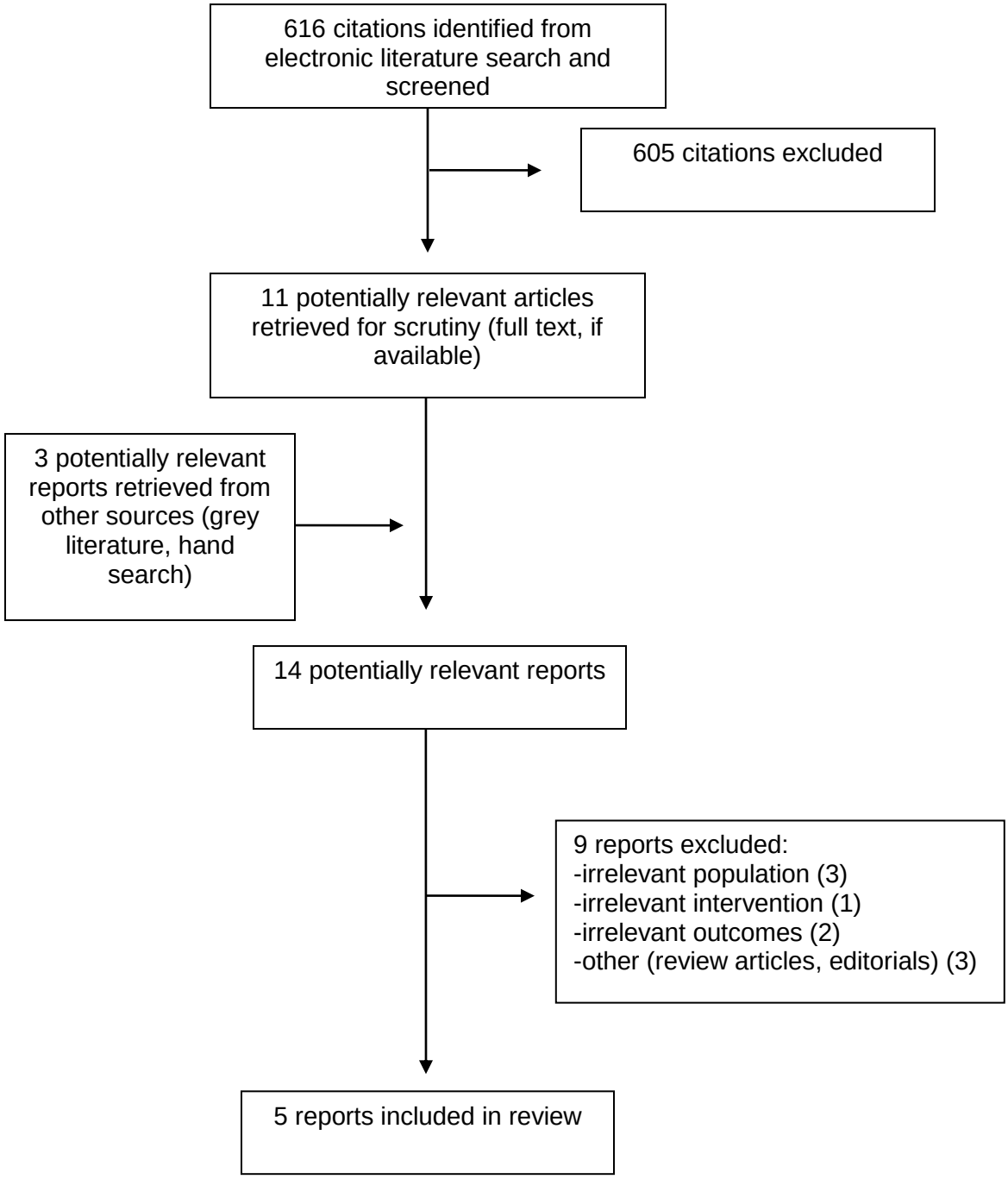
10. Brouwers M, Kho ME, Browman GP, Burgers JS, Cluzeau F, Feder G, et al. AGREE II: advancing guideline development, reporting and evaluation in healthcare. CMAJ [Internet]. 2010 Dec [cited 2014 Apr 9];182(18):E839-E842. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3001530/pdf/182e839.pdf

11. Adult depression: clinical practice guideline [Internet]. Oakland (CA): Kaiser Permanente; 2012 Feb. 317 p. [cited 2015 Aug 26]. Available from: http://www.providers.kaiserpermanente.org/info_assets/cpp_cod/cod_depression_guideline_0712.pdf

12. National Guideline Clearinghouse [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 1997 -. Guideline summary: depression in the long-term care setting; 2011 [cited 2015 Sep 1]. Available from: http://www.guideline.gov/content.aspx?id=32668

13. Whiting P, Rutjes AW, Reitsma JB, Bossuyt PM, Kleijnen J. The development of QUADAS: a tool for the quality assessment of studies of diagnostic accuracy included in systematic reviews. BMC Med Res Methodol [Internet]. 2003 Nov 10 [cited 2015 Sep 4];3(25). Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC305345

APPENDIX 1: Selection of Included Studies



APPENDIX 2: Characteristics of Included Publications

Table A1: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Types and numbers of primary studies included	Patient Characteristics	Intervention(s)	Comparator(s)	Clinical Outcomes
Dennis 2012,[2] United Kingdom	14 studies investigating the diagnostic accuracy of various depression scales. Literature search: from inception to June 2009	Elderly in-patients (aged ≥ 60 years, in general hospital or rehabilitation hospital). All participants should have been assessed using a depression rating scale to screen for depression and had to be compared with "gold standard" (e.g. ICD-10 or a clinical interview and diagnosis by a psychiatrist).	Various depression screening tools: GDS, BASDEC, HADS, ZSDS, CES-D, BDI	Gold standard: recognized diagnostic criteria such as ICD-10 or DSM, GMS-AGECAT or involve a clinical interview and diagnosis by a psychiatrist.	Diagnostic accuracy such as sensitivity and specificity
Mitchell 2010,[7] United Kingdom	69 studies measuring the diagnostic validity of the GDS against a semi-structured psychiatric interview. Literature search: from inception to October 2009	Elderly patients ≥ 65 years of age, had a diagnosis of depression, and from 3 settings: inpatients, outpatients and nursing home.	$GDS_{4/5}$, GDS_{15} and GDS_{30}	Semi-structured psychiatric interviews	Diagnostic accuracy such as sensitivity and specificity

AGECAT=a computerized diagnostic system; BASDEC=Brief Assessment Schedule Depression Cards; BDI=Back Depression Inventory; CES-D=Center for Epidemiological Studies Depression Scale; DSM= the Diagnostic and Statistical Manual; GDS=Geriatric Depression Scale 5, 15, 30-item versions; GMS=Geriatric Mental State; HADS=Hospital Anxiety and Depression Scale; ICD=international Classification of Disease; ZSDS=Zung Self Rating depression scale

Table A2: Characteristics of Included Guidelines						
Objectives			**Methodology**			
Intended users/ Target population, Country of Development	**Intervention and Practice Considered**	**Major Outcomes Considered**	**Evidence collection, Selection and Synthesis**	**Evidence Quality and Strength**	**Recommendation Development and Evaluation**	**Guideline Validation**
Kaiser, 2012[11] *(Update of 2006 guidelines)*						
Health care practitioners (physicians, nurses, managed care organizations, pharmacists) Patients with major depressive disorder United States	Screening tools: PHQ-9, PHQ-2, GDS (older patients), the Edinburgh Postpartum depression tool for pregnant and postpartum women	Accuracy, sensitivity and specificity of screening tools	Comprehensive literature search was conducted, but English literature only. Data were synthesized by reviewing previous MA and SR	Strength of evidence was graded as *good*, *fair* and *insufficient*.	Recommendations were formulated through expert consensus, within a multidisciplinary guideline development team.	Draft guideline recommendations were presented to key experts and champions in their region for critical review and approved. The Guideline Quality Committee examined and approved the final guideline.
American Medical Directors Association, 2011[12] *(Update of 2003 guidelines)*						
Health care professionals (nurses, allied health personnel, dietitians, occupational therapists, pharmacists, physicians,	Depression screening tests: GDS, CSDD, PHQ-9	Treatment response, recovery, remission, relapse and recurrence	Multiple databases were searched from May 2009 through February 2011; evidence was reviewed.	Not applicable	Recommendations were based on evidence and expert consensus	Internal and external review; draft was reviewed by physician members or independent physicians, specialists and organizations that are knowledgeable of the guideline

Table A2: Characteristics of Included Guidelines						
Objectives			**Methodology**			
Intended users/ Target population, Country of Development	**Intervention and Practice Considered**	**Major Outcomes Considered**	**Evidence collection, Selection and Synthesis**	**Evidence Quality and Strength**	**Recommendation Development and Evaluation**	**Guideline Validation**
psychologists, social workers and speech-language pathologists); Elderly residents of long-term care facilities at risk for or diagnosed with depression. United States			Methods used to analyze the evidence were not reported.			topic, and the long-term care setting.
The Registered Nurses Association of Ontario, 2010[4] *(Update of 2003 guidelines)*						
Advanced Practice Nurses, nurses. Older adults Canada	Screening for depression, delirium and dementia	Quality of life, morbidity and mortality	SR including a search on multiple databases, a stop date was not specified. Evidence was analyzed through the review of existing meta-analysis	A rating scheme was used to assess the strength of evidence: I: evidence from MA or SR of RCTs; II: evidence from at least 1 well-designed controlled study without	Recommendations were formulated through expert consensus.	Internal and external review; clinical validation – pilot testing.

Table A2: Characteristics of Included Guidelines						
Objectives			**Methodology**			
Intended users/ Target population, Country of Development	**Intervention and Practice Considered**	**Major Outcomes Considered**	**Evidence collection, Selection and Synthesis**	**Evidence Quality and Strength**	**Recommendation Development and Evaluation**	**Guideline Validation**
				randomization III: evidence from well-designed non-experimental descriptive studies; G4: evidence from expert committee reports or opinions.		

CSDD=Cornell Scale for Depression in Dementia; GDS=Geriatric Depression Scale; MA=meta-analysis; PHQ-9=Patient Health Questionnaire 9; PHQ-9-OV=Staff Assessment of Resident Mood; RCT=randomized controlled trial; SR=systematic review.

APPENDIX 3: Critical Appraisal of Included Publications

Table A4: Strengths and Limitations of Systematic Reviews and Meta-Analyses using AMSTAR[10]

Strengths	Limitations
Dennis, 2012[2]	
• Objectives were explicit • Literature search performed on multiple databases • Data pooling was conducted • Conflict of interest was reported	• No review protocol published prior to conduct of review • Not clear if grey literature search was conducted • Search restricted to English language publications • Not clear if the quality of the included has been assessed • characteristics of the included studies was not provided • Publication bias not considered
Mitchell, 2010[7]	
• Objectives were explicit • Intervention, comparator and outcomes were explicit • Quality of the included studies was assessed • P values of the study were reported	• No review protocol published prior to conduct of review • Patient characteristics were not reported in details • Findings were not reported in details • Conflict of interest was not reported.

Table A5: Strengths and Limitations of Clinical Practice Guidelines using AGREE II[9]

Strengths	Limitations
Kaiser, 2012[11]	
Scope and Purpose • Objectives were explicit • Applicable population were explicit *Rigour of Development* • Comprehensive search conducted • Strengths and limitations of evidence were explicit • Methods for formulating recommendations explicit • Explicit link between recommendations and supporting evidence • Guideline externally peer-reviewed prior to publication *Clarity of Presentation* • Recommendations specific and unambiguous	*Rigour of Development* • Literature was limited to English-language articles *Stakeholder Involvement* • Patient preferences were not sought *Rigour of Development* • Plan for updating guideline not reported *Applicability* • Facilitators and barriers were not described • Implementation strategy were not provided

Table A5: Strengths and Limitations of Clinical Practice Guidelines using AGREE II[9]	
Strengths	**Limitations**
• Key recommendations easily identifiable *Editorial Independence* • Funding sources and competing interests disclosed	
American Medical Directors Association, 2011[12]	
Scope and Purpose • Objectives were explicit • Health questions were explicit • Target population and users of guideline was explicit *Stakeholder Involvement* • The workgroups included practitioners and others involved in patient care in long-term care facilities *Rigour of Development* • Search and selection strategy was explicit • Quality of the evidence was assessed by expert consensus • Process for formulating recommendations not described – "Consensus among primary writers was obtained for each of the recommendations" • External peer review process was described *Clarity of Presentation* • Recommendations were explicit and unambiguous *Applicability* • Implementation of this guideline was outlined	*Stakeholder Involvement* • Patient input was not sought *Rigour of Development* • Strengths and limitations of included evidence not stated • Methods used to analyze the evidence not stated • Procedure for updating guideline not stated; however, guideline is an update of a 2003 version • Link between evidence and recommendations was unclear *Clarity of Presentation* • Individual recommendations clearly defined; however, key recommendations embedded within text *Editorial Independence* • Funding sources and competing interests of guideline development members have been disclosed
The Registered Nurses Association of Ontario, 2010[4]	
Scope and Purpose • Objectives were explicit • Health questions were explicit • Target population and users of guideline was explicit *Stakeholder Involvement* • Multiple clinical groups represented on guideline development group *Rigour of Development* • SRs used to inform recommendations, detailed methodology for guideline development presented • Search strategy described; multiple databases searched • Quality assessment of literature completed	*Rigour of Development* • Last search date was not reported • Study selection strategy was unclear *Applicability* • Facilitators and barriers to application was unclear • No tools or advice were provided for implementation • No monitoring or auditing criteria were presented *Editorial Independence* • Competing interests of authors was unclear *Other* • No details were provided in the recommendations with regard to the

Table A5: Strengths and Limitations of Clinical Practice Guidelines using AGREE II[9]	
Strengths	**Limitations**
• Process for formulating recommendations was explicit • Link between evidence and recommendations were explicit • Guideline will be updated regularly *Editorial Independence* • Project was funded by non-industry funding	appropriate screening tools or specific procedures

APPENDIX 4: Main Study Findings and Author's Conclusions

Table A6: Summary of Findings of Systematic Reviews

Main Study Findings	Author's Conclusions
Dennis, 2012[2]	
• GDS_{30}: at cut-off of 10/11, sensitivity 85% (95% CI 78 to 91) specificity 82% (95% CI 78 to 85) • GDS_{15}: at cut-off of 5/6, sensitivity 79% (95% CI 70 to 86) specificity 77% (95% CI 73 to 81) • BASDEC: at cut-off of 6/7, sensitivity 80% (95% CI 66 to 91) specificity 86% (95% CI 78 to 92)	• *"Best performance for the GDS was for a cut-off 5/6 for the GDS_{15} and 10/11 for the GDS_{30}" in the general hospital setting* • *"The GDS would appear the most validated instrument currently (in either 15 or 30 items versions)"* (pg.148)
Mitchell, 2010[7]	
• GDS_{30}: -overall sensitivity 81.9% (95% CI 76.4 to 86.9) specificity 77.7% (95% CI 73.0 to 82.1) -inpatients setting sensitivity 84.2% (95% CI 76.4 to 90.7) specificity 79.3% (95% CI 72.2 to 85.6) -outpatients setting sensitivity 72.8% (95% CI 57.7 to 85.6) specificity 77.2% (95% CI 68.7 to 84.6) -nursing home setting sensitivity 78.4% (95% CI 64.8 to 89.3) specificity 76.2% (95% CI 69.0 to 82.8) • GDS_{15}: -overall sensitivity 84.3% (95% CI 79.7 to 88.4) specificity 73.8% (95% CI 68.0 to 79.2) -inpatients setting sensitivity 32.3% (95% CI 13.3 to 54.7) specificity 69.0% (95% CI 55.4 to 81.2) -outpatients setting sensitivity 82.2% (95% CI 74.1 to 89.1) specificity 74.5% (95% CI 66.6 to 81.7)	• *"All versions of the GDS yield potential added value in medical settings"* (pg.1066)

Table A6: Summary of Findings of Systematic Reviews	
Main Study Findings	**Author's Conclusions**
-nursing home setting sensitivity 86.8% (95% CI 76.1 to 94.4) specificity 72.3% (95% CI 50.6 to 89.6) • GDS_4 and GDS_5: -overall sensitivity 92.5% (95% CI 85.5 to 97.4) specificity 77.2% (95% CI 66.6 to 86.3)	

BASDEC=Brief Assessment Schedule Depression Cards; CI=confidence interval; GDS=Geriatric Depression Scale;

Table A8: Summary of Findings of Included Evidence-Based Guidelines	
Recommendations	**Key Messages**
Kaiser, 2012[11]	
• "The PHQ-9 or PHQ-2 is recommended for depression screening (strong recommendation)" • "The Geriatric Depression Scale (GDS or GDS15) is an option as a screening instrument for older patients who have difficulty completing the PHQ-9 (weak recommendation)." – from the guideline summary, under "Major Recommendations, Depression Screening"	• Low quality evidence suggested that GDS is an option for depression screening in elder patients.
AMDA guideline, 2011[12]	
• 10-item GDS, CSDD, PHQ-9 and PHQ-9-OV were appropriate screening tools • "if the patient has a history of depression, other psychiatric disorder(s) or a screening test result that indicate possible depression, members of the interdisciplinary team and direct care staff should observe him or her for current signs and symptoms of depression." • "If the patient has risk factors, develop an interdisciplinary care plan that takes those risk factors into account and maintain a high index of suspicion for depression." • Patient's concomitant medications and his/her other conditions may cause or contribute to depression. • Monitor patient's response to treatment for depression: resolution of signs and symptoms of depression, improvement of scores on the GDS, CSDD, PHQ-9 and PHQ-9-OV, improvement in attendance at and participation in usual activities, improvement in sleep patterns, and	• Elderly residents of long-term care facilities should be screened for depression. • The history of depression or suicide attempt, concomitant medical conditions and medications need to be considered. • GDS, CSDD, PHQ-9 and PHQ-9-OV are appropriate screening tools.

Table A8: Summary of Findings of Included Evidence-Based Guidelines	
Recommendations	**Key Messages**
side effects specific to each class of medication as well as for interactions between antidepressants and other classes of medications. – from the guideline summary, under "Major Recommendations"	
RNAO, 2010[4]	
• "Nurses should maintain a high index of suspicion for early recognition/early treatment of depression in order to facilitate support and individualized care (level of evidence: IV)" • "Nurses should use the diagnostic criteria from the Diagnostic and Statistical Manual (DSM) IV-R to assess for depression (level of evidence: IV)" • "Nurses should use standardized assessment tools to identify the predisposing and precipitating risk factors associated with depression. (level of evidence: IV)" (pg. 12)	• Recommendations based on low quality evidence propose that nurses should use standardized methods to identify depressive patients. No details have been provided for the appropriate tools and cutoff values.

CSDD=Cornell Scale for Depression in Dementia; DSM=the Diagnostic and Statistical Manual; GDS=Geriatric Depression Scale; PHQ-2=Patient Health Questionnaire 2; PHQ-9=Patient Health Questionnaire 9; PHQ-9-OV=Staff assessment of Resident Mood

APPENDIX 5: Additional References of Potential Interest

Not Specific to Elderly Patients

Canadian Task Force on Preventive Health Care. Recommendations on screening for depression in adults. CMAJ [Internet]. 2013 [cited 2015 Sep 4];185(9):775-82. Available from: http://www.cmaj.ca/content/185/9/775.full.pdf+html

VA/DoD clinical practice guideline for management of major depressive disorder (MDD) [Internet]. Washington (DC): Department of Veteran Affairs; 2009 May. 199 p. (VA/DoD Evidence Based Practice). [cited 2015 Aug 26]. Available from: http://www.healthquality.va.gov/mdd/mdd_full09_c.pdf