



CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

Secondary Prevention of Stroke Seventh Edition, 2020 Evidence Table: *Virtual Care*

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on Behalf of the Canadian Stroke Best Practice Recommendations

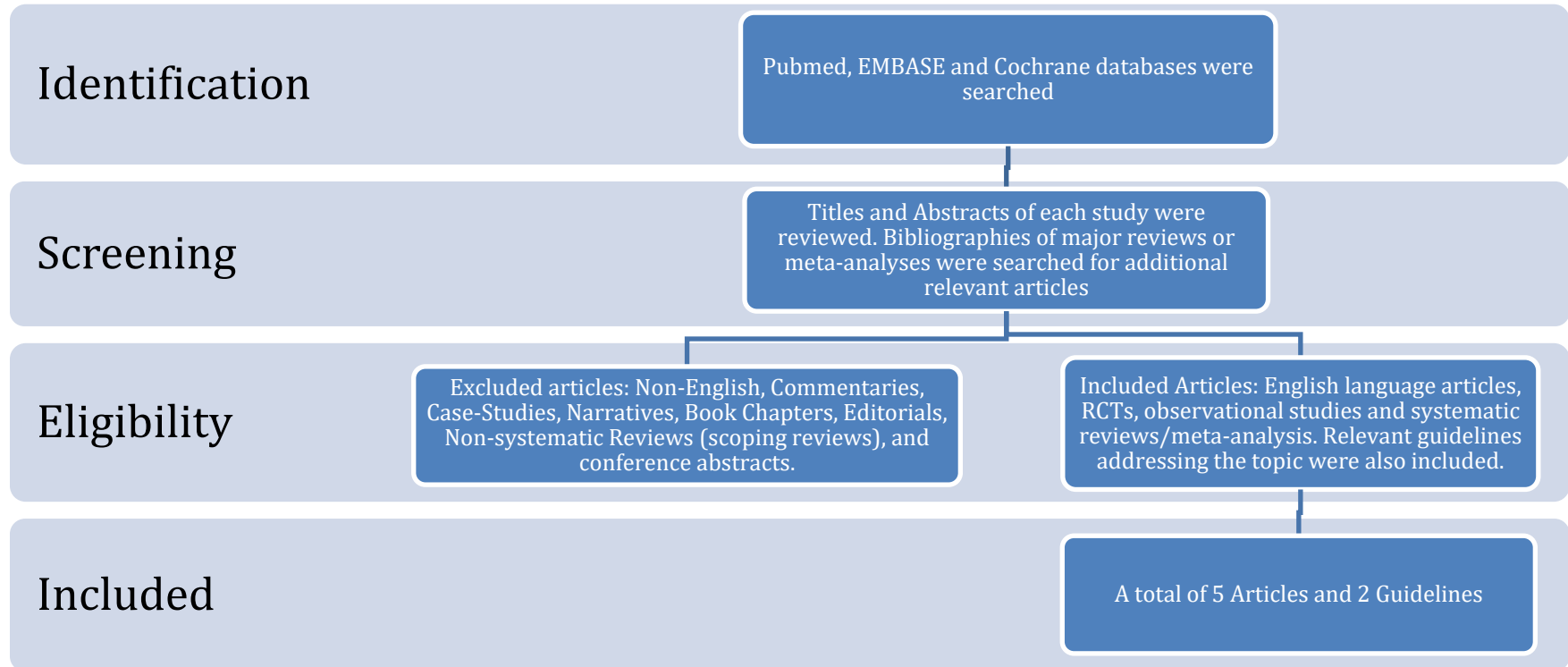
Secondary Prevention of Stroke Writing Group and in collaboration with the Canadian Stroke Consortium

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Search Strategy



PubMed, EMBASE and the Cochrane Central Register of Controlled Trials databases were search using medical subject. Titles and abstract of each article were 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.

Published Guidelines

Guideline	Recommendations
<p>Arnett DK, Blumenthal RS, Albert MA, Buroker AB, Goldberger ZD, Hahn EJ, Himmelfarb CD, Khera A, Lloyd-Jones D, McEvoy JW, Michos ED, Miedema MD, Muñoz D, Smith SC Jr, Virani SS, Williams KA Sr, Yeboah J, Ziaeian B.</p> <p>2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines.</p> <p>Circulation. 2019;000:exxx–exxx. DOI: 10.1161/CIR.0000000000000678</p>	<p>No guidelines related to risk factor management</p>
<p>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.</p> <p>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.</p> <p>Stroke. 2018; Mar;49(3):e46-e110</p>	<p>1.6. Telemedicine No guidelines related to risk factor management</p>
<p>Grundy SM, Stone NJ, Bailey AL, Beam C, Birtcher KK, Blumenthal RS, Braun</p>	<p>Implementation</p>

Guideline	Recommendations
<p>LT, de Ferranti S, Faiella-Tommasino J, Forman DE, Goldberg R, Heidenreich PA, et al.</p> <p>2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol.</p> <p><i>Journal of the American College of Cardiology</i> (2018), doi: https://doi.org/10.1016/j.jacc.2018.11.003.</p>	<p>Interventions focused on improving adherence to prescribed therapy are recommended for management of adults with elevated cholesterol levels, including telephone reminders, calendar reminders, integrated multidisciplinary educational activities, and pharmacist-led interventions, such as simplification of the drug regimen to once-daily dosing. Class of Recommendation 1; Level of evidence A.</p>
<p>Tobe SW, Stone JA, Anderson T, et al.</p> <p>Canadian Cardiovascular Harmonized National Guidelines Endeavour (C-CHANGE) guideline for the prevention and management of cardiovascular disease in primary care: 2018 update.</p> <p>CMAJ 2018; 190: E1192-e206</p>	<p>No guidelines related to risk factor management</p>
<p>Diabetes Canada Clinical Practice Guidelines Expert Committee. Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada.</p> <p>Can J Diabetes. 2018;42(Suppl 1): S1-S325</p>	<p>7. Telehealth technologies may be used to:</p> <ul style="list-style-type: none"> a. Improve self-management in underserved communities [Grade B, Level 2] b. Facilitate consultation with specialized teams as part of a shared care model [Grade A, Level 1A] c. Improve clinical outcomes in type 2 diabetes, including a decrease in A1C, an increase in quality of care (i.e. guideline adherence), a decrease in health service use and cost, and an increase in patient satisfaction and knowledge [Grade A, Level 1A] d. Improve glycemic and CV risk factor control in type 1 and type 2 diabetes [Grade A, Level 1].
<p>Clinical Guidelines for Stroke Management 2017. Melbourne (Australia): National Stroke Foundation. Section 4 Secondary Prevention</p>	<p>No guidelines related to risk factor management</p>

Guideline	Recommendations
National Clinical guidelines for stroke” 5th Edition 2016; Intercollegiate Stroke Working Party. Royal College of Physicians	No guidelines related to risk factor management

Evidence Tables

Cardiovascular Risk Factor Reduction

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Kraft et al. 2017 Germany Systematic review & eta-analysis	6/11 RCTs had concealed allocation, none blinded participant, 3 blinded outcome assessor, 11/11 had reporting bias	13 RCTs (n=2,672) including adults with previous stroke or TIA	Trials compared telephone-based counselling or support, or web-based interventions, including video lectures, support for caregivers, and educational messages. Many interventions were nurse-led. Duration of follow-up ranged from 8 weeks to one year	Primary outcome: Those for which pooled analyses were possible	Pooled analysis was possible only for blood pressure. The reduction in SBP from baseline to end of treatment was significantly greater in the intervention group (MD=- 6.14, 95% CI -10.41 to -1.87, p = 0.005). Results from 4 studies included.
Liu et al. 2017 USA/China Systematic review & meta-analysis	9/13 presented adequate sequence generation, 8/13 reported allocation concealment, 5/13 had blinded assessment of outcomes, 12/13 applied the intention-to-treat principle in analysis and all described the losses	13 studies (11 RCTs) that included adults being treated for diabetes, hypertension, and hyperlipidemia, followed for a minimum of 6 months	Trials assessed mobile Health (mHealth) interventions for HbA1c control (n=6), smoking cessation (n=7), hyperlipidemia (n=2) and hypertension (n=2). Interventions included smart phone applications to improve medication compliance or self-monitoring, short text or video message to facilitate the communication between health care providers and patients (diabetes) and short text/video message and internet and cell phone-	Primary outcome: Treatment effect size (SMD, Hedge's g, odds ratio)	No clinical trials of the role of mHealth on either primary or secondary stroke prevention were found. All included trials examined vascular risk factor reduction. mHealth interventions were associated with a significant reduced HgbA1c compared with control condition (SMD=0.44, 95% CI -0.82 to -0.06, p=0.02). Results from 6 trials included, 663 participants. mHealth interventions were associated with significantly increased odds of smoking cessation at 6 months (OR=1.54, 95% CI 1.24-1.90, p= 0.0001). Results from 7 trials included, 9,514 participants. Pooling of data was not possible for the outcomes associated with hypercholesterolemia and hypertension.

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
			based programs (smoking cessation) Control conditions included usual and a variety of sham interventions		
Salisbury et al. 2016 UK RCT	CA: <input checked="" type="checkbox"/> Blinding: Patient <input checked="" type="checkbox"/> Assessor <input checked="" type="checkbox"/> ITT: <input checked="" type="checkbox"/>	641 adults aged 40 to 74 years with a 10 year cardiovascular disease risk score (QRISK2) of $\geq 20\%$ or more, no previous cardiovascular event, at least one modifiable risk factor (SBP ≥ 140 mm Hg, BMI ≥ 30 , current smoker), and access to a telephone, the internet, and email. Mean age was 67 years, 20% were women. Mean 10-year QRISK2score was 31%	Patients were randomized to receive usual care (CV risk factors managed by primary care physician) or to an intervention group who received support from the Healthlines service, a multifaceted intervention, that included regular telephone calls from a health advisor, using standardised scripts generated through a computerised behavioural management programme. The program included modules on topics including drug adherence, diet, and smoking cessation and was based on patient goals. Frequency of contact with health advisor was monthly. Participants in the intervention group also received usual care.	Primary outcome: The proportion of participants responding to treatment, defined as maintaining or reducing their cardiovascular risk after 12 months Secondary outcomes: Blood pressure, total cholesterol, weight, BMI at 6 and 12 months	The odds of improving or maintaining cardiovascular risk were not significantly increased in the intervention group at 12 or 6 months (OR=1.3, 95% CI 1.0 to 1.9, p= 0.08 and OR=1.1, 95% CI 0.8 to 1.5, p=0.65, respectively). There were no interactions based on subgroup analysis of the primary outcome (age, sex, baseline risk score or baseline modifiable risk factors-SBP, BMI, smoking status). At 12 months mean SBP and DBP was significantly lower in the intervention group (139.6 vs. 142.2 mm Hg, p=0.01 and 76.6 vs. 78.7 mmHg, p<0.001, respectively). Mean weight and BMI was significantly lower in the intervention group at 6 and 12 months. There was no significant difference in mean chol or total chol:HDL level between groups at 12 months. The odds of being a current smoker were reduced significantly in the intervention group at 6 months (OR=0.3, 95% CI 0.1 to 1.2, p= 0.01), but not at 12 months (OR=0.4, 95% CI 0.2 to 1.0, p=0.06). The intervention was also associated with significant improvements in diet, physical activity, drug adherence, and satisfaction

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<p>Widmer et al. 2015</p> <p>USA</p> <p>Systematic review & meta-analysis</p>	<p>The majority of included RCTs were assessed as being at low risk of bias for all components, with the exception of blinding of participants, whereby none were blinded to the treatment group assignment</p>	<p>51 studies (n=23,962 participants). No details of inclusion criteria or eligibility criteria for participants are reported. Mean age was 54 years, 54% were men.</p>	<p>Trials compared any element of digital health interventions (DHI) including telemedicine, web-based strategies, email, mobile phones, mobile applications, text messaging, and monitoring sensors that lasted ≥ 1 month.</p>	<p>Primary outcomes: CVD events (including MI, stroke, or revascularization, hospitalizations, and all-cause mortality) and CVD risk factors ((total cholesterol, LDL-cholesterol, HDL-cholesterol, and triglycerides, glucose, and Framingham Risk Scores [FRS])</p>	<p>with access to care, treatment received, and care coordination.</p> <p>39 studies focused on primary prevention and 13, on secondary prevention.</p> <p>Overall, DHI significantly reduced the risk of CVD events (RR=0.61, 95% CI, 0.46–0.80, $p < 0.001$). Results from 9 RCTs included.</p> <p>DHI was associated with a significant reduction in Framingham 10-year risk percentages (-1.24%; 95% CI -1.73%, -0.76%; $P < 0.001$. Results from 6 studies included).</p> <p>Overall, DHI was associated with significant reductions in weight (MD=-2.7, 95% CI -4.49 to -1.05, $p=0.002$) and BMI (MD=-0.17, 95% CI -0.32 to -0.01, $p=0.03$).</p> <p>Among primary prevention studies, there was a significant reduction in SBP (MD=-2.12 mmHg, 95% CI-4.15 to -0.09, $p=0.04$, results from 23 studies included). There were also significant reductions in total cholesterol (MD=-5.39 mg/dL, 95% CI, -9.80 to -0.99, $p=0.02$, results from 13 studies included) and glucose (MD=-1.38 mg/dL, 95% CI -2.13 to -0.63, $p < 0.001$. Results from 6 studies included).</p> <p>Among the secondary prevention studies, there were no significant reductions in the DHI group in SBP, weight, cholesterol or glucose indices.</p>
<p>Merriel et al. 2014</p>	<p>The majority of studies were</p>	<p>13 RCTs (10,057 participants) including adults with multiple</p>	<p>The effectiveness of telehealth interventions to reduce overall</p>	<p>Primary outcome: Change in overall cardiovascular risk</p>	<p>There were no significant differences in Framingham 10-year CVD risk scores from baseline to end of follow-up between</p>

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
UK Systematic review	assessed as being of moderate quality, with low risk of bias in three to five of the seven domains.	cardiovascular risk factors with no history of cardiovascular disease, who were living in the community. Mean age was 56 years, 41% were men.	cardiovascular disease risk and/or to reduce multiple CVD risk factors was compared with a non-telehealth control group. Interventions included internet-based training programs, e-counselling, and individual telephone-based counselling, among others. Follow-up ranged from 3 months to 8 years.		<p>groups (SMD=-0.35, 95% CI -1.97 to 1.27). Results from 3 trials included, or SBP (MD=-1.22 mm Hg, 95% CI -2.80 to 0.35, p=0.13). Results from 8 trials included.</p> <p>There were no significant differences from baseline to end of follow-up between groups in total cholesterol (n=7 trials), or HDL cholesterol (n=4 trials).</p> <p>The odds of smoking following an intervention were not reduced significantly reduced (OR=1.09, 95% CI 0.82-1.44, p=0.56). Results from 4 trials included.</p>

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