Annual adult health checkup

Update on the Preventive Care Checklist Form©

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The Preventive Care Checklist (PCC) Form© is a clinical tool developed to help physicians deliver preventive health care as part of the periodic health examination. The PCC Form must be updated regularly to reflect evidence-based practice. This article details changes to the form including updates on vitamin D and calcium supplementation, depression screening and lifestyle modifications in obese patients, blood pressure targets in hypertension, dyslipidemia screening, and new vaccination recommendations from the National Advisory Committee on Immunization (NACI).

The periodic health examination provides an opportunity to review a patient's ongoing medical issues, to counsel on preventive health, and to improve the physician-patient relationship.[1] A systematic review assessed the benefits and harms of the periodic health examination and found evidence supporting improved delivery of clinical preventive services. The review also found evidence that the periodic health examination reduced patient anxiety, and failed to show any evidence of harm. The systematic review defined the periodic health examination as "history, risk assessment, and a tailored physical examination that could lead to delivery of preventive services."[2]

The PCC Form is a tool designed to aid physicians during the periodic health examination. It can also serve as an organized record of preventive health maneuvers delivered to patients. Grade A (good evidence) and grade B (fair evidence) recommendations from the Canadian Task Force on Preventive Health Care (CTFPHC) are delineated in bold and italic text, respectively. Plain text is used to denote recommendations from sources other than the CTFPHC. The PCC Form, endorsed by the College of Family Physicians of Canada, also includes functional inquiry and physical examination components.[3] The form is sex-specific. It is accompanied by an explanation page, and is available in both English and French.

The PCC Form has been validated in a prospective cluster randomized controlled trial, which found that the use of the form resulted in a 22.8% absolute increase and 46.6% relative increase in the delivery of preventive health care maneuvers.[4] Furthermore, 77% of physicians who used the PCC Form in this study said they would continue to use it.[5]

The PCC Form was originally developed in 2002. To ensure that the form reflects evidence-based preventive care, it must be regularly updated. This article describes the most recent updates to the form. The update was completed in December 2010.

Method

Articles were identified via Ovid MEDLINE using 2 separate search strategies. The first strategy involved searching the database for the key words *mass screening*, *preventive medicine*, *adult complete health assessment*, and *screening guidelines*. The results were limited to Canadian guidelines published after 2005.[6] A second strategy was developed in an attempt to identify potential articles missed by the first search. This strategy searched Ovid MEDLINE for Canadian articles and guidelines published after 2005 using the key words *mass screening*, *physical examination*, *primary prevention*, and *public health*, as well as using various topics relevant to the complete adult health checkup such as *vitamin D*, *diabetes*, *depression*, *obesity*, etc. Approximately 30 different search terms were used.

A review of guidelines produced by a number of Canadian medical societies and organizations was also conducted. These included NACI, Health Canada, the Canadian Cardiovascular Society (CCS), the Society of Obstetricians and Gynaecologists of Canada (SOGC), and the Canadian Hypertension Education Program (CHEP), among others. Publications from approximately 18 different Canadian societies and organizations were searched. Guidelines produced by provincial societies were not included because the PCC Form was developed for use across Canada.

Unfortunately, from the time of the last update to the time of this review, the CTFPHC did not release any new recommendations. Previous updates of the PCC Form graded evidence based on the CTFPHC grading system. Because the recommendations for this version of the updated forms came from sources other than the CTFPHC, a variety of different systems for grading evidence were used. Owing to a lack of continuity between the different grading systems, new additions to the PCC Form do not include a grade and appear in plain text.

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Results

After the review of recent literature pertaining to preventive health care, the PCC Form was updated to reflect the current evidence (**Table 1**).[7-17] The recommendations included new guidelines for vitamin D and calcium supplementation, depression screening and lifestyle modifications in obese patients, blood pressure targets in hypertension, and dyslipidemia screening. New vaccination recommendations from NACI included conjugate meningococcal vaccination for serogroups A, C, Y, and W-135 in high-risk patients, pneumococcal 23-valent polysaccharide vaccination for homeless persons and injection drug users, influenza vaccination, and herpes zoster vaccination.

Calcium and vitamin D supplementation. The SOGC published an update on menopause and osteoporosis in 2009.[18] The update cited the Women's Health Initiative trial,[7] which demonstrated a 1.06% increase in hip bone mineral density ($P<.01$) in patients taking 1000 mg of calcium and 400 IU of vitamin D compared with placebo. More important, the treatment arm also showed a statistically significant 29% reduction in hip fractures in the treatment-compliant group (hazard ratio 0.71, 95% CI 0.52 to 0.97). In addition, vitamin D in doses of 800 IU per day has been shown to reduce the risk of falls by 49% during a 3-month treatment period.[19] Based on these data, the executive council of the SOGC recommends 1500 mg of total calcium intake (dietary and supplementation) and 800 IU of vitamin D supplementation per day in postmenopausal women.

In 2010, the Osteoporosis Society of Canada (OSC) published a set of guidelines for the diagnosis and management of osteoporosis. The OSC recommends that adults younger than 50 years of age consume 1000 to 1500 mg of elemental calcium per day. For adults older than 50 years of age, the OSC recommends a dose of 1200 mg per day. If this amount cannot be provided by diet alone (usually 3 or more servings of dairy products), then calcium supplementation should be recommended. The OSC recommends 400 to 1000 IU (10 to 25 µg) of vitamin D per day in patients with low risk of vitamin D deficiency, and 800 to 1000 IU (20 to 25 µg) per day if patients are 50 years of age or older and at moderate risk of vitamin D deficiency.[8] Both recommendations for calcium and vitamin D supplementation are included in the PCC Form update.

Depression screening and lifestyle modifications for obese patients. Recent literature has revealed a link between obesity and depression.[20,21] This link has been further recognized by Obesity Canada, now known as the Canadian Obesity Network.[22] The 2006 Canadian clinical practice guideline on the management and prevention of obesity in adults and children suggested screening all overweight and obese patients for eating disorders, depression, and psychiatric disorders as appropriate.[23] The authors found evidence to support the use of behaviour modification techniques, cognitive behavioural therapy, activity enhancement, and dietary counseling in the management of obese patients.[24-27] The guidelines recommended reducing energy intake by 500 to 1000 kcal per day and initiating 30 minutes of moderate-intensity exercise 3 to 5 times per week. Exercise should be slowly increased to 60 minutes or longer on most days and should include endurance training. The target weight loss goal is 5% to 10% of body weight or 0.5 to 1 kg per week for 6 months.[10]

Income and social status as a determinant of health. The Public Health Agency of Canada lists education, income, and social status among the important determinants of health. Those who experience poverty are more likely to suffer illness and have a shorter lifespan, regardless of age, race, sex, or place of residence. Illiterate individuals are also more likely to be unemployed, have poor health, and die earlier than literate individuals.[28] Although the determinants of health were published by the Public Health Agency of Canada in 2003, it was believed to be necessary to include them in this version of the PCC Form because of their relevance to preventive health care.

Blood pressure targets in individuals with diabetes and chronic kidney disease. Studies demonstrate that aggressive treatment of hypertension in individuals with diabetes results in decreases in death, cardiovascular events, and the progression of diabetic retinopathy and kidney disease.[29-33] In 2009, CHEP published a set of recommendations that emphasized more aggressive hypertension control in individuals with diabetes and chronic renal failure.[11] They recommended a blood pressure target of less than 130/80 mm Hg in individuals with diabetes mellitus or chronic renal failure.[12] For individuals without diabetes mellitus or chronic renal failure, CHEP recommended a target of less than 140/90 mm Hg.[12]

Dyslipidemia screening. In late 2009, the CCS published a set of guidelines for the screening of dyslipidemia in adults. In addition to previously identified high-risk groups requiring screening for dyslipidemia, the CCS now identifies patients with HIV treated with highly active antiretroviral therapy as high risk.

The CCS also recommends the use of high-sensitivity C-reactive protein testing in men older than 50 years and women older than 60 years who are at moderate risk of cardiovascular disease (using the Framingham risk score) and whose level of low-density lipoprotein cholesterol is less than 3.5 mmol/L. Two high-sensitivity C-reactive protein samples should be taken at

Table 1. 2009 recommendations included in the Preventive Care Checklist Form©

CONDITION	RECOMMENDATION	CHANGES TO THE PREVENTIVE CARE CHECKLIST FORM	SOURCE OF RECOMMENDATION
Education and counseling			
Osteoporosis[7,8]	Supplementation with vitamin D and calcium in postmenopausal women has been shown to prevent hip fractures and increase bone density	Vitamin D and calcium supplementation targets will be added to the explanation form	*JOGC*, SOGC, OSC
Smoking cessation[9]	Drugs other than nicotine replacement, specifically bupropion, have been shown to be effective in improving the success rate of smoking cessation	Nicotine replacement therapy and other drugs will appear in the "Education/Counseling" section of the form under "Smoking" Bupropion will be specified as a smoking cessation adjunct on the explanation form	Health Canada
Obesity[10]	Screen for depression, eating disorders, and psychiatric disorders in obese patients as appropriate Evidence supports behaviour modification techniques, cognitive behavioural therapy, activity enhancement, and dietary counseling in the management of obese patients Reduce energy intake by 500-1000 kcal/d Initiate 30 min of moderate-intensity exercise 3-5 times/wk, increase to ≥ 60 min on most days with endurance training Target weight loss of 5%-10% of body weight or 0.5-1 kg/wk for 6 mo	An "Obesity (BMI ≥ 30)" heading will be added to the "Education/Counseling" section on both the male and female forms Screen for mental illness will be added in plain text as a bullet under "Obesity (BMI ≥ 30)" Multidisciplinary management approach will be added in plain text as a bullet under "Obesity (BMI ≥ 30)" to both the male and female forms Targets will be added to the explanation form	Obesity Canada
Physical examination			
Hypertension[11,12]	BP targets: • Most patients < 140/90 mm Hg • Patients with DM or CKD < 130/80 mm Hg Diagnosis Can be made in 1-5 office visits based on the following criteria: • Visit 1—hypertensive urgency or emergency • Visit 2—hypertensive and evidence of target organ damage, DM, CKD, or BP > 180/110 mm Hg • Visit 3—average > 160/100 mm Hg • Visits 4 to 5—average > 140/90 mm Hg Can be made by home BP monitoring based on the following criteria: • ABPM—mean awake > 135/85 mm Hg or if the mean 24-h systolic BP is > 130/80 mm Hg • Home BP—average > 135/85 mm Hg • If the average home BP < 135/85 mm Hg, it is advisable to perform 24-h ABPM	BP targets will be included on the explanation form An algorithm for the diagnosis of hypertension will be included on the explanation form	Canadian Hypertension Education Program
Laboratory investigations			
Osteoporosis screening[8]	The OSC provided a list of indications for measuring bone mineral density in 2 separate groups: older adults (aged ≥ 50 y) and younger adults (aged < 50 y)	Recommendation will be added to the explanation form	OSC
Dyslipidemia[13]	Patients with HIV taking HAART are now considered high risk and should be screened for dyslipidemia regardless of age hsCRP testing in men > 50 y and women > 60 y who are at moderate risk of cardiovascular disease and whole level of LDL-C is < 3.5 mmol/L; 2 hsCRP samples should be taken at least 2 wk apart and the patient should be free of any acute illness; treat if the lower of the 2 values is > 2.0 mg/L ApoB can be used as an alternative marker in the screening for dyslipidemia New LDL-C targets are recommended based on patient risk	HIV patients taking HAART will be added to the high-risk category on the explanation form Recommendation will be added to the explanation form ApoB targets will be included on the explanation form Recommended LDL-C levels will be included on the form	Canadian Cardiovascular Society
Immunizations			
Meningococcal[14]	Conjugate meningococcal vaccine for subtypes A, C, Y, and W-135 is recommended for high-risk individuals 2-55 y of age, including patients with asplenia; patients with complement, properdin, or factor D deficiencies; travelers to endemic areas; research, clinical, and industrial laboratory personnel exposed to meningitis; military recruits; and case contacts	Meningococcal vaccine for high-risk individuals will appear in plain text on both male and female forms and explanation form	NACI
Pneumococcal[15]	High-risk individuals who are eligible for the pneumococcal 23-valent polysaccharide vaccine now include homeless persons and injection drug users	Homeless persons and injection drug users are now listed as high-risk individuals on the explanation form	NACI
Influenza[16]	High-risk and priority groups (including individuals providing child care to children younger than 24 mo, persons who are morbidly obese [BMI ≥ 40], aboriginal people, and healthy children 2-4 y of age) have been updated	High-risk groups are listed on the explanation form	NACI
Zostavax[17]	Indicated for the prevention of herpes zoster and its complications in persons 60 y of age and older who do not have contraindications	Herpes zoster vaccination in persons 60 y of age and older will be added in plain text to both the male and female forms	NACI

ABPM—ambulatory blood pressure monitoring, ApoB—apolipoprotein B, BMI—body mass index, BP—blood pressure, CKD—chronic kidney disease, DM—diabetes mellitus, HAART—highly active antiretroviral therapy, hsCRP—high-sensitivity C-reactive protein, *JOGC—Journal of Obstetrics and Gynaecology Canada*, LDL-C—low-density lipoprotein cholesterol, NACI—National Advisory Committee on Immunization, OSC—Osteoporosis Society of Canada, SOGC—Society of Obstetricians and Gynaecologists of Canada.

least 2 weeks apart in a patient not suffering from any acute illness. If the lower of the 2 values is greater than 2.0 mg/L, individuals might benefit from pharmacotherapy. The CCS also recommends the use of apolipoprotein B as an alternative marker in the screening and treatment of dyslipidemia.[13]

Conjugate meningococcal vaccine for serogroups A, C, Y, and W-135. Menactra and Menveo are quadrivalent protein-polysaccharide conjugate vaccines that provide protection against the meningococcal subtypes A, C, Y, and W-135 (Men ACYW-135). *Neisseria meningitidis* is endemic to Canada, with rates of 1.1 cases or less per 100 000 population per year between 1995 and 2004. Therefore, NACI recommends the use of Men ACYW-135 in high-risk individuals 2 to 55 years of age. This includes persons with asplenia; persons with complement, properdin, or factor D deficiencies; travelers to endemic areas; research, clinical, and industrial laboratory personnel exposed to *N meningitidis*; and military recruits. Further, NACI recommends Men ACYW-135 for individuals with HIV and close contacts of individuals with invasive meningococcal disease caused by serotypes A, Y, or W-135.[14]

Pneumococcal 23-valent polysaccharide vaccine for homeless persons and illicit drug users. Previous recommendations from NACI encouraged vaccination of high-risk individuals. High-risk individuals were defined as those with sickle cell anemia, asplenia, HIV infection, other immunocompromising conditions, pulmonary disease, diabetes mellitus, liver cirrhosis, chronic renal disease, cerebrospinal fluid leaks, or cochlear implants. Recent studies have shown that homeless persons are at increased risk of contracting pneumococcal pneumonia, with a rate of 266.7 per 100 000 person-years among homeless persons, compared with 9.7 per 100 000 person-years in the general population.[34] The rate of pneumococcal pneumonia also appears to be increased in injection drug users.[35,36] Based on these data, NACI now also recommends vaccination of homeless persons and injection drug users with the pneumococcal 23-valent polysaccharide vaccine.[15]

High-risk groups for influenza. Studies have shown that the rate of influenza-related hospitalization is elevated in pregnant women in their third trimesters.[37,38] As a result, NACI recommends that pregnant women be considered at high risk of influenza-related complications and receive the influenza vaccine. The NACI recommendations have also been updated to include vaccination of individuals providing child care to children younger than 24 months of age, persons who are morbidly obese (body mass index ≥ 40), aboriginal people, and healthy children 2 to 4 years of age.[16]

Herpes zoster vaccine in the elderly. Zostavax is a live attenuated herpes zoster vaccine authorized for use in Canada for the prevention of shingles in adults older than 60 years of age. Shingles has a prevalence ranging from 1.9 to 8.1 per 1000 adults depending on the study and the age of the individuals studied.[39,40] Research also shows an increasing incidence of shingles with age, with an incidence of 2.6 per 1000 in adults aged 20 to 64 years, and 7.0 per 1000 in adults older than 65 years.[41] The efficacy of the live attenuated injectable zoster vaccine was demonstrated by the Shingles Prevention Study, a large, phase 3 randomized controlled trial. This study demonstrated a statistically significant reduction in the herpes zoster burden-of-illness score, from 5.68 in the placebo group to 2.21 in the vaccine group ($P<.001$). The incidence of herpes zoster was reduced from 11.12 per 1000 person-years to 5.42 per 1000 person-years with the use of the herpes zoster vaccine compared with placebo. The incidence of postherpetic neuralgia was also reduced, with an incidence of 1.38 cases per 1000 person-years in the placebo group versus 0.46 cases per 1000 person-years in the vaccine group.[42] Based on these data, NACI now recommends the use of Zostavax for the prevention of herpes zoster and its complications in persons 60 years of age and older who do not have contraindications to the vaccine.[17]

Conclusion

The PCC Form has been updated to incorporate new evidence-based practice guidelines addressing preventive health maneuvers. The goal of the form is to provide family physicians with a concise clinical tool to aid in their practice of preventive medicine. The PCC Form is not intended to be a rigid tool for patient care; rather, it should serve as a reminder and documentation aid for preventive health maneuvers. Physicians are encouraged to use clinical judgment when deciding which interventions are required for each patient.

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Competing interests
None declared

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