

Approach to preventive care in the elderly

Bachir Tazkarji MD CCFP(CAC)(COE) ABFM Robert Lam MD MS CCFP(CAC)(COE) FCFP Shawn Lee MD CCFP Soumia Meiyappan MSc

Abstract

Objective To guide family physicians in creating preventive screening and treatment plans for their elderly patients.

Sources of information The MEDLINE database was searched for Canadian guidelines on primary health care and the elderly; guidelines or meta-analyses or practice guidelines or systematic reviews related to mass screening in those aged 80 and older and the frail elderly, limited to between 2006 and July 2016; and articles on preventive health services for the elderly related to family practice or family physicians, limited to English-language publications between 2012 and July 2016.

EDITOR'S KEY POINTS

- Owing to the lack of research and evidence for screening tests beyond the age of 74 years, most agencies, including the Canadian Task Force on Preventive Health Care, believe this age group's screening needs to be individualized. Choosing Wisely Canada recommends a target hemoglobin A_{1c} level less than 7.5% for healthy elderly patients but less than 8.5% for those with a limited life expectancy of less than 5 years. However, the risks and benefits of tight glucose control in the elderly are still being evaluated.

- For secondary prevention of cardiovascular events, 4 drug classes have been shown to reduce mortality in older adults: angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers; β -blockers; statins; and antiplatelet agents. For primary prevention of cardiovascular events, there is a lack of convincing evidence to recommend routine screening for and treatment of hypercholesterolemia with statins in those older than 80 years of age.

- Those at high (>20%) and moderate (10% to 20%) risk of fracture within 10 years might benefit from bisphosphonate treatment. All individuals should be counseled regarding adequate daily elemental calcium and vitamin D intake. Asking about falls every year is recommended; elderly patients tend not to mention this problem until very advanced stages. There is no upper age limit for vaccination, but a patient's physical fitness and other contraindications should be considered.



This article is eligible for Mainpro+ certified Self-Learning credits. To earn credits, go to www.cfp.ca and click on the Mainpro+ link.

This article has been peer reviewed.

Can Fam Physician 2016;62:717-21

La traduction en français de cet article se trouve à www.cfp.ca dans la table des matières du numéro de septembre 2016 à la page e508.

Main message Estimating life expectancy is not an easy or precise science, but frailty is an emerging concept that can help with this. The Canadian Task Force on Preventive Health Care offers cancer screening guidelines, but they are less clear for patients older than 74 years and management plans need to be individualized. Estimating remaining years of life helps guide your recommendations for preventive screening and treatment plans. Risks often increase along with an increase in frailty and comorbidity. Conversely, benefits often diminish as life expectancy decreases. Preventive management plans should take into account the patient's perspective and be mutually agreed upon. A mnemonic device for key primary care preventive areas—CCFP, short for cancer, cardiovascular disease, falls and osteoporosis, and preventive immunizations—might be useful.

Conclusion Family physicians might find addressing the following areas helpful when considering a preventive health intervention: age, life expectancy (including concept of frailty), comorbidities and functional status, risks and benefits of screening or treatment, and values and preferences of the patient.

Family physicians are responsible for much of the preventive medical care their elderly patients receive. Appreciating the realistic benefits of providing preventive measures to increasingly frail, elderly patients with limited life expectancy can be a challenge in primary care.

Family physicians might find addressing the following areas helpful when considering a preventive health intervention:

- age, life expectancy, and concept of frailty (comorbidities and functional status);
- risks and benefits of screening or treatment; and
- values and preferences of the patient.

Mrs M.B. is an 82-year-old woman who comes to your office seeking a checkup. She has mild cognitive impairment, hypertension, diabetes mellitus, and osteoarthritis. Her parents died of heart disease in their early 90s. She drives and remains active, walking 30 minutes daily. You discuss goals of care and she asks

for any preventive procedures or tests that could help with her quality of life. She has an advanced directive: In case of cardiac arrest she requests DNR (do not resuscitate) status.

Sources of information

The MEDLINE database was searched for Canadian guidelines on primary health care and the elderly; guidelines or meta-analyses or practice guidelines or systematic reviews related to mass screening in those aged 80 and older and the frail elderly, limited to between 2006 and July 2016; and articles on preventive health services for the elderly related to family practice or family physicians, limited to English-language publications between 2012 and July 2016.

Main message

Areas to address

Age, life expectancy, and concept of frailty: Estimating remaining years of life helps guide your recommendations for preventive screening and treatment plans. Estimating

life expectancy is not an easy or precise science, yet clinical decisions are made daily regarding this issue.

There are multiple tools to predict patient life expectancy. The US National Center for Health Statistics provides a table based on only sex, race, and age.¹ Statistics Canada also provides a similar table based on sex and age.² There are other tools that use further individual characteristics and that are more accurate.³

Both comorbidity (the presence of 1 or more medical illnesses) and functional status (independence or dependence in basic or instrumental activities of daily living) affect life expectancy.⁴ Frailty is an emerging concept that can help guide clinical decision making.⁵ In Canada, the Clinical Frailty Scale, developed from the Canadian Study of Health and Aging, also predicts life expectancy (Figures 1 and 2).^{4,6}

Using the Clinical Frailty Scale, Mrs M.B. is found to be in category 3, "managing well" (Figure 1).⁶ Category 3 is associated with approximately an 80% probability of survival to 60 months (5 years). Category 3 is also

Figure 1. Clinical Frailty Scale

Clinical Frailty Scale*



1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.



2 Well – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.



3 Managing Well – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.



4 Vulnerable – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being "slowed up", and/or being tired during the day.



5 Mildly Frail – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.



6 Moderately Frail – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.



7 Severely Frail – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).



8 Very Severely Frail – **Completely dependent**, approaching the end of life. Typically, they could not recover even from a minor illness.



9. Terminally Ill - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.

2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

© 2007-2009. Version 1.2. All rights reserved. Geriatric Medicine Research, Dalhousie University, Halifax, Canada. Permission granted to copy for research and educational purposes only.



IADL—instrumental activity of daily living.
Reproduced with permission from Rockwood.⁶

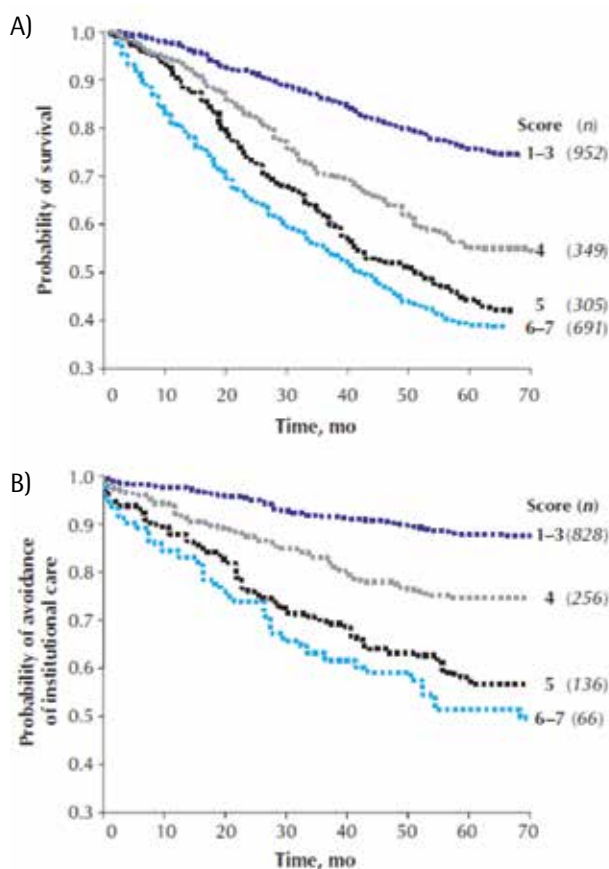
associated with approximately a 90% probability of avoidance of institutional care at 5 years (**Figure 2**).⁴

Risks and benefits of screening or treatment: Risks often increase along with an increase in frailty and comorbidity. Conversely, benefits often diminish as life expectancy decreases.

Values and preferences of your patient: Preventive management plans should take into account the patient's perspective and be mutually agreed upon. This is especially true when there is no specific guideline to follow.

Primary care preventive considerations. We created an acronym for primary care preventive considerations based on our clinical experience and called it *CCFP*, short for cancer, cardiovascular disease, falls and osteoporosis, and preventive immunizations.

Figure 2. Kaplan-Meier curves, adjusted for age and sex, for study participants over the medium term (5–6 y), according to their scores on the Clinical Frailty Scale: Some scores were grouped. A) Probability of survival. B) Probability of avoidance of institutional care.



Reproduced with permission from Rockwood et al.⁴

Cancer: Adults aged 65 or older have a 16-fold greater risk of dying from cancer than younger people do.⁷ The American Cancer Society,⁸ the US Preventive Services Task Force, and the Canadian Task Force on Preventive Health Care (CTFPHC) offer guidelines for screening for breast, cervical, colorectal, and prostate cancer. The CTFPHC guidelines can be accessed online (<http://canadiantaskforce.ca/ctfphc-guidelines/overview>) and their recommendations are in agreement with most other agencies, but owing to the lack of research and evidence for screening tests beyond the age of 74 years, most agencies believe this age group's screening needs to be individualized based on age and life expectancy, risks and benefits, and patient values and preferences. The general consensus is that screening mammography is unlikely to benefit women who have a life expectancy of less than 5 years.⁹ The US Preventive Services Task Force recommends against screening with colonoscopy beyond 85 years of age.¹⁰ Recently the CTFPHC has recommended against screening with colonoscopy altogether at any age. However, the CTFPHC does support screening with fecal occult blood testing or fecal immunochemical testing every 2 years and sigmoidoscopy every 10 years from 50 to 74 years of age.^{11,12} A discussion on screening, including the patient's core values and a review of potential risks and benefits, will be critical for optimal patient-centred care.¹³

For patients older than 74 years, screening mammography might provide benefit if life expectancy is longer than 5 years.⁹ Mrs M.B. chooses to undergo mammography.¹⁴ Mrs M.B.'s Papanicolaou tests have had normal results since the age of 50 until she was 68, and she has indicated that her husband is her only sexual partner. You decide that she does not need to have any more Pap tests as she is older than 69 years.¹⁵ After discussing risks and benefits of sigmoidoscopy and, considering the time it takes for carcinomatous polyps to develop, you do not recommend it. As she likely has more than 5 years of life expectancy, you recommend fecal occult blood testing.^{11,12} Mrs M.B. agrees and mentions she was hoping that colonoscopy or sigmoidoscopy would not be necessary.

Cardiovascular disease: Screening for type 2 diabetes by measuring fasting plasma glucose level should be performed every 3 years in individuals 40 years of age and older. In the elderly, intensive lowering of hemoglobin A_{1c} (HbA_{1c}) might not reduce cardiovascular events and could increase hypoglycemic events and mortality.¹⁶ Choosing Wisely Canada, endorsed by the Canadian Geriatrics Society and the College of Family Physicians of Canada, recommends a target HbA_{1c} level less than 7.5% for healthy elderly patients but less than 8.5% in those with a limited life expectancy of less than 5 years.¹⁷ However, the risks and benefits of tight glucose control in the elderly are still being evaluated.¹⁸

Previous Canadian Diabetes Association guidelines recommended acetylsalicylic acid (ASA) antiplatelet therapy for all patients with diabetes older than 50 years of age, but more recent meta-analyses of randomized controlled trials have pointed to a lack of evidence for ASA in these patients.¹⁹⁻²¹

Hypertension occurs in more than two-thirds of adults older than 65 years of age.²² The randomized controlled trial HYVET (Hypertension in the Very Elderly Trial) showed that total mortality and cardiovascular events were reduced by treatment of hypertension in those 80 years of age or older with a systolic blood pressure of at least 160 mm Hg at baseline.²³ The same study concluded that blood pressure targets for patients older than 80 years should be 150/80 mm Hg to prevent hypotensive events.

For secondary prevention of cardiovascular events, 4 drug classes have been shown to reduce mortality in older adults: angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers; β -blockers; statins; and antiplatelet agents. The greatest benefit was found with the use of statins.²⁴

However, for primary prevention of cardiovascular events, there is a lack of convincing evidence to recommend routine screening for and treatment of hypercholesterolemia with statins in those older than 80 years of age.^{25,26} Low cholesterol levels have actually been associated with death in the frail elderly residing in long-term care.²⁷

You recommend ongoing HbA_{1c} testing for Mrs M.B. to monitor her glucose levels but do not recommend screening for high cholesterol levels. You also recommend ongoing blood pressure monitoring. You discuss the benefits and drawbacks of using of ASA and decide not to start antiplatelet treatment.

Falls and osteoporosis: Osteoporosis screening with dual-energy x-ray absorptiometry measurement of bone mineral density should be considered for adults aged 65 and older and those older than 50 years of age with risk factors.²⁸ Assessment tools, such as the CAROC (Canadian Association of Radiologists and Osteoporosis Canada) system and FRAX (Fracture Risk Assessment Tool of the World Health Organization) can be used to determine 10-year fracture risk.²⁹ Those at high (>20%) and moderate (10% to 20%) risk of fracture in 10 years might benefit from bisphosphonate treatment. All individuals should be counseled regarding adequate daily elemental calcium (1200 mg) and vitamin D (1000 IU) intake through diet and supplements.^{11,29} The American Geriatrics Society and British Geriatrics Society recommend asking about falls every year. Our personal experience is that elderly patients tend not to mention this problem to their family doctors until very advanced stages.

You learn that Mrs M.B. has had 2 falls in the past 6 months with no injuries and they were both accidents when she tripped at home. You recommend osteoporosis screening, as it has not been done in the past 3 to 5 years. You also recommend a gait assessment by a physiotherapist and home hazard assessment by an occupational therapist. Based on previous screening, Mrs M.B. is at moderate 10-year risk of fracture, so you recommend treatment with bisphosphonates, calcium, and vitamin D after educating her about ways to prevent falling.

Preventive immunizations: Health care providers should encourage all of their older patients to receive an annual influenza vaccination, as this has been shown to reduce influenza-related hospital admissions by 42%.³⁰ A single pneumococcal vaccination in those older than 65 is also recommended. This should be at least 5 years after any pneumococcal vaccinations received at or before age 65 for a specific medical condition.³¹ Older adults have twice the incidence of tetanus infections; the fatality rate is also higher.³² This finding is likely owing to a missed vaccination rather than an inadequate response to it, as the vaccine provides sufficient immunity to older adults.³³ The herpes zoster vaccine is also recommended for patients aged 50 and older, as it reduces both the incidence and severity of herpes zoster disease in older adults.³⁴ There is no upper age limit for vaccination, but a patient's physical fitness and other contraindications should be considered.

You recommend annual influenza vaccination to Mrs M.B. You also recommend pneumococcal and herpes zoster vaccinations (as she has not had these yet) and check on her tetanus immunization status. You also plan for formal cognitive testing at the next visit to see if she has any further memory decline.

Conclusion

Developing a preventive care plan for elderly patients with increasing frailty and limited life expectancy can be challenging. We recommend covering the following primary care preventive considerations: cancer, cardiovascular disease, falls and osteoporosis, and preventive immunizations. Just remember CCFP.

Dr Tazkarji is Assistant Professor of Family Medicine at the University of Toronto in Ontario and a practising family physician with the Summerville Family Health Team in Toronto. **Dr Lam** is Associate Professor of Family Medicine at the University of Toronto, a practising family physician with the Toronto Western Family Health Team, and an attending physician in the Geriatric Rehabilitation Program of the University Health Network. **Dr Lee** is a family physician practising at the St Clair Medical Clinic in Toronto. **Ms Meiyappan** is Research Associate in the Department of Family and Community Medicine at Toronto Western Hospital.

Acknowledgment

We thank **Drs Christopher Frank, Sidney Feldman, and Marcel Arcand** for reviewing the manuscript and **Ms Ani Orchanian-Cheff**, Information Specialist and Archivist at the University Health Network Library and Information Services, for completing the literature search.

Contributors

All authors contributed to the literature review and interpretation, and to preparing the manuscript for submission.

Competing interests

None declared

Correspondence

Dr Robert Lam; e-mail robert.lam@uhn.ca

References

1. Arias E. United States life tables, 2008. *Natl Vital Stat Rep* 2012;61(3):1-63.
2. Statistics Canada. *Life expectancy, at birth and at age 65, by sex and by province and territory. Table 102-0512*. Ottawa, ON: Statistics Canada; 2012. Available from: www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/health72a-eng.htm. Accessed 2016 Apr 4.
3. Schonberg MA, Davis RB, McCarthy EP, Marcantonio ER. Index to predict 5-year mortality of community-dwelling adults aged 65 and older using data from the National Health Interview Survey. *J Gen Intern Med* 2009;24(10):1115-22. Epub 2009 Aug 1.
4. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, et al. A global clinical measure of fitness and frailty in elderly people. *CMAJ* 2005;173(5):489-95.
5. Lee L, Heckman G, Molnar FJ. Frailty. Identifying elderly patients at high risk of poor outcomes. *Can Fam Physician* 2015;61:227-31 (Eng), e119-24 (Fr).
6. Rockwood K. *Clinical Frailty Scale*. Halifax, NS: Geriatric Medicine Research, Dalhousie University; 2009.
7. Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, et al, editors. *SEER cancer statistics review, 1975-2001*. Bethesda, MD: National Cancer Institute; 2004. Available from: http://seer.cancer.gov/csr/1975_2001. Accessed 2016 Jul 22.
8. American Cancer Society. *American Cancer Society guidelines for the early detection of cancer*. Atlanta, GA: American Cancer Society; 2015. Available from: www.cancer.org/healthy/findcancerearly/cancerscreeningguidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer. Accessed 2016 Jul 27.
9. Schonberg MA, McCarthy EP, Davis RB, Phillips RS, Hamel MB. Breast cancer screening in women aged 80 and older: results from a national survey. *J Am Geriatr Soc* 2004;52(10):1688-95.
10. U.S. Preventive Services Task Force. Screening for colorectal cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med* 2008;149(9):627-37. Epub 2008 Oct 6.
11. Shimizu T, Bouchard M, Mavriplis C. Update on age-appropriate preventive measures and screening for Canadian primary care providers. *Can Fam Physician* 2016;62:131-8 (Eng), e64-72 (Fr).
12. Canadian Task Force on Preventive Health Care, Bacchus CM, Dunfield L, Gorber SC, Holmes NM, Birtwhistle R, et al. Recommendations on screening for colorectal cancer in primary care. *CMAJ* 2016;188(5):340-8. Epub 2016 Feb 22.
13. Walter LC, Covinsky KE. Cancer screening in elderly patients: a framework for individualized decision making. *JAMA* 2001;285(21):2750-6.
14. Warner E, Heisey R, Carroll JC. Applying the 2011 Canadian guidelines for breast cancer screening in practice. *CMAJ* 2012;184(16):1803-7. Epub 2012 Sep 10.
15. Murphy J, Kennedy EB, Dunn S, McLachlin CM, Fung Kee Fung M, Gzik D, et al. Cervical screening: a guideline for clinical practice in Ontario. *J Obstet Gynaecol Can* 2012;34(5):453-8.
16. Action to Control Cardiovascular Risk in Diabetes Study Group, Gerstein HC, Miller ME, Byington RP, Goff DC Jr, Bigger JT, et al. Effects of intensive glucose lowering in type 2 diabetes. *N Engl J Med* 2008;358(24):2545-59. Epub 2008 Jun 6.
17. Canadian Geriatrics Society. *Geriatrics. Five things physicians and patients should question*. Toronto, ON: Choosing Wisely Canada; 2014. Available from: www.choosingwiselycanada.org/recommendations/geriatrics. Accessed 2016 Jul 22.
18. Paty BW. The role of hypoglycemia in cardiovascular outcomes in diabetes. *Can J Diabetes* 2015;39(Suppl 5):S155-9.
19. De Berardis G, Sacco M, Strippoli GF, Pellegrini F, Graziano G, Tognoni G, et al. Aspirin for primary prevention of cardiovascular events in people with diabetes: meta-analysis of randomised controlled trials. *BMJ* 2009;339:b4531. Erratum in: *BMJ* 2010;340:c374.
20. Butalia S, Leung AA, Ghali WA, Rabi DM. Aspirin effect on the incidence of major adverse cardiovascular events in patients with diabetes mellitus: a systematic review and meta-analysis. *Cardiovasc Diabetol* 2011;10:25.
21. Xie M, Shan Z, Zhang Y, Chen S, Yang W, Bao W, et al. Aspirin for primary prevention of cardiovascular events: meta-analysis of randomized controlled trials and subgroup analysis by sex and diabetes status. *PLoS One* 2014;9(10):e90286.
22. Vasan RS, Beiser A, Seshadri S, Larson MG, Kannel WB, D'Agostino RB, et al. Residual lifetime risk for developing hypertension in middle-aged women and men: the Framingham Heart Study. *JAMA* 2002;287(8):1003-10.
23. Beckett N, Peters R, Tuomilehto J, Swift C, Sever P, Potter J, et al. Immediate and late benefits of treating very elderly people with hypertension: results from active treatment extension to Hypertension in the Very Elderly randomised controlled trial. *BMJ* 2012;344:d7541.
24. Zuckerman IH, Yin X, Rattinger GB, Gottlieb SS, Simoni-Wastila L, Pierce SA, et al. Effect of exposure to evidence-based pharmacotherapy on outcomes after acute myocardial infarction in older adults. *J Am Geriatr Soc* 2012;60(10):1854-61. Epub 2012 Sep 24.
25. Ridker PM, Danielson E, Fonseca FA, Genest J, Gotto AM Jr, Kastelein JJ, et al. Rosuvastatin to prevent vascular events in men and women with elevated C-reactive protein. *N Engl J Med* 2008;359(21):2195-207. Epub 2008 Nov 9.
26. Shepherd J, Blauw GJ, Murphy MB, Bollen EL, Buckley BM, Cobbe SM, et al. Pravastatin in elderly individuals at risk of vascular disease (PROSPER): a randomised controlled trial. *Lancet* 2002;360(9346):1623-30.
27. Grant MD, Piotrowski ZH, Miles TP. Declining cholesterol and mortality in a sample of older nursing home residents. *J Am Geriatr Soc* 1996;44(1):31-6.
28. Papaioannou A, Morin S, Cheung AM, Atkinson S, Brown JP, Feldman S, et al. 2010 Clinical practice guidelines for the diagnosis and management of osteoporosis in Canada: summary. *CMAJ* 2010;182(17):1864-73. Epub 2010 Oct 12.
29. Papaioannou A, Santesso N, Morin SN, Feldman S, Adachi JD, Crilly R, et al. Recommendations for preventing fracture in long-term care. *CMAJ* 2015;187(15):1135-44, E450-61. Epub 2015 Sep 14.
30. Kwong JC, Campitelli MA, Gubbay JB, Peci A, Winter AL, Olsha R, et al. Vaccine effectiveness against laboratory-confirmed influenza hospitalizations among elderly adults during the 2010-2011 season. *Clin Infect Dis* 2013;57(6):820-7. Epub 2013 Jun 20.
31. Public Health Agency of Canada. *An Advisory Committee Statement (ACS), National Advisory Committee on Immunization (NACI): re-immunization with polysaccharide 23-valent pneumococcal vaccine (Pneu-P-23)*. Ottawa, ON: Public Health Agency of Canada; 2015. Available from: <http://publications.gc.ca/site/eng/9.629954/publication.html>. Accessed 2016 Jul 22.
32. Centers for Disease Control and Prevention. Tetanus surveillance—United States, 2001–2008. *MMWR Morb Mortal Wkly Rep* 2011;60(12):365-9.
33. Topinková E, Maresová V. Tetanus and pertussis vaccines: their usefulness in the aging population. *Aging Clin Exp Res* 2009;21(3):229-35.
34. Shapiro M, Kvern B, Watson P, Guenther L, McElhaney J, McGeer A. Updates on herpes zoster vaccination. A family practitioner's guide. *Can Fam Physician* 2011;57:1127-31 (Eng), e356-62 (Fr).
