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Quality of Diabetes Care in the Canadian Forces

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ABSTRACT

Background: Published data on quality of care indicators from various countries indicate the challenges of providing high-quality diabetes care. The objective of this study was to evaluate the quality of care provided to members of the Canadian Forces (CF) who have diabetes, by determining the extent to which healthcare providers adhere to recommendations outlined in the 2008 Canadian Diabetes Association (CDA) clinical practice guidelines.

Methods: All 14 CF bases meeting eligibility criteria were included in the evaluation. Cases of diabetes were ascertained based on laboratory criteria. Adherence to 21 CDA guideline recommendations was evaluated following a review of patient medical records.

Results: The CF demonstrated high adherence (>75%) with 9 recommendations, moderate adherence (50% to 75%) with 7 recommendations and low adherence (<50%) with 5 recommendations. Most notably, there were 4 recommendations for which adherence was greater than 90%. The mean rate of adherence with all applicable recommendations per patient was 60.3% (95% Confidence Interval [CI], 59.0% to 61.6%). CF adherence rates were generally similar to or better than comparable rates in the civilian population within Canada and other industrialized countries.

Conclusions: It is unclear what accounts for the favourable quality of diabetes care in the CF Health Services, but this highly structured practice setting has a number of features that distinguish it from provincial healthcare systems. Several strategies can be considered to improve diabetes care even further, including providing feedback to physicians about their performance, promoting the use of diabetes care flow sheets and creating a diabetes registry.

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R É S U M É

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Introduction : Les données publiées sur les indicateurs de la qualité des soins de plusieurs pays montrent les défis liés à la prestation de soins de grande qualité aux diabétiques. L'objectif de cette étude était d'évaluer la qualité des soins fournis aux membres des Forces canadiennes (FC) qui ont le diabète en déterminant dans quelle mesure les prestataires de soins respectent les recommandations définies dans les lignes directrices de pratique clinique 2008 de l'Association canadienne du diabète (ACD).

Méthodes : Les 14 bases des FC répondant aux critères d'admissibilité ont été incluses dans l'évaluation. Les cas de diabète ont été établis selon les critères de laboratoire. L'observance des 21 recommandations provenant des lignes directrices de l'ACD a été évaluée d'après une revue de dossiers médicaux.

Résultats : Les FC ont démontré une observance élevée (> 75 %) si 9 recommandations avaient été suivies, une observance modérée (50 % à 75 %) si 7 recommandations avaient été suivies et une faible observance (< 50 %) si 5 recommandations avaient été suivies. Plus particulièrement, il y a eu 4 recommandations pour lesquelles l'observance a été plus grande que 90 %. Le taux moyen d'observance de toutes les recommandations applicables par patient a été de 60,3 % (intervalle de confiance [IC] à 95 %, 59,0 % à 61,6 %). Les taux d'observance des FC ont généralement été similaires ou meilleurs que les taux comparables de la population civile de tout le Canada et d'autres pays industrialisés.

Conclusions : Il est difficile de savoir ce qui relève d'une qualité de soins favorable dans les Services de santé des FC, mais ce cadre de pratique hautement structuré a de nombreuses caractéristiques qui le distinguent des systèmes de soins de santé provinciaux. Plusieurs stratégies peuvent être considérées

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pour améliorer encore davantage les soins du diabète, y compris l'offre d'une rétroaction aux médecins sur leur performance, la promotion de l'utilisation des organigrammes des soins diabétologiques et la création d'un registre du diabète.

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Introduction

Between 2008 and 2009, there were an estimated 2.4 million Canadians with diabetes, representing 6.8% of the population (1). Diabetes is the 6th leading cause of death in Canada, with cardiovascular disease representing a major cause of morbidity and mortality among affected individuals (2,3). There is a 2- to 4-fold increased risk of cardiovascular events among people with diabetes compared to those without diabetes, an increase that persists even after accounting for other traditional risk factors (4). Additional complications include blindness, kidney disease, foot ulcers and amputations. The annual cost of diabetes to the Canadian healthcare system is projected to exceed \$19 billion by 2020 (5).

Indicators of the quality of diabetes care internationally have demonstrated that there are significant challenges to providing high-quality diabetes care (6–10). With the prevalence of diabetes increasing globally due to an aging population and increasing levels of obesity and physical inactivity, the quality of diabetes care has never been a more important issue (11). The objective of this study was to evaluate the quality of care provided to members of the Canadian Forces (CF) who have diabetes, by determining the extent to which health care providers adhere to recommendations outlined in the 2008 Canadian Diabetes Association (CDA) clinical practice guidelines (12). The recommendations proposed in the CDA guidelines were based on the best available evidence as well as expert opinion on best practice. They shared much in common with the American Diabetes Association (ADA) clinical practice guidelines and the UK's National Institute for Health and Clinical Excellence (NICE) clinical practice guidelines; although there were notable differences as well (13,14). A secondary objective was to compare the quality of diabetes care in the CF with national and international estimates for the general population.

Methods

A retrospective medical case review of all eligible CF members with diabetes was conducted over a 3-year period to examine adherence to 21 CDA guideline recommendations.

Study population

The study population consisted of members of the CF Regular Force aged 18 to 60 years with diabetes who were located at the 14 bases that incorporated progress notes into the electronic medical record (EMR) for 6 months or more as of December 19th, 2011. There was a total of 32 603 members of the CF Regular Force at these bases, which represents roughly half of the overall CF Regular Force population. The bases included members of the army, navy and air force and were located in all regions of Canada except the Maritime provinces, which did not meet the electronic medical record (EMR) criteria for inclusion, and the territories, where there are no CF bases.

Case ascertainment of diabetes

CF members with diabetes were identified by extracting a list of patients at the 14 selected bases who either had a diagnosis of diabetes documented in the EMR within the physicians' progress

notes or periodic health assessments (diagnostic assessment extract) or who were identified from a pharmacy database as having been prescribed diabetes medication and/or glucose testing strips in the past year. The diagnostic assessment extract contained the diabetes-specific ICD-10 codes (E10–E14) listed for every relevant clinic visit as early as July 2010 up to December 19, 2011. From this initial list, eligible patients for this study were identified by reviewing laboratory records. Patients were included in this study if they had plasma glucose levels in the diabetes range on 2 separate occasions as per clinical practice guidelines (fasting plasma glucose ≥ 7.0 mmol/L, random plasma glucose ≥ 11.1 mmol/L or 2-hour plasma glucose ≥ 11.1 mmol/L after a 75 g oral glucose tolerance test) (12). As the 2008 CDA clinical practice guidelines did not include HbA1c thresholds in their diagnostic criteria, HbA1c levels were not considered. Note that while patients may be prescribed medications, like Metformin for conditions such as pre-diabetes and polycystic ovarian syndrome or require glucose testing strips for monitoring gestational diabetes, the requirement for laboratory evidence of diabetes meant that these conditions were excluded from consideration. Because the CF does not accept applicants with pre-existing diabetes, CF members currently with diabetes must have been diagnosed while in service and would, therefore, have laboratory results corresponding to that diagnosis in their medical records.

Quality of care indicators

The criteria used to assess quality of care were based on adherence to CDA guideline recommendations in 2 areas: 15 processes of care and 6 intermediate outcomes. Guideline recommendations that should be "considered" were not included in the evaluation as they are open to clinical judgement.

Process of care measures

In terms of processes of care, the 2008 CDA guidelines recommended that patients with diabetes should have the following: a hemoglobin A1c test at least every 6 months; an annual test for urine protein excretion (random urine albumin-creatinine ratio [ACR]); an annual kidney function test (serum creatinine converted to an estimated glomerular filtration rate [eGFR]); a blood pressure check at every visit; an annual foot exam with additional testing for peripheral neuropathy; a dilated eye exam every 1 to 2 years; a fasting lipid profile every 1 to 3 years and a baseline EKG in those over 40 years of age (12). An EKG should be repeated every 2 years in those who are at high risk for cardiovascular events (7). Patients at high risk for cardiovascular events were defined as males ≥ 45 years old and as females ≥ 50 years old (12). All other patients with diabetes were defined as moderate risk. Additional recommendations included an annual influenza vaccination, encouragement to stop smoking, the use of metformin as the initial oral anti-hyperglycemic agent, and the prescription of an angiotensin-converting enzyme (ACE) inhibitor or an angiotensin receptor blocker (ARB) for those with persistent microalbuminuria (ACR ≥ 2.0 mg/mmol in males or ≥ 2.8 mg/mmol in females), even in the absence of hypertension (12). According to the 2008 CDA clinical practice guidelines, an ACE inhibitor or ARB should also be prescribed for those at high risk of cardiovascular events (12).

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