Can J Diabetes xxx (2017) 1–8

Contents lists available at ScienceDirect

Canadian Journal of Diabetes

journal homepage: www.canadianjournalofdiabetes.com

Original Research

Insights Into the Current Management of Older Adults with Type 2 Diabetes in the Ontario Primary Care Setting

Graydon S. Meneilly MD, FRCPC, MACP [a,*], Lori D. Berard RN, CDE [b], Alice Y.Y. Cheng MD, FRCPC [c], Peter J. Lin MD, CCFP [d], Lori MacCallum BScPhm, PharmD, RPh, CDE [e], Ross T. Tsuyuki BSc (Pharm), PharmD, MSc, FCSHP, FACC [f], Jean-François Yale MD, CSPQ, FRCPC [g], Nahal Nasseri BPharm, MSc, MBA [h], Jean-François Richard BPharm [h], Lianne Goldin [d], Anatoly Langer MD, MSc, FRCPC, FACC [d,i], Mary K. Tan MSc [d], Lawrence A. Leiter MD, FRCPC, FACP, FACE, FAHA [j]

[a] *Department of Medicine, Vancouver Hospital and the University of British Columbia, Vancouver, British Columbia, Canada*
[b] *Winnipeg Regional Health Authority, Health Sciences Centre, Winnipeg Diabetes Research Group, Department of Medicine, Section of Endocrinology, University of Manitoba, Winnipeg, Manitoba, Canada*
[c] *Division of Endocrinology and Metabolism, St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada*
[d] *Canadian Heart Research Centre, Toronto, Ontario, Canada*
[e] *Banting and Best Diabetes Centre, Faculty of Medicine and Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto, Ontario, Canada*
[f] *EPICORE Centre, Department of Medicine, University of Alberta, Edmonton, Alberta, Canada*
[g] *Division of Endocrinology and Metabolism, McGill University, Montréal, Québec, Canada*
[h] *Merck Canada Inc., Kirkland, Québec, Canada*
[i] *Terrence Donnelly Heart Centre, Division of Cardiology, St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada*
[j] *Division of Endocrinology & Metabolism, Li Ka Shing Knowledge Institute, St. Michael's Hospital, University of Toronto, Ontario, Canada*

ARTICLE INFO

Article history:
Received 16 December 2016
Received in revised form
9 February 2017
Accepted 3 March 2017

Keywords:
frailty
older individuals
pharmacotherapy
primary care
type 2 diabetes

ABSTRACT

Objective: The Goal Oriented controL of Diabetes in the Elderly populatioN (GOLDEN) Program assessed the management of older persons with type 2 diabetes in Canadian primary care.
Methods: Data were extracted from the records of 833 consecutively identified persons 65 years of age or older who had type 2 diabetes and were taking 1 antihyperglycemic agent or more; they were managed by 64 physicians from 36 Ontario clinics.
Results: More than half (53%) had glycated hemoglobin (A1C) levels of 7.0% or lower, 41% had blood pressure levels below 130/80 mm Hg, and 73% had low-density lipoprotein levels of 2.0 mmol/L or lower; 19% met all 3 criteria. Over the past year, 11% had been assessed for frailty, 16% for cognitive dysfunction and 19% for depression; 88% were referred for eye checkups, and 83% had undergone foot examinations. One-tenth were taking 4 or more antihyperglycemic agents, 87% statins and 52% an angiotensin-converting enzyme inhibitor. More than half of those with high clinical complexity had A1C levels of 7.0% or lower; of these, one-third were taking a sulfonylurea, and one-fifth were taking insulin. In the patients with A1C levels of 7.0% or above and low clinical complexity, there was often no up-titration or initiation of additional antihyperglycemic agents.
Conclusions: Older persons with type 2 diabetes often have multiple comorbidities. Unlike eye and foot examinations, there was less emphasis on evaluating for frailty, cognitive dysfunction and depression. The GOLDEN patients had generally well-controlled glycemic, blood pressure and cholesterol profiles, but whether these would be reflected in a "sicker" population is not known. Personalized strategies are necessary to avoid undertreatment of "healthy" older patients and overtreatment of the frail elderly.

* Address for correspondence: Graydon S. Meneilly, MD, FRCPC, MACP, Department of Medicine, University of British Columbia, 2775 Laurel Street, 10th Floor, Vancouver, British Columbia V5Z 1M9, Canada.
E-mail address: meneilly@mail.ubc.ca

1499-2671 © 2017 Canadian Diabetes Association.
The Canadian Diabetes Association is the registered owner of the name Diabetes Canada.
http://dx.doi.org/10.1016/j.jcjd.2017.03.003

Mots clés :
fragilité
personnes âgées
pharmacothérapie
soins primaires
diabète de type 2

RÉSUMÉ

Objectif : Le programme GOLDEN (Goal Oriented controL of Diabetes in the Elderly populatioN) évaluait la prise en charge des personnes âgées atteintes du diabète de type 2 en milieu de soins primaires au Canada.
Méthodes : Les données ont été extraites des dossiers médicaux de 833 personnes âgées, désignées de manière consécutive, qui avaient 65 ans ou plus, et qui souffraient du diabète de type 2 pour lequel elles prenaient 1 antihyperglycémiant ou plus; 64 médecins de 36 cliniques de l'Ontario les ont pris en charge.
Résultats : Plus de la moitié (53 %) avaient des concentrations d'hémoglobine glyquée (A1c) de 7,0 % ou moins, 41 % avaient des valeurs de pression artérielle de 130/80 mm Hg ou moins et 73 % avaient des concentrations de lipoprotéines de basse densité de 2,0 mmol/l ou moins; 19 % répondaient aux 3 critères. Au cours de la dernière année, 11 % avaient fait l'objet d'une évaluation de la fragilité, 16 %, d'une évaluation du dysfonctionnement cognitif et 19 %, d'une évaluation de la dépression; 88 % avaient reçu une consultation pour des examens ophtalmologiques et 83 % avaient subi un examen des pieds. Un dixième prenaient 4 antihyperglycémiants ou plus, 87 %, des statines et 52 %, un inhibiteur de l'enzyme de conversion de l'angiotensine. Plus de la moitié de ceux qui présentaient un tableau clinique de grande complexité avaient des concentrations d'A1c de 7,0 % ou moins. Parmi ces derniers, un tiers prenaient des sulfonylurées, et un cinquième prenaient de l'insuline. Chez les patients qui avaient des concentrations d'A1c de 7,0 % ou plus et qui présentaient un tableau clinique peu complexe, il n'y avait souvent aucun ajustement de la dose à la hausse ou introduction d'un antihyperglycémiant additionnel.
Conclusions : Les personnes âgées atteintes du diabète de type 2 ont souvent plusieurs comorbidités. Contrairement aux examens ophtalmologiques et aux examens des pieds, l'évaluation de la fragilité, du dysfonctionnement cognitif et de la dépression était négligée. Les patients qui participaient au programme GOLDEN montraient généralement une bonne maîtrise de la glycémie, de la pression artérielle et du cholestérol, mais on ignore si ceci se reflétera dans une population « plus malade ». Des stratégies personnalisées sont nécessaires pour éviter le sous-traitement des patients âgés en « bonne santé » et le surtraitement des personnes âgées fragiles.

Introduction

According to the 2010 Public Health Agency of Canada report (1), 49% of persons living with diabetes in Canada were 65 years of age or older. This is not surprising, given that data from the 2008/09 Canadian Chronic Disease Surveillance System revealed that the greatest spike in diabetes prevalence was detected in the 60- to 64-year age group, with diabetes incidence rates peaking in the 70- to 74- and the 75- to 79-year age strata (2). The surge in diabetes cases in those 65 years of age or older is likely to have been driven in part by unhealthy weights during childhood and adulthood (2) as well as prolonged longevity (3) due to the decline in cardiovascular and cancer mortality over the past 2 decades (4,5). The socioeconomic impact of these changing dynamics is worrisome because conservative estimates suggest that the overweight/obese adult population in Canada will outnumber those who have healthy weights by 2019 (6) and that by 2024, 1 in 5 of the national population will be 65 years of age or older (7).

There is good evidence that a combination of healthful behavioural habits and pharmacotherapy can generally help to slow the evolution of type 2 diabetes. Guidelines are aligned in emphasizing the importance of personalizing therapy (8–12), in particular in older individuals, given their diverse comorbidities, functional capacities and social circumstances. Indeed, recent analyses using information from the databases of the United States Centers for Medicare and Medicaid Services, National Health and Nutrition Examination Survey and Veterans Health Administration suggest that older adults with type 2 diabetes may be overtreated and, accordingly, subjected to higher risks for hypoglycemia and its associated morbidities (13–15). Individualizing therapy can, however, pose a challenge at the primary care level, given the broad spectrum of cases that are routinely seen and the necessity of prioritizing care for the most pressing ailment or concern that has the greatest, perceived or bona fide, social implications. Inasmuch as there are limited real-world data about the care of older persons with diabetes, the Goal Oriented controL of Diabetes in the Elderly populatioN (GOLDEN) program was designed to evaluate and gain contemporary insight into the status and management of individuals 65 years of age or older with type 2 diabetes in the Canadian primary care setting.

Methods

Study design and conduct

The GOLDEN Program was a 1-time, cross-sectional survey conceived, designed, coordinated and managed by the Canadian Heart Research Centre (CHRC), a federally incorporated, not-for-profit academic research and continuing professional development organization.

Physician participants, patient population and clinical care

Between October 2015 and April 2016, primary care physicians from Ontario who utilize electronic medical record (EMR) systems from the same accredited provider were invited to participate in the GOLDEN program. The EMR system was programmed to identify, via the International Classification of Diseases codes, consecutive patients 65 years of age or older with type 2 diabetes, per the *Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada* (9), who were being treated with at least 1 antihyperglycemic agent and who were cared for in the practices of the participating physicians. The GOLDEN study protocol did not mandate any specific management or treatment algorithms so, accordingly, all decisions pertaining to patient management were left entirely to the discretion of the treating physicians for the duration of the study.

Assessment forms and data collection

The electronic practice-assessment form used in the GOLDEN program was developed in consultation with the scientific committee. Data collected on these forms were extracted from EMRs and