Trends in Prescribing Oral Anticoagulants in Canada, 2008–2014

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ABSTRACT

Purpose: The non–vitamin K antagonist oral anticoagulants (NOACs), dabigatran, rivaroxaban, and apixaban, provide several advantages over vitamin K antagonists, such as warfarin. Little is known about the trends of prescribing OACs in Canada. In this study we analyzed changes in prescription volumes for OAC drugs since the introduction of the NOACs in Canada overall, by province and by physician specialty.

Methods: Canadian prescription volumes for warfarin, dabigatran, rivaroxaban, and apixaban from January 2008 to June 2014 were obtained from the Canadian Compuscript Audit of IMS Health Canada Inc and were analyzed by physician specialty at the national and provincial levels. Total prescriptions by indication were calculated based on data from the Canadian Disease and Therapeutic Index for all OAC indications and for each commonly prescribed dose of dabigatran (75, 110, and 150 mg), rivaroxaban (10, 15, and 20 mg), and apixaban (2.5 and 5 mg).

Findings: The overall number of OAC prescriptions in Canada has increased annually since 2008. With the availability of the NOACs, the proportion of total OAC prescriptions attributable to warfarin has steadily decreased, from 99% in 2010 to 67% by June 2014, and the absolute number of warfarin prescriptions has been decreasing since February 2011. The greatest decline in proportionate warfarin prescriptions was in Ontario. In general, the increase of NOAC prescriptions coincided with the introduction of provinces' reimbursement of NOAC prescription costs. The proportion of total OAC prescriptions represented by the NOACs varied by specialty, with the greatest proportionate prescribing found among orthopedic surgeons, cardiologists, and neurologists.

Implications: Since their approval, the NOACs have represented a growing share of total OAC prescriptions in Canada. This trend is expected to continue because the NOACs are given preference over warfarin in guidelines on stroke prevention in patients with atrial fibrillation, because of growing physician experience, and due to the emergence of potential new indications. An understanding of the current prescribing patterns will help to encourage knowledge translation and possibly influence policy/reimbursement strategies. (*Clin Ther.* 2015;37:2506–2514) © 2015 The Authors. Published by Elsevier HS Journals, Inc.

Key words: NOAC, oral anticoagulants, prescribing trends.

INTRODUCTION

For decades, vitamin K antagonists, such as warfarin, were the only oral anticoagulant (OAC) agents indicated for the long-term prevention and treatment of arterial and venous thrombosis. Although warfarin is effective, its use is complicated by its numerous drug and food interactions, as well as the need for individualized patient dosing, requiring regular

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monitoring of coagulation to optimize efficacy and tolerability.[1,2] The non–vitamin K antagonist OACs (NOACs) are more convenient than is warfarin because they can be given in fixed doses without routine coagulation monitoring. In Canada, 3 NOACs are currently available: the oral thrombin inhibitor dabigatran etexilate, and the oral factor Xa inhibitors rivaroxaban and apixaban.

Although the NOACs were first approved in 2008 for the prevention of venous thromboembolism (VTE) after elective hip- or knee-replacement surgery, the most common use of the NOACs now is for stroke risk reduction in patients with atrial fibrillation (AF).[3] More recently, the NOACs were also approved for the treatment of deep vein thrombosis and pulmonary embolism.[4–6]

Little is known about the trends of prescribing OACs in Canada. This article provides the first look at OAC-prescribing trends in Canada, according to province and physician specialty, since the availability of the NOACs in 2008. Guidelines have embraced the use of NOACs, and in 2012, the Canadian Cardiovascular Society gave preference to NOACs over warfarin for stroke prevention in AF.[7] However, a major challenge for clinicians in following this recommendation is the lack of alignment with reimbursement systems in Canada.[8,9] An understanding of the uptake of NOACs may help to change policy/reimbursement strategies to reflect current guidelines and prescribing patterns.

MATERIALS AND METHODS

Data Sources

A detailed listing and description of the data sources are provided in the **Supplemental Material** in the online version at http://dx.doi.org/10.1016/j.clinthera.2015.09.008. Briefly, data on the numbers of prescriptions filled by retail pharmacies in Canada from January 2008 to June 2014, available from the Canadian CompuScript database, were obtained from IMS Health Canada Inc. These data provide the number of new, refill, and total prescription volumes for OACs, including formulation and strength, within each therapeutic class, at the national and provincial levels. The Physician Specialty Report, which can complement the Canadian Compuscript, shows new and total prescriptions dispensed according to physician specialty, specialty share by product and therapeutic class, and product market share by physician specialty. Data are available from Alberta, Saskatchewan, Ontario, Quebec, Nova Scotia, and New Brunswick; the other provinces and territories do not supply data to IMS Health Canada Inc. IMS Health Canada Inc captures all new and refill prescriptions (80% national prescription coverage) from a panel of over 5000 pharmacies, which are stratified by province, pharmacy type (retail chain, independent), and size. Prescription records are collected electronically and updated on a monthly basis. Sample data from the panel are extrapolated to estimate the prescriptions by all physicians in each province. The accuracy of these data is greater in provinces with greater pharmacy coverage. Extrapolated provincial totals were summed to provide a national estimate. *Total prescriptions* refers to all new and refill prescriptions dispensed from pharmacies. Data on each of the NOACs in all of the commonly used doses were obtained: dabigatran (75, 110, and 150 mg), rivaroxaban (10, 15, and 20 mg), and apixaban (2.5 and 5 mg). The total prescription share for each OAC was used for accounting for differences in NOAC dosing. For analysis of the per capita OAC-prescribing trends by province, the total number of pills was used for accounting for differences in prescription duration, thereby ensuring that provinces with shorter prescription durations (eg, Quebec) would not be overrepresented.

Data for determining the total prescriptions by indication were obtained from the Canadian Disease and Therapeutic Index (CDTI). The CDTI uses statistical information on the patterns and treatment of diseases encountered in office-based practices in Canada to help to understand disease trends and drug-prescribing patterns. Data on estimated drug use and estimated diagnostic visits are obtained at national and regional levels (5 regions: Maritimes, Quebec, Ontario, Prairies, and British Columbia) from physicians who fill out case records about their patients. The CDTI panel consists of 652 physicians in office-based medical practices covering 15 specialties. Each quarter, these physicians report on patients' visits during a 2-day period. Data from the CDTI do not include visits to non–primary care specialists or reflect patient self-medication. Although individual quarterly estimates of the national CDTI data have a high sampling error because of large sampling weights, quarterly and year-over-year