

Polypharmacy among older adults with heart failure: Trends between 2000 and 2017 in the province of Quebec, Canada

Alexandre Campeau Calfat, PharmD^{1,2,3}, Marc Simard, M.Sc^{1,4}, Amina Ouali¹, Claudia Blais, PhD^{4,5}, Caroline Sirois, B.Pharm, PhD^{2,3,4,5}

¹Faculty of Medicine, Laval University, Québec, Canada ; ²Centre de recherche en santé durable-VITAM ³Centre d'excellence sur le vieillissement de Québec ; ⁴Institut National de Santé Publique du Québec; ⁵Faculty of Pharmacy, Laval University *alexandre.campeau-calfat.1@ulaval.ca

Background

- In 2015-2016, 4,7% of Quebecers aged $\geq 60-79$ years old and 17,3% of those ≥ 80 were affected by heart failure [1].
- The use of medications for the treatment of heart failure and its associated comorbidities can lead to an important pharmacological burden (polypharmacy) [2]. Angiotensin-converting-enzyme inhibitors/angiotensin II receptors blockers (ACEI/ARB) and β -Blockers (BB) were the cornerstone treatment over the studied period.
- There is scarce information concerning polypharmacy and medication use among older adults with heart failure.

Aim

To observe trends related to polypharmacy exposure and recommended medication use for heart failure in older Quebecers with heart failure between 2000 and 2017.

Methods

Data: Population-based study using data from the Québec Integrated Chronic Disease Surveillance System. **Population:** Individuals >65 years old with heart failure between 2000 and 2017. A validated case definition of heart failure was used to identify individuals [3]. **Analysis:** The number of prescribed medications used by each individual was measured annually. For every studied year we calculated: 1) the proportions of individuals using three definitions of polypharmacy (≥ 10 , ≥ 15 , ≥ 20 different medications annually); 2) the proportions of individuals using guideline recommended medications for the treatment of heart failure. All proportions were age- and sex-standardised with Quebec's 2001 population.

Results

Figure 1: Age- and sex-standardized proportions of adults aged >65 years with heart failure in Quebec, Canada, exposed to three levels of polypharmacy (≥ 10 , ≥ 15 , ≥ 20 medications) between 2000 and 2017

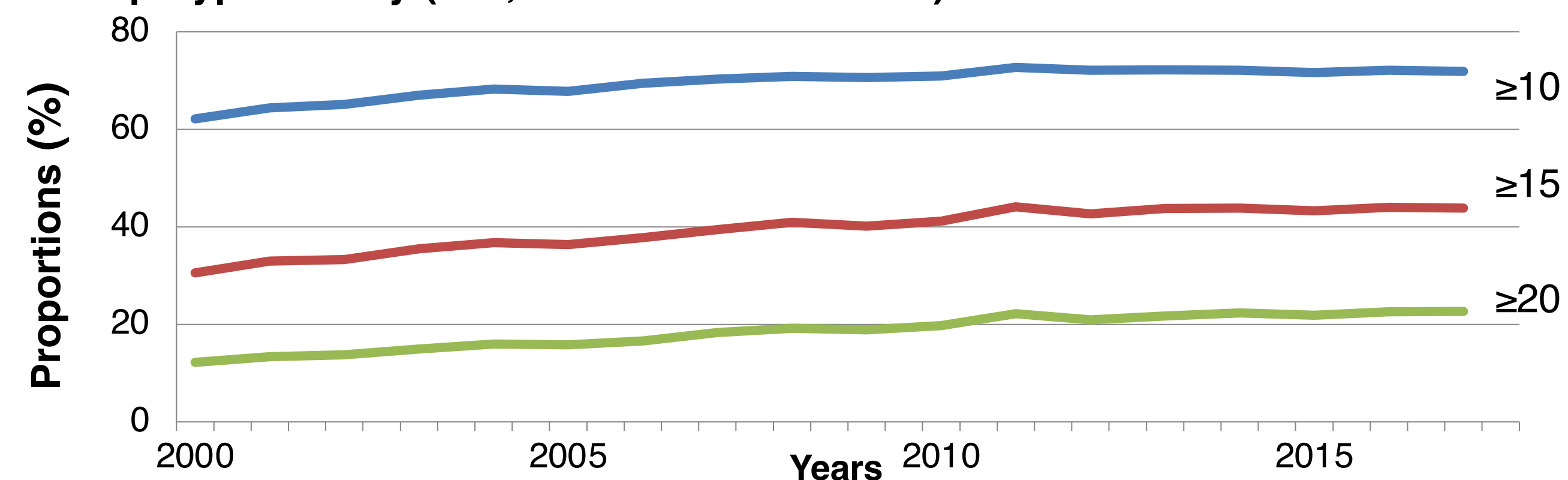
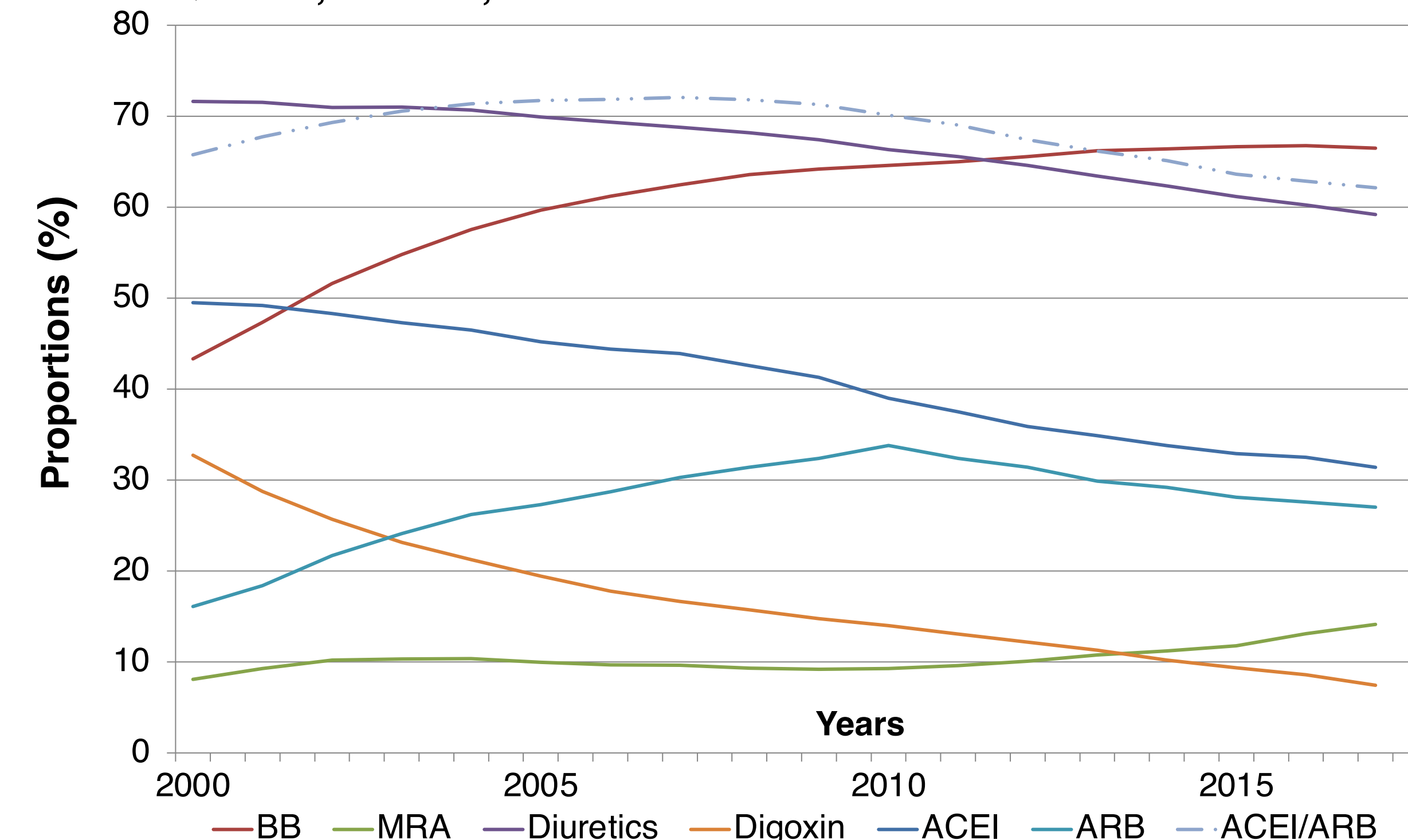


Figure 2: Age- and sex-standardized proportions of users of heart failure recommended medications among adults aged >65 years with heart failure in Quebec, Canada, between 2000 and 2017



KEY POINTS

The exposure to polypharmacy increased over the years, which may raise concerns about the possible consequences of this important medication burden.

The discrepancies between the use of medications and guideline recommendations should increase clinicians' awareness and lead to further investigations.

Discussion

- The trends are similar to those observed in the general population: between 2000 and 2016 the proportion of individuals using ≥ 10 medications increased from 26,0% to 38,1% in Quebecers aged >65 years old [4]. Our results show an increase in the proportion of individuals using ≥ 10 medications from 62,2% to 72,1% over the same period. The proportions of polypharmacy users in our population are twice those observed in the general population.
- The trends concerning recommended medication use are not uniform. The proportions of BB users increased over the period while the proportions of ACEI/ARB users decreased. The decrease in ACEI/ARB use was similar for all molecules, no matter the number of years following the diagnostic and no matter the comorbidities. The impact of the decreased in ACEI/ARB use on public and individual health should be assessed.

Funding

Alexandre Campeau Calfat received a study grant from the Centre de recherche sur les soins et les services de première ligne de l'Université Laval and from the Centre d'excellence sur le vieillissement du Québec. Caroline Sirois is a recipient of a Junior 2 Research Scholar from the Quebec Research Funds in Health

References

1. Massamba VK et al. Institut national de santé publique du Québec, Bureau d'information et d'études en santé des populations. Surveillance de l'insuffisance cardiaque au Québec: prévalence, incidence et mortalité de 2005-2006 à 2015-2016. Montréal: Institut national de santé publique du Québec; 2019.
2. McDonald M et al. CCS/CHFS Heart Failure Guidelines Update: Defining a New Pharmacologic Standard of Care for Heart Failure With Reduced Ejection Fraction. *Canadian Journal of Cardiology*. avr 2021;37(4):531-46.
3. Blais C, Jean S, Sirois C, et al. Quebec Integrated Chronic Disease Surveillance System (QICDSS), an innovative approach. *Chronic Dis Inj Can*. 2014;34(4):226-235.
4. Gosselin E et al. Portrait de la polypharmacie chez les aînés québécois entre 2000 et 2016. Institut national de santé publique du Québec; 2020.