

Over Half of Seniors Initiating Oral Bisphosphonates are Exposed for 3+ Years: Novel Rolling Window Approach & Patterns of Use

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INTRODUCTION

Oral bisphosphonates are first-line therapy for osteoporosis in Canada

- >96% of older adults in Ontario start **alendronate or risedronate**

Potential long-term harms, (e.g., atypical fractures)

- Guidelines recommend that most patients take a **drug holiday after 3-5 years** of therapy

Evidence indicates persistence to **bisphosphonates is low**

- Up to 50% do not persist** with therapy for 1 year
- Recent studies identify up to **50% restart bisphosphonate therapy**
- Unclear what proportion reach long-term therapy**



METHODS

Objective: Estimate the proportion of patients on long-term oral bisphosphonate therapy, describe patterns of long-term therapy, and compare characteristics of patients with and without long-term therapy

Data Sources:

Ontario healthcare administrative data, 1996/04-2019/12

Study Cohort: New users of **alendronate or risedronate** aged ≥66, 2000/11-2016/12

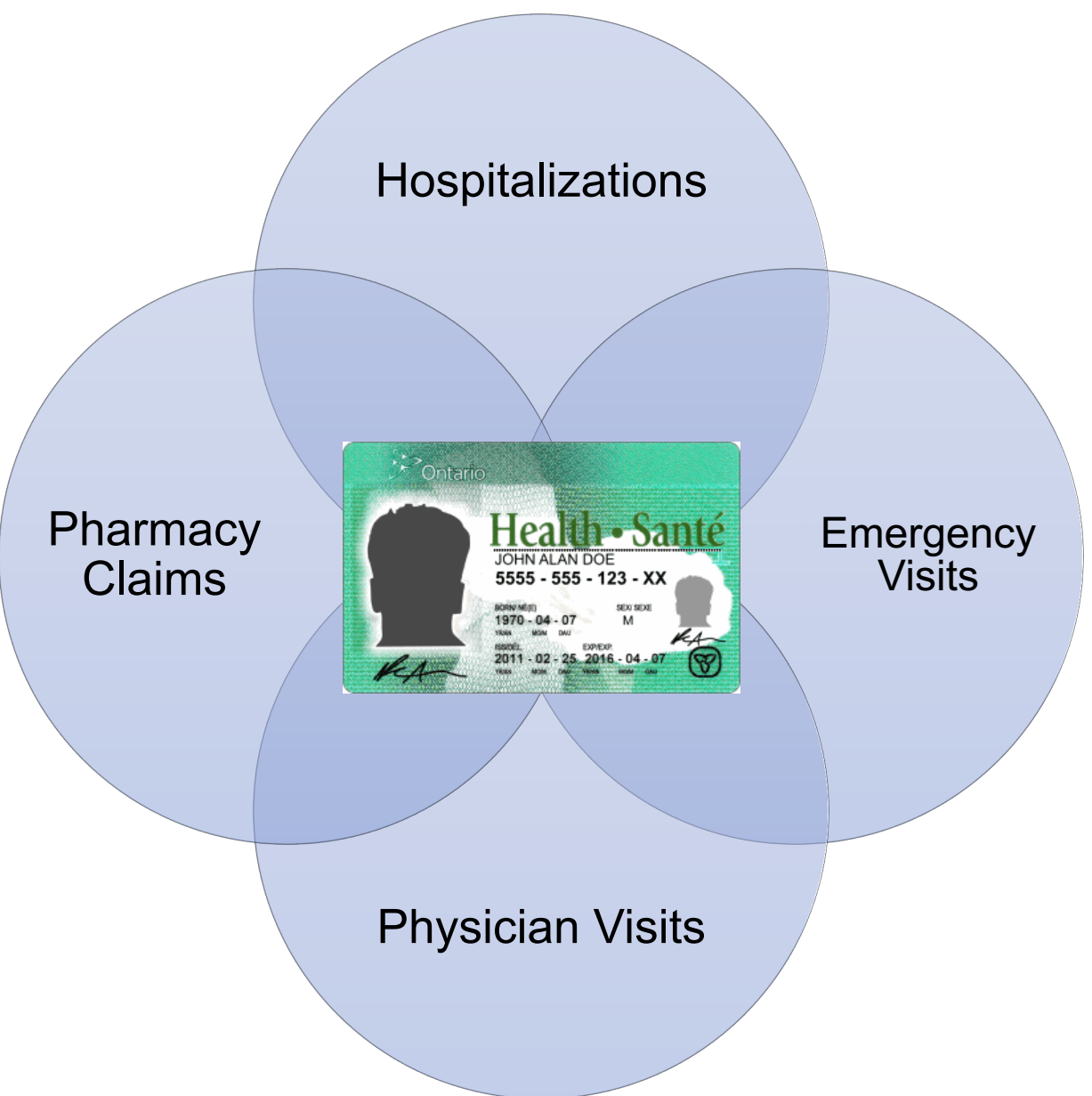
Patients receiving alendronate (ALD) or risedronate (RSD) between 2000/11 and 2016/12, n=471,104

Excluded, n=210,320

- Age ≤ 65 years, n=155,602
- Long-term care resident, n=19,205
- Health exclusions n=35,513

Eligible community-dwelling seniors initiating ALD/RSD for osteoporosis, n=260,784

Figure 1. Exclusion Study Flow.



ANALYSIS

Identify Long-Term Oral Bisphosphonate Therapy: Patients followed from first alendronate or risedronate dispensation (baseline) for **3-year rolling windows** to identify long-term use (**≥80% proportion of days covered, PDC**)

- Kaplan-Meier estimates for proportion with long-term therapy**

Compare Patient Characteristics: for those with vs. without long-term therapy (survived ≥3 vs. <3 years), data from **1 year prior to baseline**

Describe Patterns of Long-Term Therapy

- Length of time between initiation and start of long-term therapy
- Total length of bisphosphonate therapy, therapy ≥5 years

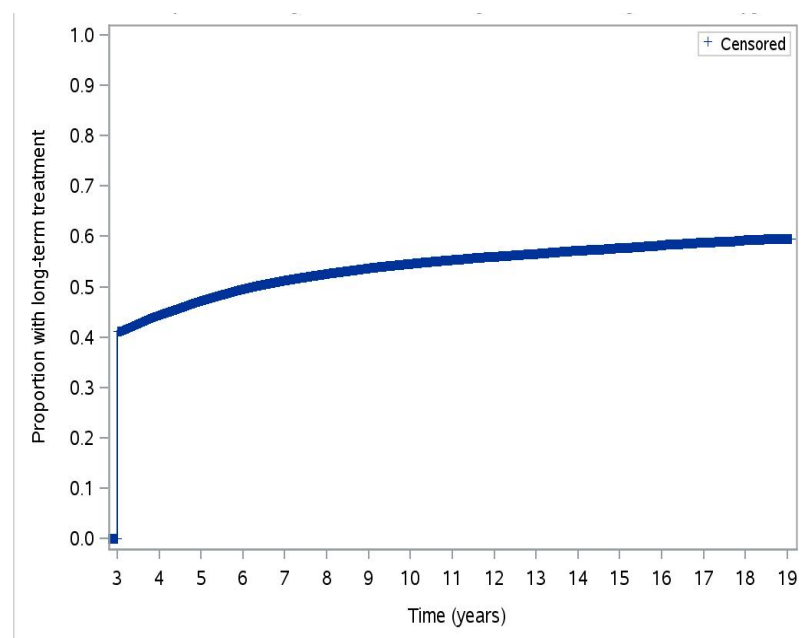


Figure 1. Time to long-term therapy.

RESULTS

60% had long-term therapy (≥3 years); 48% had therapy for ≥5 years

- Median length of long-term therapy: 7.0 years for women and 6.1 years for men

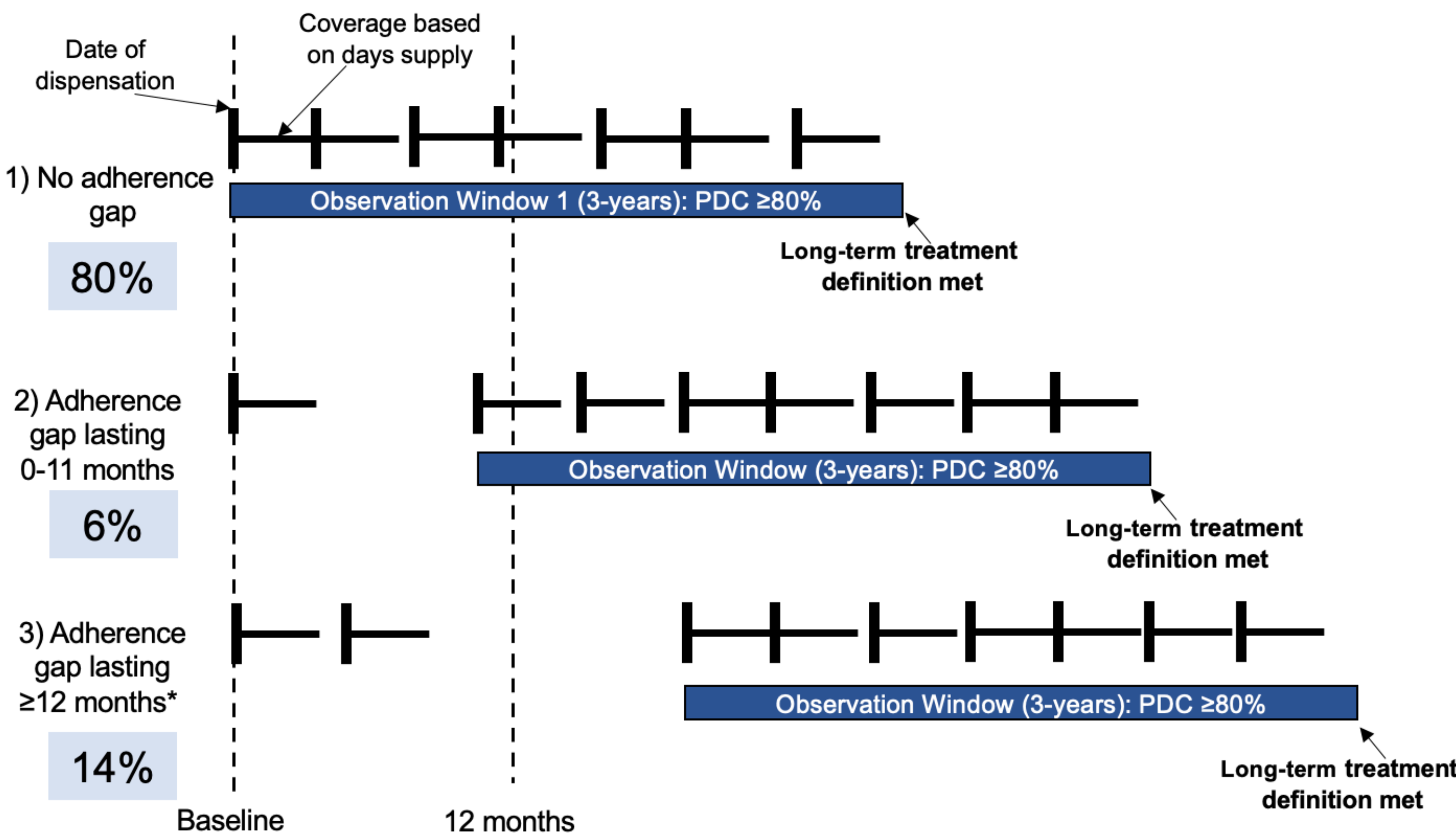


Figure 2. Patterns of long-term oral bisphosphonate therapy.

- Gap lengths: <6 months (mo.): 2.9%, 6-11 mo.: 3.0% ≥12 mo.: 12-23 mo.: 4.6%; 24-35 mo.: 3.3%; ≥36 mo. 6.2%

RESULTS

Table 1. Characteristics of patients with and without long-term therapy.

	Long-term Therapy	Not long-term therapy, survived ≥3 years	Standardized Mean Difference	Not long-term therapy, survived <3 years
N	120,368	118,382		22,034
Age, years (mean [SD])	75.0 (6.7)	75.0 (7.0)	0.00	80.8 (7.6)
Women	79.8%	77.5%	0.05	61.3%
Risedronate-initiating	54.9%	59.1%	0.09	56.5%
Rural Residence	3.6%	3.7%	0.00	4.5%
Fractures (Past Year)				
Any Fracture	11.0%	11.2%	0.00	23.1%
Hip Fracture	3.4%	3.3%	0.00	8.5%
Vertebral Fracture	2.9%	3.0%	0.00	8.3%
Comorbidities				
COPD	18.7%	21.2%	0.06	40.5%
Heart Failure	6.8%	7.6%	0.03	27.0%
Diabetes	19.6%	20.5%	0.02	27.4%
Rheumatoid Arthritis	3.4%	3.9%	0.02	5.1%
Prescription Drug Use				
Antipsychotics	2.1%	1.9%	0.02	5.2%
Benzodiazepines	13.7%	14.2%	0.01	20.2%
Glucocorticoids	6.1%	8.5%	0.09	16.8%
Opioids	14.1%	15.3%	0.03	26.4%

- Characteristics were similar** between patients with and without long-term therapy who survived ≥3 years

DISCUSSION

Conclusions

- A rolling-window approach** that accounts for initial gaps found **60% of older adults** who initiate an oral bisphosphonate **undergo long-term therapy**
- Observational research that only considers persistence in the first 2-3 years of therapy may result in **exposure misclassification of long-term therapy**

Limitations: Did not capture those <66 years old or those with private drug plans

Next Steps: Examine benefits and harms of long-term bisphosphonate treatment

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