The disease-modifying drugs for multiple sclerosis and association with survival

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Background

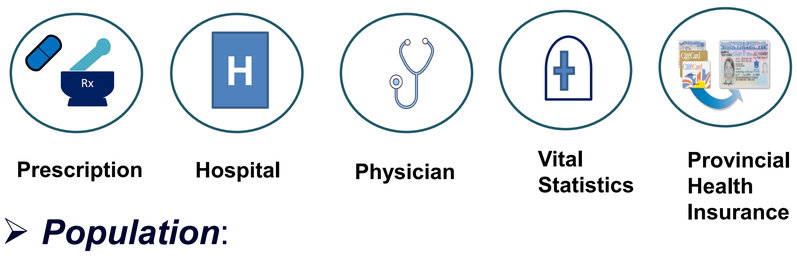
- Whether **use of disease-modifying drugs (DMDs)** to treat multiple sclerosis (MS) **improves survival** remains **poorly understood**.
- **Limited evidence** suggests a survival benefit for the first generation DMD, beta-interferon (IFNB).

Objective

To assess the association between the **MS DMDs** and **survival** in a multi-region population-based study.

Methods

- Linked, population-based health administrative data in **4 Canadian provinces:** British Columbia, Saskatchewan, Manitoba & Nova Scotia.



- ***Population***:

All individuals with MS → **Aged ≥ 18 years**

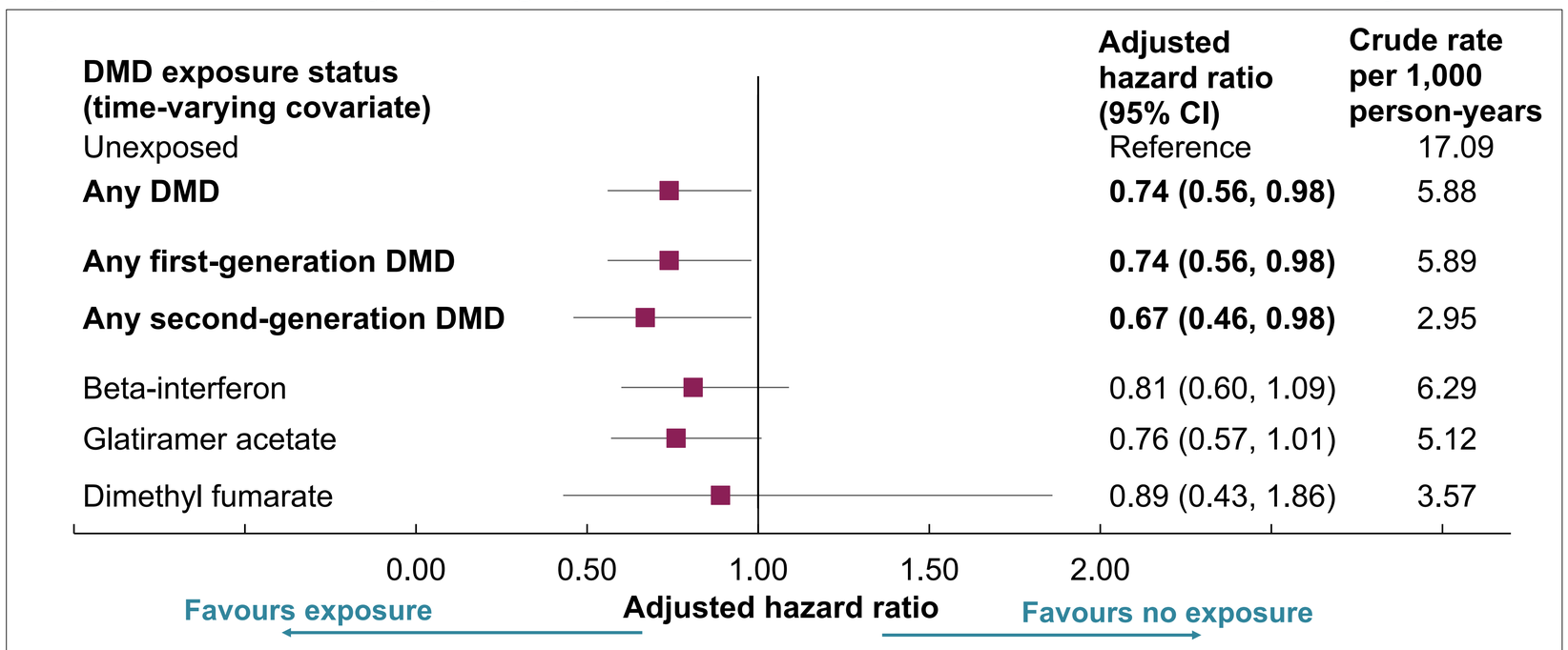
- ***Study follow-up***:
  - **Index date**: most recent of the first MS or demyelinating event or 01-January-1996
  - **Study end date**: earliest of death, emigration, or last available data (31-December-2017 or 31-March-2018 for Saskatchewan only)
- ***DMD exposure categories***: any DMD, any 1st (injectables) or 2nd (orals/infusions) generation DMD, and by individual DMDs (selected based on *priori* power calculation).
- ***Outcomes and analyses***:
  - **All-cause mortality:**
    Stratified Cox proportional hazards model, by calendar year at the index date
  - **All models adjusted for characteristics at index date:** age, sex, neighbourhood socioeconomic status, and Charlson comorbidity Index.
  - **Timing of DMD initiation was explored:** 2, 5 or 10 years post-index date, representing very early, early, or late initiation.

MS cohort characteristics, N=35,894

Sex, N (%)	
Women	25,777 (72)
Age at index date (years)	
Mean (SD)	44.5 (13.6)
Follow-up time (years)	
Mean (SD)	12.0 (7.2)
Person-years of follow-up	
DMD-exposed	89,180
DMD-unexposed	342,217

Results

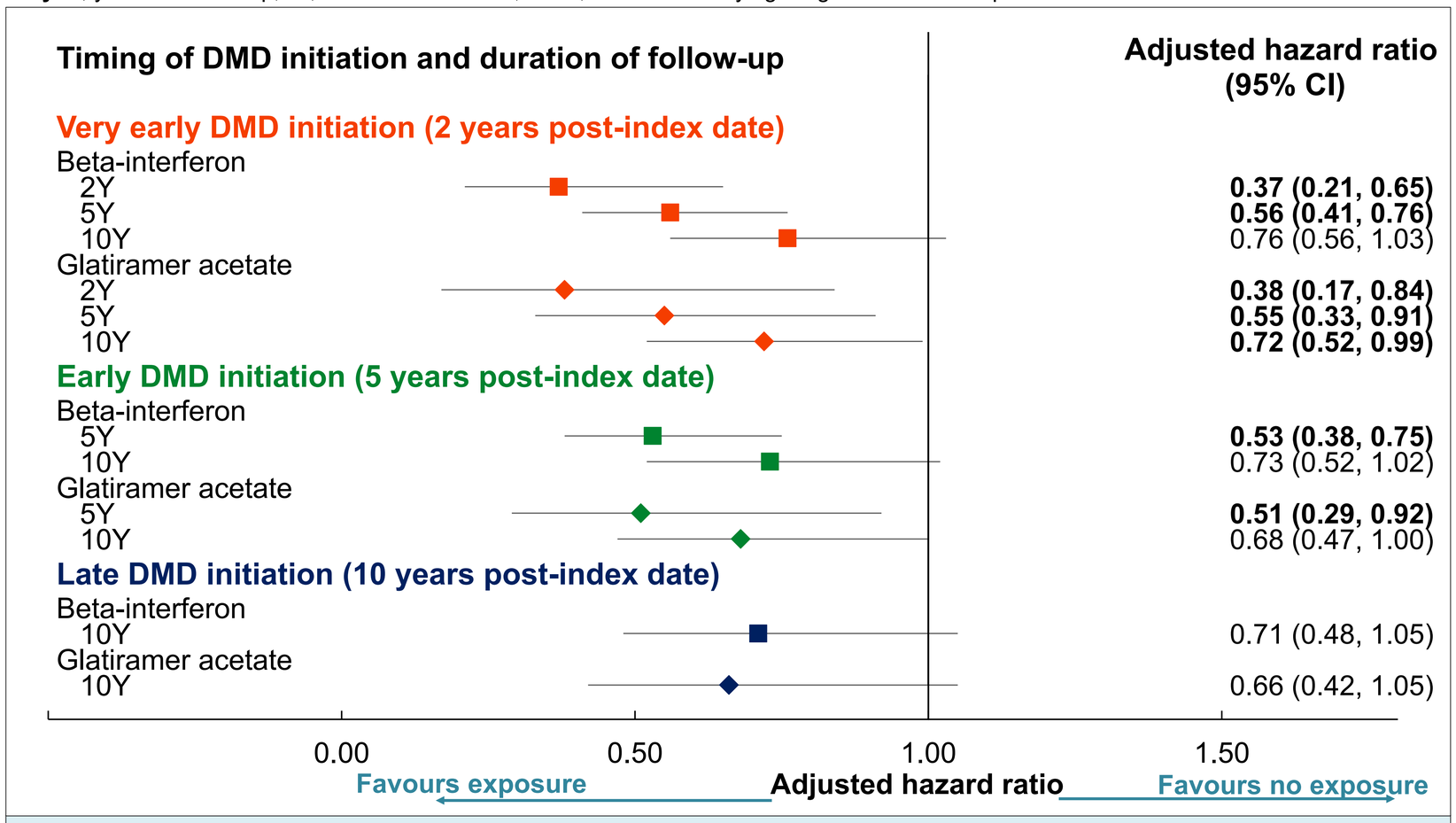
Fig 1. Disease-modifying drugs (DMD) for MS and Hazard of All-Cause Mortality



- **Any DMD** and any **1st generation DMD** were each associated with a 26% **lower hazard** of mortality (versus no exposure).
- **Second generation DMDs** were associated with a 33% **lower hazard** of mortality (versus no exposure).

Fig 2. Hazard of All-Cause Mortality by timing of DMD initiation and duration of follow-up

Key: Y, years of follow-up; CI, confidence interval; DMD, disease-modifying drug. Bold indicates p<0.05.



- **Earlier DMD initiation (IFNB or glatiramer acetate versus no exposure)** was associated **with a significant mortality effect (p<0.05)**, but **later initiation was not.**

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Disclosures

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Implications

- **Evidence of a beneficial effect on survival for:**
  - the 1st and 2nd generation DMDs
  - earlier, but not later DMD initiation
- **These findings help to inform decision-making** by clinicians and people living with MS about the use of the DMDs.