

## Evaluating the Completeness of Physician Billing Claims: A Proof-of-Concept Study

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### Objectives

An increasing number of physicians are remunerated by alternative forms of payment, instead of conventional fee-for-service (FFS) payments. Changes in physician remuneration methods can influence the completeness of physician billing claims databases, because physicians on alternative payments may not consistently complete billing records. However, there is no established technique to estimate the magnitude of data loss. This proof-of-concept study estimated completeness of physician claims by comparing them with prescription drug records. We applied the method to estimate completeness of non-fee-for-service (NFFS) and FFS physician claims data over time in Manitoba, Canada.

### Approach

Our method uses information on the date of patient initiation of a new prescription medication, payment method of the prescribing physician, and presence/absence of a physician billing claim prior to the medication initiation date. A billing claim within 7 days of the medication initiation date was defined as a captured claim; if there was no claim in this observation window, it was classified as missed. Our method was applied to annual patient cohorts who initiated a common prescription medication (i.e., anti-hypertensives) between fiscal years 1998/99 and 2012/13. A sensitivity analysis used a 21-day observation window to identify captured/missing claims. Multivariable hierarchical logistic regression models tested patient and prescriber characteristics associated with missing claims.

### Results

The cohort consisted of 274,462 individuals with a new anti-hypertensive prescription medication. A total of 9.2% of the cohort had a NFFS prescribing physician in 1998/99; this increased to 20.2% in 2012/13 (linear trend p-value < .0001). The percentage of NFFS prescribers almost doubled, from 10.0% to 17.8%. The percentage of the annual cohorts with a FFS prescribing physician and a missing claim remained close to 13.0%. However, the percentage of the annual cohorts with a NFFS prescribing physician and a missing claim increased from 15.6% to 23.3% (linear trend p-value < .0001), and was always higher than the FFS percentage. Patient age, sex, and comorbidity and physician specialty and practice location were associated with the odds of a missing claim.

### Conclusion

The percentage of missing claims was higher for patients with NFFS than FFS prescribing physicians, demonstrating the impact of physician remuneration on database completeness. The trend of greater data loss in later than earlier years suggests that completeness of physician billing claims data may be decreasing. Our method can be applied across jurisdictions to compare the impact of physician payment methods on data quality.

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