

## Reliability of Clinical Coding in Accurately Estimating the Actual Prevalence of Adverse Drug Event Admissions

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**Abstract :** Adverse drug event (ADE) related hospital admissions are common among older people. The first step in prevention is accurately estimating the prevalence of ADE admissions. Clinical coding is an efficient method to estimate the prevalence of ADE admissions. The objective of the study is to estimate the rate of under-coding of ADE admissions in older people in New Zealand and to explore how clinical coders decide whether or not to code an admission as an ADE. There has not been any research in New Zealand to explore these areas. This study is done using a mixed-methods approach. Two common and serious ADEs in older people, namely bleeding and hypoglycaemia were selected for the study. In study 1, eight hundred medical records of people aged 65 years and above who are admitted to hospital due to bleeding and hypoglycemia during the years 2015 - 2016 were selected for quantitative retrospective medical records review. This selection was made to estimate the proportion of ADE-related bleeding and hypoglycemia admissions that are not coded as ADEs. These files were reviewed and recorded as to whether the admission was caused by an ADE. The hospital discharge data were reviewed to check whether all the ADE admissions identified in the records review were coded as ADEs, and the proportion of under-coding of ADE admissions was estimated. In study 2, thirteen clinical coders were selected to conduct qualitative semi-structured interviews using a general inductive approach. Participants were selected purposively based on their experience in clinical coding. Interview questions were designed in a way to investigate the reasons for the under-coding of ADE admissions. The records review study showed that 35% (CI 28% - 44%) of the ADE-related bleeding admissions and 22% of the ADE-related hypoglycemia admissions were not coded as ADEs. Although the quality of clinical coding is high across New Zealand, a substantial proportion of ADE admissions were under-coded. This shows that clinical coding might under-estimate the actual prevalence of ADE related hospital admissions in New Zealand. The interviews with the clinical coders added that lack of time for searching for information to confirm an ADE admission, inadequate communication with clinicians, along with coders' belief that an ADE is a small thing might be the potential reasons for the under-coding of the ADE admissions. This study urges the coding policymakers, auditors, and trainers to engage with the unconscious cognitive biases and short-cuts of the clinical coders. These results highlight that further work is needed on interventions to improve the clinical coding of ADE admissions, such as providing education to coders about the importance of ADEs, education to clinicians about the importance of clear and confirmed medical records entries, availing pharmacist service to improve the detection and clear documentation of ADE admissions and including a mandatory field in the discharge summary about external causes of diseases.

**Keywords :** adverse drug events, bleeding, clinical coders, clinical coding, hypoglycemia

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