Recording of cardiovascular disease risk factors in general practice data and the impact of applying temporal reference periods

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Introduction

Cardiovascular disease (CVD) is a major cause of disability and death accounting for 1 in 4 deaths in Australia (AIHW, 2024a). Absolute CVD risk assessment uses multiple risk factors to estimate the probability that an individual will develop a cardiovascular event or other vascular disease within a specified time frame (RACGP, 2024). CVD is largely preventable, and risk assessment within general practices enables effective management of modifiable risk factors (RACGP, 2024).

Methods

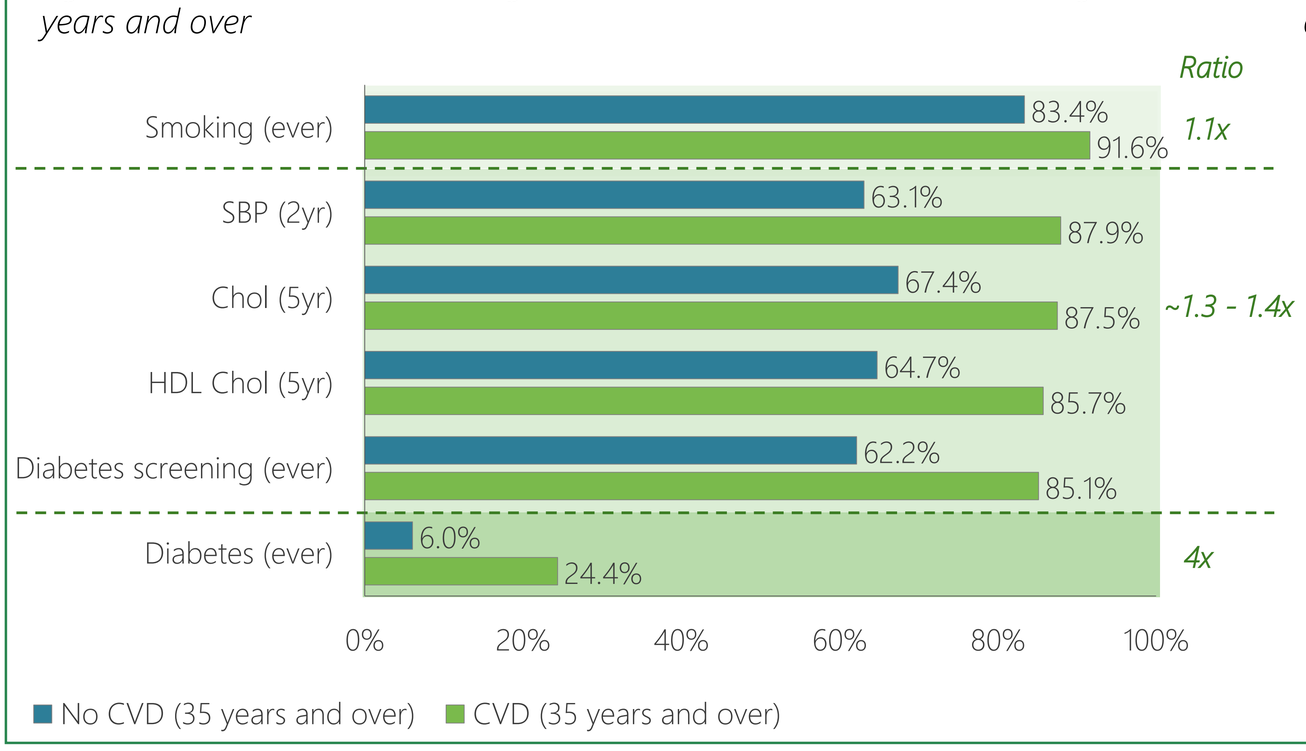
AIHW collaborated with 6 PHNs to examine how the recording of risk factors varied in regular clients with and without pre-existing CVD that visited a practice 3 or more times in the 2 years prior to data extraction in the PIP Eligible Dataset (DoHAC, 2020). The extract included information on how recently the risk factors had been recorded to assess the impact of applying temporal reference periods (e.g. ever recorded, in the previous 12 months or 24 months).

Results

The extract included data from over 5.7 million regular clients across all ages from 6 PHNs combined. Around a third of regular clients aged 35 years and over (1 million out of 3.5 million clients, 29.4%) had pre-existing CVD diagnoses, similar to survey estimates (ABS, 2022).

The 1 million clients aged 35 years and over with pre-existing CVD were more likely to have their risk factors recorded than the 2.4 million clients without CVD. For most risk factors, clients with CVD had recording rates that were slightly higher than those without CVD (1.1 to 1.4 times as high). Regular clients with a diabetes diagnosis and pre-existing CVD (247,299) were 4 times as likely to have a diabetes diagnosis recorded than those without CVD (24.4% compared to 6%). This is consistent with existing literature which shows a strong association between diabetes and CVD (AIHW, 2024a).

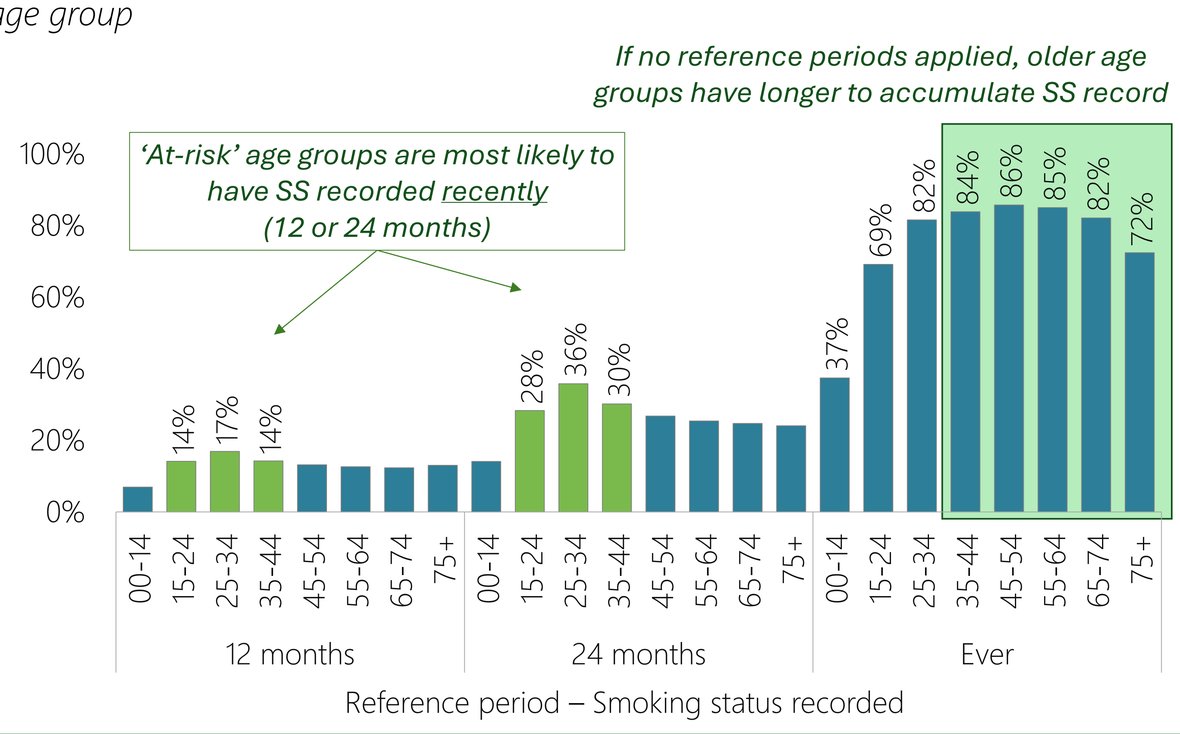
Figure 1: CVD risk factor recording rates for clients with or without CVD aged 35 years and over



Smoking status recording rates decreased significantly if shorter reference periods were applied, from 73% 'ever recorded' to 13% if 'recorded in the previous 12 months'. Applying no temporal reference period to smoking status means that the clients in older age groups have higher recording rates because they have had more time to visit a practice and have a smoking status recorded within a Practice Management System (PMS).

Recording smoking status requires manual input in a PMS, and this is less likely to occur if the client's smoking status is unchanged since their last visit. This means that a bias occurs in recently updated records that are more likely to capture instances where smoking status has changed in younger at-risk age groups, and less likely to capture where smoking status is unchanged (e.g. older age groups). This effect is seen when applying a 12-month or 24-month reference period to the recording of smoking status, which shows higher recording rates among younger at-risk-age groups.

Figure 2: Recording of smoking status for different temporal reference periods by age group



Discussion

This project provided new insights into how CVD risk factors are captured within a PMS and the impact of temporal reference periods on recording rates. The biggest differences in recording rates between clients with and without CVD was for those with a diabetes diagnosis, whereas the smallest difference was for recording of smoking status. Recording rates for diabetes, or the type of diabetes, or as a risk factor for screening against CVD offers opportunities to establish prevalence estimates in data collected from general practices.

Since the recording of a patient's most recent smoking status in the PMS depends on manual input, and the smoking status for most clients remains unchanged between recent practice visits, applying a condition that only counts smoking status records that have been updated within a fixed temporal reference period (e.g., within the last 12 months) will exclude all records that have not been manually updated within that timeframe. This also means that the recently updated smoking status records are more likely to capture instances where smoking status has changed since the previous visit (e.g. from a smoker to non-smoker) and are less likely to capture instances where smoking status was the same as the previous visit. On the other hand, applying a fixed temporal reference period can be useful for assessing smoking status in at-risk age groups. If no temporal reference periods are applied, so that clients with any smoking status ever recorded are included, then there is no bias introduced because this approach does not rely on manual updates to be made in the PMS when the current smoking status is the same as the previous visit. The impact of temporal reference periods on the reporting of results from GP data extracts are explored in more detail in the AIHW PIPQI national report (AIHW, 2024b).

References

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