EPH170

Burden of Severe ANCA Associated Vasculitis in Australia via Real-World Usage of Rituximab

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INTRODUCTION

- Antineutrophil cytoplasmic antibody (ANCA) associated vasculitis (AAV) is a group of rare autoimmune diseases that cause inflammation in small to medium-sized blood vessels. These include microscopic polyangiitis (MPA), granulomatosis with polyangiitis (GPA), and eosinophilic granulomatosis with polyangiitis (EGPA).
- Severe AAV is commonly defined by the presence of life- or organ-threatening manifestations which can involve different organ systems such as the kidneys, lungs, heart, gastrointestinal tract, eyes, and central nervous system (1). The heterogenous nature of presentation along with diagnostic challenges hinder understanding of the true incidence and prevalence of severe AAV.
- Health resource utilisation provides a proxy of the incidence of patients with severe AAV who are diagnosed and treated. One Australian study determined a cumulative incidence of 13.4 per million and a prevalence of 134.1 per million based on hospitalisation between 1995 and 2005, translating to approximately 400-500 patients treated per year (2). A limitation of the approach used in this study, which may underestimate the incidence, is the failure to account for cases managed in the outpatient setting.
- The Pharmaceutical Benefits Scheme (PBS) is Australia's national drug subsidy program. PBS data can be obtained in various formats, one of which is the PBS 10% sample, a standardised, longitudinal, unit-record extract containing all PBS medicine dispensing data for a random 10% sample of Australians prescribed each medication (3). The PBS 10% sample can be used to address the limitations of an approach based on hospitalisation data alone as it provides information on all prescriptions supplied in Australia.

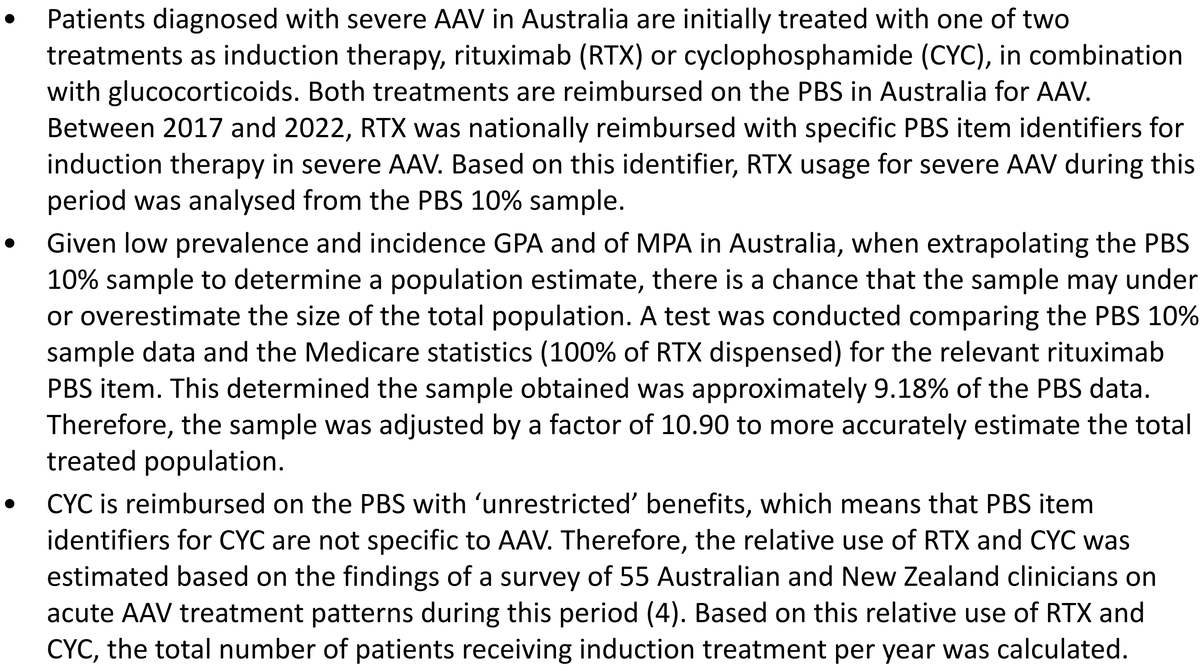
OBJECTIVES

- The aim of this study is to determine the incidence of severe AAV treated in Australia by extrapolating the reimbursed usage of rituximab, which is a treatment for severe AAV in Australia.

METHODS

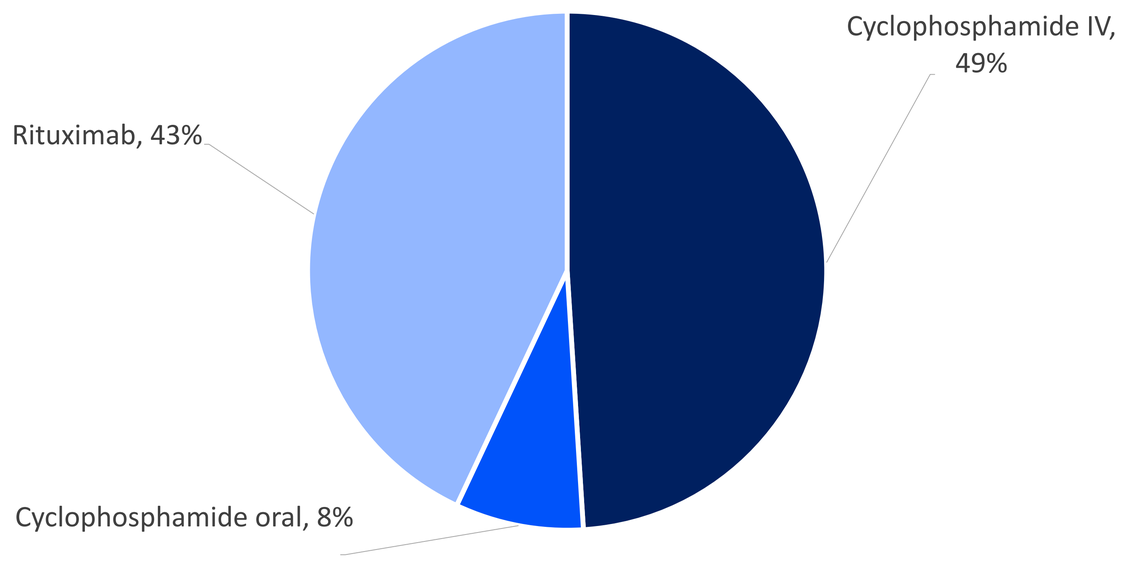
- The PBS 10% sample dataset was analysed using Model Solutions proprietary software/dashboard. The project was approved by the Services Australia External Request Evaluation Committee (EREC) on September 14, 2023 (reference code RMS3253).
- Patients diagnosed with severe AAV in Australia are initially treated with one of two treatments as induction therapy, rituximab (RTX) or cyclophosphamide (CYC), in combination with glucocorticoids. Both treatments are reimbursed on the PBS in Australia for AAV. Between 2017 and 2022, RTX was nationally reimbursed with specific PBS item identifiers for induction therapy in severe AAV. Based on this identifier, RTX usage for severe AAV during this period was analysed from the PBS 10% sample.
- Given low prevalence and incidence GPA and of MPA in Australia, when extrapolating the PBS 10% sample to determine a population estimate, there is a chance that the sample may under or overestimate the size of the total population. A test was conducted comparing the PBS 10% sample data and the Medicare statistics (100% of RTX dispensed) for the relevant rituximab PBS item. This determined the sample obtained was approximately 9.18% of the PBS data. Therefore, the sample was adjusted by a factor of 10.90 to more accurately estimate the total treated population.
- CYC is reimbursed on the PBS with 'unrestricted' benefits, which means that PBS item identifiers for CYC are not specific to AAV. Therefore, the relative use of RTX and CYC was estimated based on the findings of a survey of 55 Australian and New Zealand clinicians on acute AAV treatment patterns during this period (4). Based on this relative use of RTX and CYC, the total number of patients receiving induction treatment per year was calculated.
- A severe AAV incidence rate was estimated and the number of patients with severe AAV in 2024 extrapolated.

Figure 1. AAV diagnosed patients treated with induction RTX in Australia based on 10% PBS sample



Abbreviations: AAV, antineutrophil cytoplasmic antibody associated vasculitis, RTX, rituximab

Figure 2. Clinician choice of first-line induction therapy for AAV (4)



Abbreviations: AAV, antineutrophil cytoplasmic antibody associated vasculitis; IV, intravenous

Table 1. Estimation of severe AAV incidence rate

	2017	2018	2019	2020	2021	2022
Patients treated with induction RTX per year	272	251	436	490	490	534
Patients treated with induction CYC per year	361	333	578	650	650	708
Patients receiving severe AAV induction treatment	633	584	1,014	1,140	1,140	1,242
Estimated population of Australia (all ages) (6)	24,759,018	25,146,140	25,520,468	25,630,698	25,771,357	26,291,429
Incidence rate of severe AAV					0.0044%	0.0047%

Abbreviations: AAV, antineutrophil cytoplasmic antibody associated vasculitis, CYC, cyclophosphamide, RTX, rituximab

RESULTS

- Based on the adjusted PBS 10% sample data, the number of patients receiving RTX for induction treatment in severe AAV was determined to be 272 patients in 2017, dropping slightly to 251 patients in 2018 before growing to a plateau by 2020 with 534 patients in 2022 (Figure 1).
- A representative sample of Australian and New Zealand clinicians during this period found that similar proportions of respondents would prescribe RTX or CYC as induction therapy for severe AAV (4). The survey established that 57% of physicians would prescribe CYC first line for induction (49% IV and 8% oral) while 43% would prescribe RTX (Figure 2). This is consistent with clinical guidelines for the period of investigation which assigned equal weighting to the choice of RTX versus CYC (5).
- On the assumption that 43% of patients receive RTX and 57% receive CYC for induction, the total number of patients receiving induction treatment for severe AAV was estimated to be 633 and 584 patients in 2017 and 2018, respectively, growing to a plateau by 2020 with 1,242 patients in 2022 (Table 1).
- Using the stabilised patient numbers in 2021 and 2022 and the estimated population of Australia (6), the severe AAV incidence rate was determined to be 4.4 to 4.7 persons per 100,000. Based on the projected population of Australia in 2024 (26,966,789 persons) (7), the number of unique patients with severe AAV is estimated to be 1,192 to 1,274 patients.
- This analysis has important limitations. It likely underestimates the overall population by not counting patients who did not receive RTX that was reimbursed for GPA or MPA at all between 2016 and 2023. AAV is a relapsing remitting disease which is unpredictable, therefore patients who are in remission not requiring induction treatment during the time are also not accounted for. The analysis also relies on a point estimate of RTX/CYC preference from 2022. Future retrospective research using hospital registry data would further enhance understanding of changing AAV treatment preferences in Australia over time.

CONCLUSIONS

- Extrapolation of RTX utilisation data using results of the clinician survey determined the incidence of severe AAV treated in Australia to be 4.4 to 4.7 persons per 100,000. This translates to 1,192 to 1,274 unique patients treated in 2024.
- The incidence of patients with severe AAV treated in Australia is likely to be higher than previous studies have shown. The use of dispensing data may capture a broader patient population, including patients treated in different settings, compared with hospitalisation data.

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