



Supporting Information

Supplementary methods and results

**This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.**

Appendix to: Aung ET, Chen MY, Fairley CK, et al. Neurosyphilis-related hospital admissions, Australia, 2007–20. *Med J Aust* 2023; doi: 10.5694/mja2.51830.

Supplementary methods

1. Subgroup analysis: 2014–20

This analysis was undertaken to explore more recent changes in neurosyphilis admissions. Additionally, we aimed to minimise bias caused by possible coding errors in medical records; we had noted an unusually high number of admissions of women in 2011, which could reflect an error in coding of diagnosis. Moreover, the annual surveillance report from Kirby Institute described a rise in overall infectious syphilis notifications since 2014 onwards.¹

2. Cost estimation

The mean daily cost of an acute separation was obtained from the Independent Hospital Pricing Authority (IHPA) for 2019–20.² Hospital admission costs were expressed in Australian dollars.

We calculated the mean length of stay by dividing the total patient days by the total number of neurosyphilis cases by sex and age group. The mean length of stay per person was estimated as the mean length of stay by sex during 2007–20.³

We used national acute admitted mean cost per separation and mean length of stay as our reference. The IHPC reported the mean cost per separation (i.e., per admission episode) for acute admitted care in Australia was \$5335. Mean length of stay ranged from 2.4 days (for all acute care) to 4.2 days (acute care, after excluding same day care). Mean admission cost per day was therefore \$1271 (\$5335/4.2) to \$2223 (\$5335/2.4). Admissions with neurosyphilis are generally longer than for other acute admissions because treatment includes 14 days of intravenous penicillin; the estimated costs we report are therefore conservative.

- 1 Kirby Institute. HIV, viral hepatitis and sexually transmitted infections in Australia: annual surveillance report 2021. Sydney: Kirby Institute, UNSW Sydney, 2021. <https://kirby.unsw.edu.au/report/asr2021> (viewed Aug 2022).
- 2 Independent Hospital Pricing Authority. National hospital cost data collection report, public sector, round 24 (financial year 2019–20). Oct 2021. https://www.ihacpa.gov.au/sites/default/files/2022-08/NHCDC%20Round%2024%20Report_0_0.pdf (viewed Aug 2022).
- 3 The Australian Institute of Health and Welfare: MyHospitals data Nov 2022. <https://www.aihw.gov.au/getmedia/69d087e1-21b4-480d-a27a-9f05c8c6b087/MyHospitals-Average-length-of-stay-data.pdf.aspx> (viewed Dec 2022).

Table 1. Total length of hospital stay and mean length of stay per person for neurosyphilis admissions, by age group and sex

| Age group | Men | | | Women | | |
|-----------|-----------------|--------------------------------------|-------------------------------------|-----------------|--------------------------------------|-------------------------------------|
| | Number of cases | Total length of hospital stay (days) | Mean length of hospital stay (days) | Number of cases | Total length of hospital stay (days) | Mean length of hospital stay (days) |
| All ages | 1063 | 12,036 | 11.3 (3.4) | 312 | 3166 | 10.1 (3.2) |
| 15-24 | 18 | 195 | 10.8 (3.3) | 3 | 63 | 21.0 (4.6) |
| 25-34 | 135 | 1110 | 8.2 (2.9) | 13 | 110 | 8.5 (2.9) |
| 35-44 | 189 | 1704 | 9.0 (3.0) | 28 | 301 | 10.8 (3.3) |
| 45-54 | 243 | 2128 | 8.8 (3.0) | 40 | 471 | 11.8 (3.4) |
| 55-64 | 203 | 2005 | 10.0 (3.1) | 42 | 481 | 11.5 (3.4) |
| 65-74 | 162 | 2568 | 15.9 (4.0) | 107 | 694 | 6.5 (2.5) |
| 75-84 | 90 | 1963 | 21.8 (4.7) | 61 | 778 | 12.8 (3.6) |
| 85+ | 23 | 363 | 15.8 (4.0) | 18 | 268 | 14.9 (3.9) |

Table 2. Neurosyphilis-related public hospital admissions of people aged 15 years or more, 2007–20, by year and sex

| Year | Men | | | Women | | |
|-----------------|------------|------------|---|------------|------------|---|
| | Admissions | Population | Admission rate, per 100 000 population (95% CI) | Admissions | Population | Admission rate, per 100 000 population (95% CI) |
| 2007–20 (total) | 1063 | | | 312 | | |
| 2007–08 | 70 | 8 380 276 | 0.835 (0.660–1.060) | 23 | 8 608 588 | 0.267 (0.176–0.403) |
| 2008–09 | 60 | 8 576 860 | 0.700 (0.542–0.902) | 17 | 8 791 176 | |
| 2009–10 | 58 | 8 782 890 | 0.660 (0.510–0.855) | 16 | 8 983 248 | 0.178 (0.107–0.292) |
| 2010–11 | 82 | 8 946 831 | 0.917 (0.737–1.140) | 21 | 9 151 811 | 0.229 (0.148–0.353) |
| 2011–12 | 81 | 8 945 959 | 0.905 (0.727–1.130) | 59 | 9 1604 52 | 0.644 (0.498–0.832) |
| 2012–13 | 77 | 9 105 666 | 0.846 (0.676–1.060) | 22 | 9 322 061 | 0.236 (0.154–0.359) |
| 2013–14 | 60 | 9 261 910 | 0.648 (0.502–0.835) | 15 | 9 484 585 | 0.158 (0.093–0.263) |
| 2014–15 | 47 | 9 395 283 | 0.500 (0.375–0.667) | 11 | 9 637 792 | 0.114 (0.061–0.207) |
| 2015–16 | 78 | 9 529 513 | 0.819 (0.655–1.020) | 19 | 9 780 217 | 0.194 (0.122–0.306) |
| 2016–17 | 112 | 9 655 479 | 1.160 (0.963–1.400) | 26 | 9962 831 | 0.261 (0.176–0.384) |
| 2017–18 | 87 | 9 821 427 | 0.886 (0.717–1.090) | 23 | 10 141 325 | 0.227 (0.149–0.342) |
| 2018–19 | 111 | 9 980 343 | 1.112 (0.923–1.340) | 28 | 10 309 595 | 0.272 (0.186–0.394) |
| 2019–20 | 140 | 10 143 313 | 1.380 (1.170–1.630) | 32 | 10 479 805 | 0.305 (0.215–0.433) |

Figure 1. Neurosyphilis admission by age group, sex, and year, 2007–20

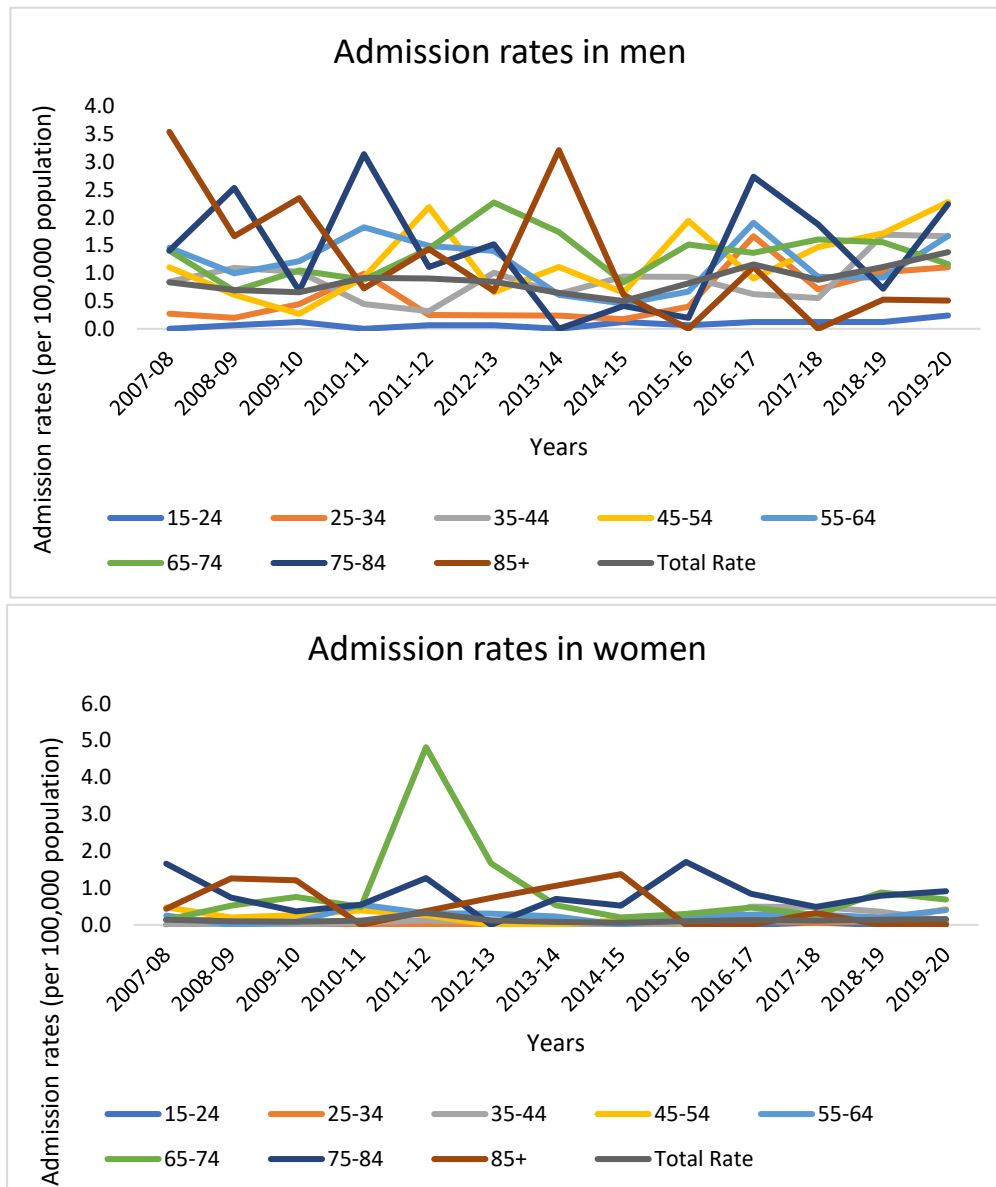
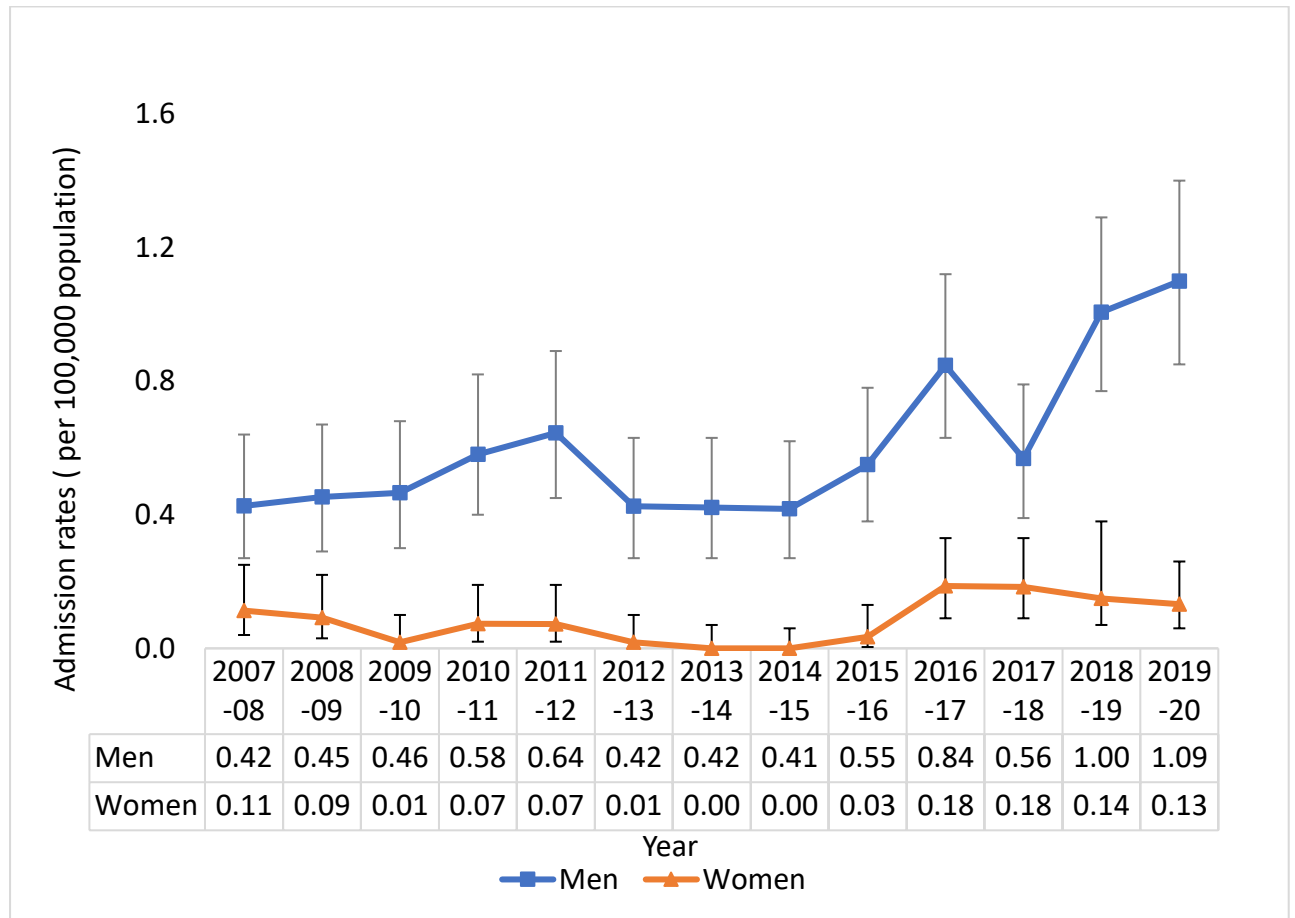


Figure 2. Neurosyphilis-related public and private Australian hospital admissions of people aged 15–50 years, 2007–20, by year and sex*



* Admission rates with 95% confidence intervals estimated using Poisson regression.