Trends in pleural disease admitted to Victorian public hospitals: an accumulating challenge

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Introduction

Pleural diseases are common and associated with significant morbidity, mortality and healthcare costs. International data show rising incidence, but population-level data from Australia are lacking.

Methods

A retrospective analysis of the Victorian Admitted Episodes Dataset (VAED) was performed, which included all adults ≥20 years admitted to public hospitals between 2012 and 2021 with a primary or additional International Classification of Diseases, 10th Revision (ICD-10) diagnosis of pleural disease. Outcomes of interest included population-adjusted separations (admissions), hospital funding (Weighted Inlier Equivalent Separation [WIES]) and length of stay (LOS). Other trends were also examined including proportions of admissions to regional hospitals, elective admissions, admissions involving a procedure and population-adjusted inpatient mortality.

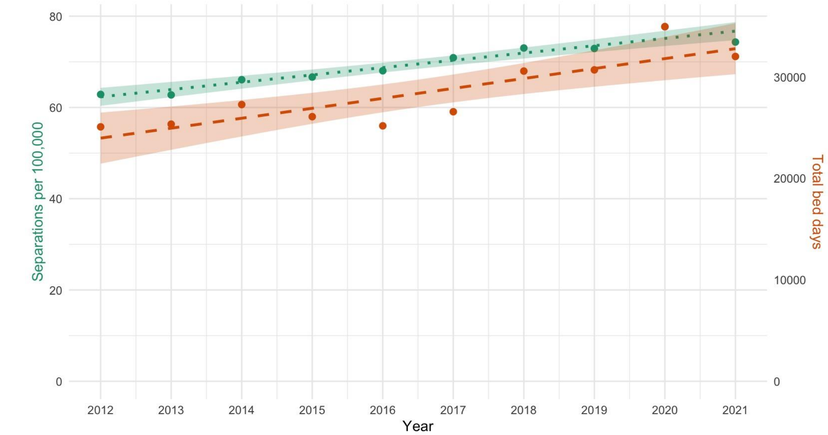

Figure 1: Adjusted separations and total bed-days for pleural disease. Teal points represent adjusted separations, with a dotted line showing the fitted linear trend from a negative binomial regression model. Orange points represent annual total bed-days, with a dashed line showing the fitted linear regression on log-transformed values. Shaded bands denote the 95% confidence intervals.

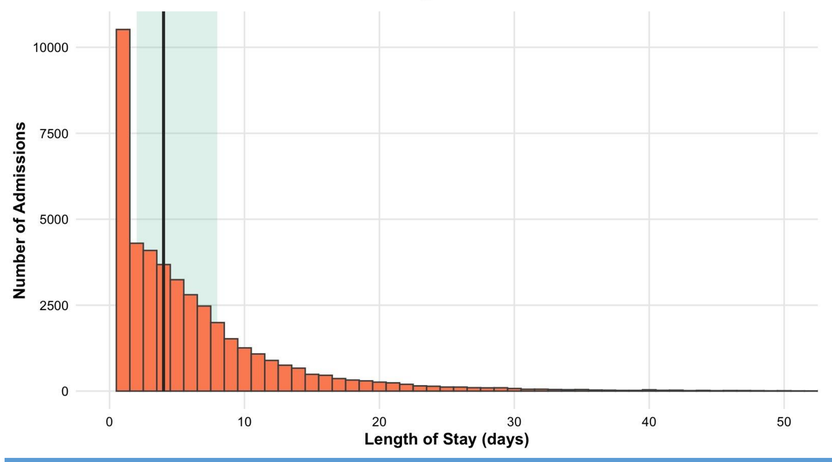

Figure 2: Distribution of hospital LOS for pleural disease admissions. Histogram shows the number of admissions by length of stay (days). The shaded teal band represents the interquartile range, and the vertical line indicates the median.

Results

A total of n=43,521 separations were identified with a diagnosis of pleural disease. Unadjusted annual separations increased from 3,589 in 2012 to 4,881 in 2021 (36% increase). After adjustment for population growth, annual separations increased from 62.86 to 74.34 (per 100,000 population), representing an annual 2% additive increase ($p < 0.001$)(**Figure 1**). Despite a slight decline in average LOS (6.99 to 6.56 days, $p = 0.024$)**(Figure 2**), total bed-days for pleural disease increased from 25,072 to 32,007 (28% increase, $p < 0.001$)(**Figure 1**). WIES increased from 1.89 to 2.06 units ($p < 0.001$). The proportion of admissions to regional hospitals remained stable (27–30%; $p = 0.148$)(**Figure 3**) and elective admissions did not change significantly (25–30%, $p = 0.148$). The proportion of admissions involving a procedure declined from 61% to 46% ($p < 0.001$). Inpatient mortality rates were unchanged (192 in 2012 to 235 in 2021; $p = 0.292$).

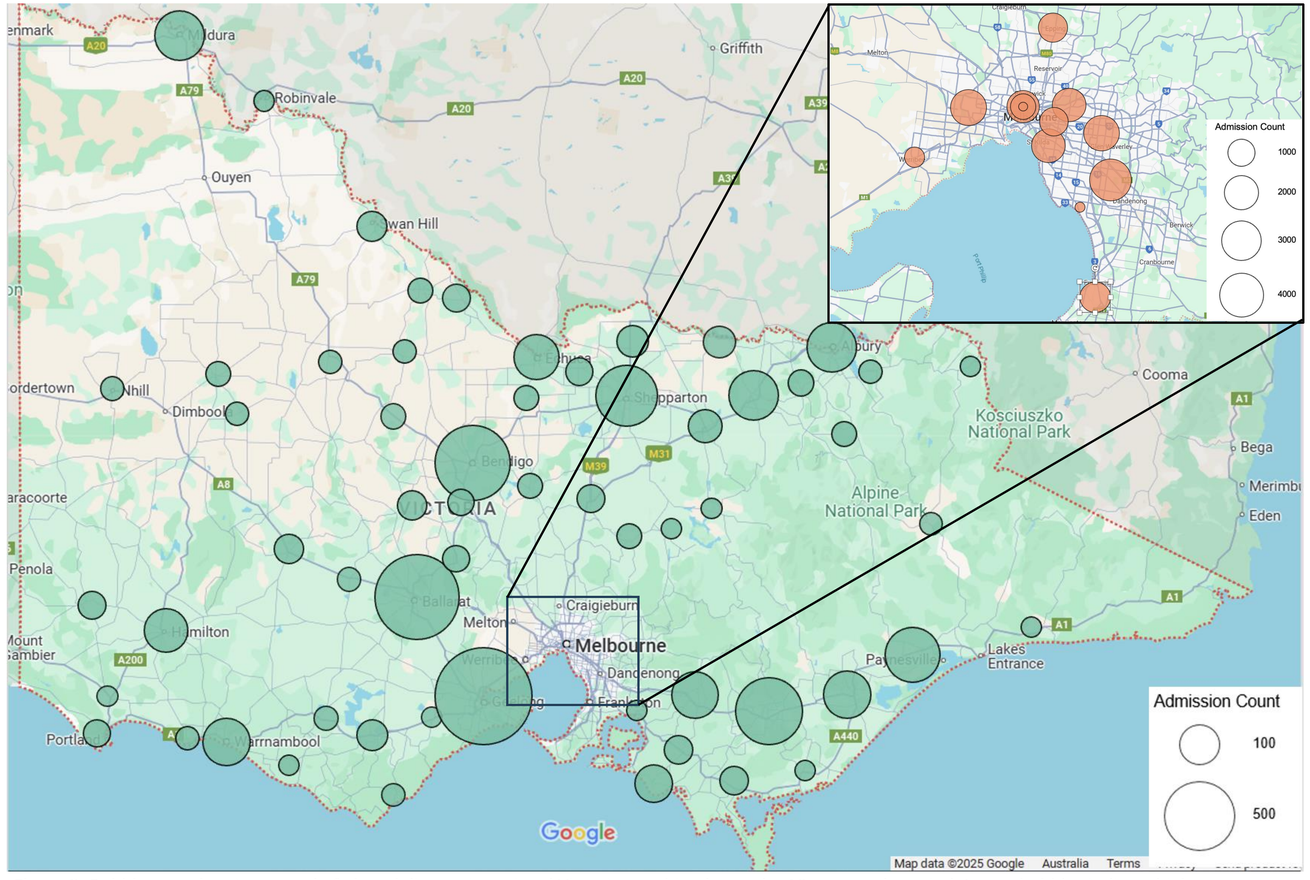

Figure 3: Bubble map showing spread of pleural disease in regional Victoria, combined over the 10-year study period. Larger bubbles indicate higher unadjusted separations. Inset (top right): Corresponding distribution in metropolitan Melbourne. Note different scale used. Map data ©2025 Google

Conclusion

Pleural disease is imposing an increasing burden on health systems, and Victorian data reflect similar trends observed internationally. Admission rates are rising, with most patients presenting through the Emergency Department. Case complexity appears to be increasing. Optimisation of resource allocation, including new models of care, may be required to meet the growing burden of pleural disease.