Differentials in poisoning rates of young Australian children according to residential location and geographical remoteness

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METHODS

Data sources
Hospital separations data for the financial year 1996–97 made available by the AIHW. The AIHW database includes data from public acute and Department of Veterans’ Affairs hospitals, and private and psychiatric hospitals.

Case selection criteria
The case selection criteria were: (1) an age of less than 5 years and (2) admitted to a hospital with a principal diagnosis of injury arising from an external cause coded in the range E850–858 (“Accidental poisoning by drugs, medicaments and biologicals”; referred to as medicinal substances or medicinals) and E860-869 (“Accidental poisoning by other solid and liquid substances, gases, and vapours”; referred to as non-medicinal substances or non-medicinals). As a single poisoning can lead to multiple hospital admissions, all readmissions were excluded in order to provide incidence estimates focusing on the number of persons hospitalized rather than the number of admissions.

Rate calculation and confidence intervals
Population based rates were produced using unpublished population estimates for 1996–97 provided by the Australian Bureau of Statistics at the level of statistical local area.

RESULTS
The crude rate of medicinal poisoning hospitalizations in 0–4 year olds (196/100 000 population) was more than double the crude rate of non-medicinal poisoning in this age group (79/100 000 population) in the financial year 1996–97.

The rates peaked in the third year of life for medicinal substances and the second year for non-medicinal substances (fig 1). Fifty four percent of the preschooler medicinal poisoning cases admitted to hospital were male, compared with 58% for non-medicinal poisoning cases.

Of the hospitalizations for which a place of poisoning was noted (80% of medicinal poisonings and 75% of non-medicinal poisonings) and E860-869 ("Accidental poisoning by other solid and liquid substances, gases, and vapours"; referred to as non-medicinal substances or non-medicinals). As a single poisoning can lead to multiple hospital admissions, all readmissions were excluded in order to provide incidence estimates focusing on the number of persons hospitalized rather than the number of admissions.

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Population based rates were produced using unpublished population estimates for 1996–97 provided by the Australian Bureau of Statistics at the level of statistical local area.

Rates of hospitalization were produced according to the Rural, Remote, and Metropolitan Area classification system (RRMA), involving aggregation of statistical local areas, in order to study the geographical distribution of poisoning by place of residence.

Where case numbers are small, the effect of chance variation on rates can be large. Therefore, 95% confidence intervals were placed around rates as a guide to the size of this variation, based on a Poisson assumption about the number of cases in a time period. Chance variation alone would be expected to lead to a rate outside the interval only once out of 20 occasions.

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Children living in rural and remote areas of Australia had higher crude rates of poisoning than children living in metropolitan areas and the rate differentials increased with geographical remoteness.

The causes and prevention of this problem have received little attention in the literature.

A case control study has been planned, involving an assessment of the home environment and risk factors of young children residing in rural and remote areas.

This will be implemented through regional child health clinics that undertake periodic health checks and home visits during the early childhood period.

CONCLUSIONS

There are strong differentials in the poisoning rates of young Australian children according to residential location and geographical remoteness. These differentials should be examined in other countries and reported in the literature. In addition, research into the risk factors, causes, and prevention is required in order to provide the much needed evidence base for prevention efforts.
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