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Health Information Centre

## An update on the contribution of cigarette smoking to mortality and hospitalisation in Queensland.

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### Introduction

Tobacco is the single risk factor associated with the greatest disease burden in Australia (Mathers et al., 1999). It greatly increases the risk of lung cancer, cardiovascular disease, chronic obstructive pulmonary disease (COPD), and several other conditions. Reviews of scientific literature confirm important associations between passive smoking and lung cancer (NHMRC, 1997, Hacksaw et al., 1997).

A method has been developed to estimate the proportion of overall mortality and illness (measured by hospital separations) that can be attributed to tobacco smoking (Ridolfo and Stevenson, 2001). This report provides a brief update of previously reported data for Queensland (Health Information Centre, 1999) using the latest Australian risk estimates for smoking (Ridolfo and Stevenson, 2001), and the latest available data for mortality and hospital separations in Queensland (refer to methods for further details).

A more comprehensive report containing more detailed information will be released in the near future.

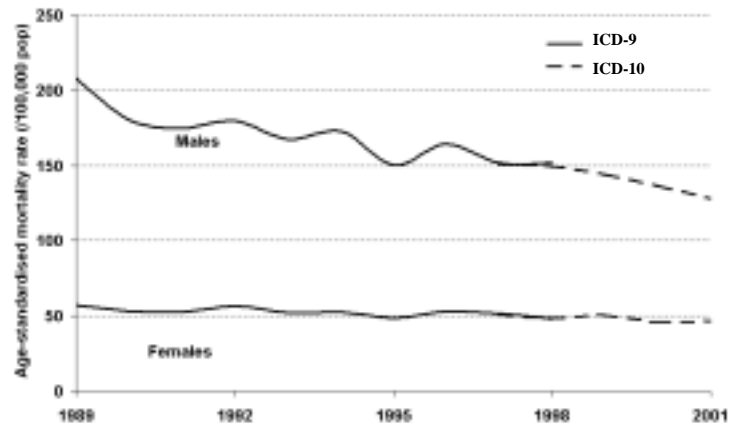
### Results

In Queensland in 2001, smoking caused an estimated 3,377 deaths, with nearly 70% (2,300) of these deaths among males. This represents 19% of all male deaths and 10% of all females deaths in Queensland. Between 1989 and 2001, there was an overall decrease of 32% in the mortality rate attributable to smoking (from 123 to 83 per 100,000 population). However the trends were quite different among males compared to females. Mortality rates decreased by 38% among males between 1989 and 2001 (208 to 128 deaths per 100,000 population), while for females the decrease was 18% (57 to 47 deaths per 100,000 population). This difference in gender-specific trends resulted in the ratio of male to female mortality rates decreasing from 3.6:1 in 1989 to 2.7:1 in 2001.

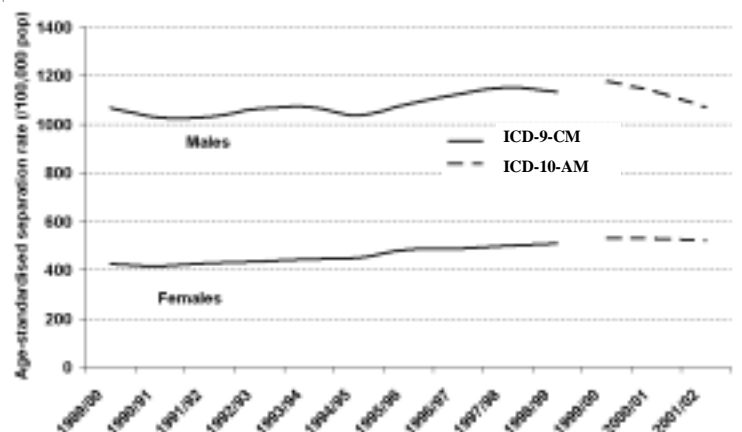
During the 2001/02 financial year, it was estimated that 30,246 hospital separations in Queensland were caused by smoking, with males accounting for 19,931 (66%) and females 10,315 (34%). This represents 3.6% and 1.6% of all hospitalisations for males and females respectively. Between the 1989/00 and 2001/02

financial years there has been an overall 8% increase in the hospital separation rate (718 to 777 separations per 100,000 population), with most of this increase being among females. Trends in hospital separation rates should be interpreted cautiously. They do not necessarily reflect changes in the incidence or prevalence of disease because they also depend on trends in admission practices and changes in disease management.

### Mortality



### Hospital separations



Deaths and hospital separations attributable to cigarette smoking were calculated using age and sex-specific aetiological fractions (AIHW, 2001). Mortality data is by calendar years, while hospital separations are for financial years. Rates are per 100,000 population, and are age-standardised using the Australian population as at 30 June 1991. ICD-9 coding classification was used for mortality data up to 1998 and ICD-9-CM coding classification was used for hospital separation data up to 1998/99. Mortality data was also coded in ICD-10 in 1997 and 1998, and hospital separation data was coded in ICD-10-AM for 1999/2000 onwards.

## Cost to Health System

It is estimated that there were 168,115 occupied bed days directly attributable to cigarette smoking in the 2001/02 financial year, at a cost to Queenslanders of \$137.8 million (see Appendix for description of cost calculations).

For public hospitals there were 100,995 occupied bed days directly attributable to cigarette smoking in the 2001/02 financial year, estimated at a cost of \$82.8 million.

It is estimated that for private hospitals there were 67,120 occupied bed days directly attributable to cigarette smoking in the 2001/02 financial year, at a cost of \$55.0 million.

## Comparisons with New South Wales

Similar trends have been reported for New South Wales for both mortality and hospital separations (Public Health Division, 2003). Rates in New South Wales are very similar to Queensland for both mortality and hospital separations.

## Discussion

Queensland men are more likely to be smokers than men in other states. In Queensland, the proportion of males, 14 years or older, who smoke was 23.2% compared with the Australian average of 21.1% [AIHW, 2002]. The corresponding figures for females aged 14 years and over were 19.1% in Queensland compared to the national average of 18.0%. [AIHW, 2002].

Although comparisons of statewide survey data over time are difficult due to changes in the wording of questions, there is a suggestion of a slight decrease in self-reported smoking prevalence among Queensland adults (18 years and over) from about 28% in 1993 to 26% in 2001 (HIC: unpublished data). Corresponding proportions from the National Household Drug survey (14 years and over) were 23% in 1995 and 21% in 2001.

The Queensland Tobacco Action Plan 2000/01 to 2003/04 (QTAP), endorsed by Cabinet in October 2000, is the State's first-ever strategic plan for addressing tobacco issues. Based on a national framework, it has 36 actions which together aim to reduce youth smoking, support smokers to quit, address smoking among Indigenous people, and reduce exposure to passive smoking. Major achievements under QTAP are:

- legislative reforms addressing passive smoking, vending machines, tobacco advertising and enforcement and sales to minors;
- the "Poison" youth smoking and support campaign; and
- implementation of the pilot "Indigenous Smoke-free Project".

In addition to the actions under QTAP, a major project has commenced through Health Promotion Queensland addressing smoking by young women and girls.

Since mortality due to smoking generally reflects smoking patterns at least 20 years ago (and more likely 40 years ago), any impact of these recent government initiatives is unlikely to be reflected in mortality data in the near future. However, they are important in terms of long term gain, and to help ensure that the future trends continue in the right direction.

## Methods

These risk estimates are called aetiologic fractions, and are the probability that a particular case of illness (hospital separation) or death was caused by smoking. The aetiologic fractions are generated by reviewing and summarising all the available published evidence for associations between smoking and specific diseases. These fractions are estimates only, and any interpretation of these data attributable to smoking should be made in light of this uncertainty.

These aetiologic fractions were updated in 2001 (Ridolfo and Stevenson, 2001), and as such there may be some differences in the results published previously for Queensland (Health Information Centre, 1999) and these results for corresponding years. However, these differences have been found to be only minor.

Mortality data was sourced from the Deaths Registration Data Set (Australian Bureau of Statistics) while the hospital separation data was obtained from the Queensland Hospital Patient Admitted Data Collection (Queensland Health).

ICD-9 coding classification was used for mortality data up to 1998 and ICD-9-CM coding classification was used for hospital separation data up to 1998/99. Mortality data was also coded in ICD-10 in 1997 and 1998. For 1999/2000 onwards the coding classification used for hospital separation data was ICD-10-AM. Differences in codes and coding practices between these coding classifications mean that interpretation of trends needs to take this into account.

## Cost Calculation

The cost to Queenslanders of cigarette-related occupied bed days was calculated by multiplying the number of occupied bed days directly attributable to cigarette smoking (during 2001/02 financial year) by the cost accrued per admitted patient day (\$820 for 2000/01 financial year, based on the National Hospital Cost Data Collection).

## References

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| Mortality               |        | 1989  | 1990  | 1991  | 1992  | 1993  | 1994  | 1995  | 1996  | 1997  | 1998  | 1999  | 2000  | 2001  |
|-------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Rate/100,000 population |        |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Male                    | ICD-9  | 207.8 | 180.2 | 175.0 | 179.7 | 167.3 | 172.6 | 150.1 | 164.2 | 152.0 | 151.6 |       |       |       |
|                         | ICD-10 |       |       |       |       |       |       |       |       | 150.6 | 149.6 | 144.1 | 136.7 | 128.2 |
| Female                  | ICD-9  | 57.1  | 52.9  | 52.6  | 56.9  | 51.9  | 52.6  | 48.8  | 53.3  | 51.4  | 48.3  |       |       |       |
|                         | ICD-10 |       |       |       |       |       |       |       |       | 51.0  | 48.4  | 50.6  | 46.3  | 47.2  |
| Persons                 | ICD-9  | 122.6 | 108.6 | 106.5 | 111.2 | 103.0 | 105.6 | 93.9  | 102.5 | 96.6  | 94.3  |       |       |       |
|                         | ICD-10 |       |       |       |       |       |       |       |       | 95.8  | 93.5  | 92.6  | 86.6  | 83.4  |
| Number of deaths        |        |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Male                    | ICD-9  | 2439  | 2194  | 2179  | 2325  | 2254  | 2410  | 2185  | 2438  | 2344  | 2412  |       |       |       |
|                         | ICD-10 |       |       |       |       |       |       |       |       | 2322  | 2381  | 2377  | 2335  | 2300  |
| Female                  | ICD-9  | 873   | 838   | 846   | 948   | 901   | 954   | 919   | 1020  | 1027  | 986   |       |       |       |
|                         | ICD-10 |       |       |       |       |       |       |       |       | 1018  | 987   | 1086  | 1030  | 1077  |
| Persons                 | ICD-9  | 3312  | 3032  | 3025  | 3274  | 3156  | 3364  | 3104  | 3459  | 3370  | 3398  |       |       |       |
|                         | ICD-10 |       |       |       |       |       |       |       |       | 3340  | 3367  | 3463  | 3365  | 3377  |

| Hospital separations    |           | 1989/90 | 1990/91 | 1991/92 | 1992/93 | 1993/94 | 1994/95 | 1995/96 | 1996/97 | 1997/98 | 1998/99 | 1999/00 | 2000/01 | 2001/02 |
|-------------------------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Rate/100,000 population |           |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Male                    | ICD-9-CM  | 1066.5  | 1028.0  | 1030.6  | 1066.2  | 1071.8  | 1038.1  | 1082.3  | 1123.1  | 1152.4  | 1132.3  |         |         |         |
|                         | ICD-10-AM |         |         |         |         |         |         |         |         |         |         | 1178.1  | 1136.1  | 1069.7  |
| Female                  | ICD-9-CM  | 424.9   | 417.4   | 428.0   | 433.8   | 444.5   | 450.9   | 485.4   | 487.0   | 500.0   | 508.1   |         |         |         |
|                         | ICD-10-AM |         |         |         |         |         |         |         |         |         |         | 531.6   | 531.4   | 521.0   |
| Persons                 | ICD-9-CM  | 718.3   | 696.9   | 704.9   | 726.9   | 735.0   | 723.6   | 762.1   | 784.2   | 805.1   | 799.1   |         |         |         |
|                         | ICD-10-AM |         |         |         |         |         |         |         |         |         |         | 832.5   | 813.3   | 776.7   |
| Number of separations   |           |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Male                    | ICD-9-CM  | 13537   | 13457   | 13785   | 14784   | 15386   | 15462   | 16699   | 17751   | 18831   | 19007   |         |         |         |
|                         | ICD-10-AM |         |         |         |         |         |         |         |         |         |         | 20348   | 20272   | 19931   |
| Female                  | ICD-9-CM  | 6100    | 6164    | 6433    | 6724    | 7111    | 7448    | 8226    | 8405    | 8841    | 9228    |         |         |         |
|                         | ICD-10-AM |         |         |         |         |         |         |         |         |         |         | 9914    | 10152   | 10315   |
| Persons                 | ICD-9-CM  | 19637   | 19620   | 20218   | 21508   | 22497   | 22910   | 24924   | 26156   | 27672   | 28236   |         |         |         |
|                         | ICD-10-AM |         |         |         |         |         |         |         |         |         |         | 30263   | 30424   | 30246   |