Trends in head injuries among child bicyclists

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BMJ 1994;308:177

Wearing of approved helmets by bicyclists has been recently made compulsory in several states in Australia and the United States, and similar legislation is being promoted in the United Kingdom. Those against helmets argue that they are not effective in collisions with motor vehicles. Evidence supporting helmet legislation has included decreases in the number of head injuries associated with wearing a helmet¹ and a reduction in the risk of bicycle related head injury among helmet wearers in a case-control study.² We examined trends in the incidence of head injuries and bicycle related injuries in Brisbane children by using injury surveillance data in a well defined population of 600 000 people.

Subjects, methods, and results

We studied all children admitted to hospital and about 75% of children attending emergency departments. Data on admissions were checked against the health department's patient register and deaths against necropsy files. Missing data were obtained by retrospective analysis of case notes. Demographic data are given in the accompanying paper.³

Trends in bicycle related head injuries and injuries other than head injuries, and trends in head injuries from all other causes, July 1985 to June 1991

From 1 July 1985 to 30 June 1991, 46 523 children under 14 years of age attended the emergency departments and 7156 were admitted to hospital. Head injuries not due to bicycle accidents fell significantly after age and sex were adjusted for ($P < 0.001$) but no significant trend occurred in annual attendance or admission rates for all injuries. Bicycle related injury was the most common injury category, resulting in 3438 attendances, 658 admissions, five deaths, and 283 head injuries. Bicycle related injuries associated with motor vehicle collision were responsible for 292 attendances, 121 admissions, four deaths, and 73 head injuries. The rate of head injury from bicycle accidents fell from 47.34/100 000 (95% confidence interval, 36.30 to 60.72) in 1985 to 18.32/100 000 (11.76 to 27.24) in 1991 ($P < 0.001$). Admissions to hospital with bicycle related injuries other than to the head were unchanged ($P > 0.6$) (figure).

Comment

Collision with a motor vehicle caused only 8.5% of bicycle injuries and 25.8% of bicycle related head injuries. Because helmets are designed to protect the head in accidents when other vehicles are not involved, which is most accidents, the case for wearing helmets is sound.

In 1986 about 2.5% of primary schoolchildren wore helmets.⁴ This had risen to 59% in June 1991, when compulsory helmet wearing was introduced.⁵ The decrease in bicycle related head injuries started before helmets became widely used and occurred against a background of unchanged admission rates for other bicycle related injuries and a decrease in head injuries from other causes. This suggests that the decrease is not due to decreased exposure of child bicyclists to injury.

Our findings indicate that the reason for the decrease in bicycle related head injuries is more complex than just increased wearing of helmets. Nevertheless, the protective effect of helmets is supported by the large drop in head injuries in the 12 months before legislation, when public debate ensured high levels of awareness and helmet wearing.

- 1 Vulcan AP, Maxwell HC, Watson WL. Mandatory bicycle helmet use: experience in Victoria, Australia. *World J Surg* 1992;16:389-97.
- 2 Thompson RF, Rivara FP, Thompson DC. A case-control study of the effectiveness of bicycle safety helmets. *N Engl J Med* 1989;320:1361-7.
- 3 Thomas S, Acton C, Dixon J, Battistutta D, Pitt WR, Clark R. Effectiveness of bicycle helmets in preventing head injury in children: case-control study. *BMJ* 1994;308:173-6.
- 4 Armon CJ, Pollard CW. Child cyclist injuries: a prospective study. *Med J Aust* 1986;44:144-6.
- 5 Dix W, Dreves M. Six months review of compulsory helmet wearing. Report to the Road Safety Division. Brisbane: Queensland Department of Transport, 1992.

Challenging professional opinion: the use of independent arbitration

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BMJ 1994;308:177-8

The handling of patient referrals made to hospitals with which a health authority has no contract—so called extracontractual referrals—has been a subject of much debate. Some argue that anything other than automatic approval of an extracontractual referral represents a restriction on the freedom of choice of both health professionals and patients. Health authorities are, however, obliged to maintain strict budgetary control. As a consequence some extracontractual referrals are refused and this may give rise

to disputes between patients or professionals and their health authority.

Such a situation arose in North West Hertfordshire, where the dispute was resolved by using an independent arbitrator.

Background, process, and outcome

The patient had been receiving treatment from a non-NHS institution for several years. The institution asked the health authority to continue funding her treatment as an extracontractual referral, but the authority refused. Considerable correspondence ensued, with no prospect of resolution. A meeting took place between the health authority's chief executive and acting director of public health, and the patient and her husband. During the meeting it became apparent that no resolution was going to be reached. Both sides therefore agreed that the case should be