Trends in head injuries among child bicyclists

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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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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

presented to a mutually acceptable, independent arbitrator who did not know the patient personally, had had no dealings with the institution concerned, and did not work in the NHS. Existing NHS procedures were not used as the dispute was not concerned with the clinical judgment of any professional or with the administration of an NHS institution. The dispute was over a principle of NHS funding. The arbitrator agreed on was a legally qualified independent arbitrator who had extensive experience but of a commercial or financial nature. He had never before acted in a case concerning a medical issue.

A preliminary meeting was set up between the patient's husband, the acting director of public health, and the arbitrator. They agreed the process of arbitration; they also agreed that the arbitration would be binding on both parties and that the authority would pay the arbitrator's fees. Written submissions were prepared by both parties and considered by the arbitrator, who discussed them with the parties individually before reaching a decision. The evidence submitted by the patient included the professional opinion of an NHS consultant psychiatrist that her physical and mental wellbeing improved after her treatment at the non-NHS institution. The evidence submitted by the authority included a report by the Royal College of Physicians immunology and allergy committee which recommended that treatment of the kind received by the patient should not be available on the NHS.¹ All parties were aware that the proposed method of resolving the dispute was novel and could be of interest within the health service. The authority therefore took the unusual step of asking for permission to write up the process in a professional journal; this was agreed by all.

The authority had two reasons for refusing funding. Firstly, it had a policy of refusing funding for treatment in non-NHS institutions which had initially been funded by the patient or by private insurance. Secondly, funding for an extracontractual referral was not authorised when a significant body of professional opinion considered that the treatment should not be available on the NHS.

There were three reasons why the patient thought that the authority should fund her future health care at this institution. Firstly, her health had improved after

treatment, in comparison with the apparent failure of traditional methods to cure her condition. Secondly, other health authorities funded patients at the institution. Thirdly, under the patients' charter the interests, views, needs, and right to care of the individual patient are paramount.

The arbitrator considered the arguments of both the authority and the patient reasonable and sustainable, and his initial inclination was to find a middle of the way solution. Ultimately, however, he decided that this would not be satisfactory in this case. He concluded that it would be better for the patient and in line with the fundamental principles of the NHS for her to continue her current treatment funded by the authority. Nevertheless, he also thought that a financial ceiling should be established so that any future increases should not be higher than any increase in the cost of living.

Comment

The process and outcome of this case raise three important issues. Firstly, the independent arbitrator thought that the interests of the individual patient should outweigh professional advice given to the health authority. This is at variance with the way in which the NHS has traditionally operated and has serious implications for the way in which such advice is acted on. Secondly, the arbitrator imposed a ceiling on the amount of funding to be made available. This authority has previously taken the view that agreement to fund an extracontractual referral would cover all subsequent costs. Although this makes financial management more difficult, it ensures continuity of care for the individual patient. The recommendation of the arbitrator is more akin to the approach of medical insurance agencies, who impose limits on the duration of payment or on the total cost. Thirdly, this case raises the question whether patients should have the right of appeal against the decision to refuse an extracontractual referral. If they have, and we believe they do have, then it begs the question "who should arbitrate."

¹ Royal College of Physicians Committee on Clinical Immunology and Allergy. *Allergy: Conventional and alternative concepts*. London: RCP, 1992.

ONE HUNDRED YEARS AGO

THE "MYSTERIOUS MALADY" OF NAPOLEON I. Lord Wolseley has raised again the old discussion of the malady of Napoleon, which he believes to have influenced his failures in battle. The nature of the first and last illness of Napoleon Bonaparte is well known, but the precise character of the ailments from which he suffered between those two maladies remains a little uncertain. At the siege of Toulon in 1793 he undoubtedly contracted scabies when working at a cannon with a gunner who had that loathsome disease. The hero was unskillfully treated, and seems to have suffered from scabies for several years. In Egypt (1798) he had gastric catarrh, and Dr. Cabanès asserts that he was inoculated with scabies, then believed to be a counterirritant. When Napoleon was at the height of his glory he drank coffee very freely for the avowed purpose of keeping himself awake. He admitted to Dr. Arnott his partiality for coffee at St. Helena. During the later part of his reign he was tormented with hæmorrhoids, and to those morbid products the failure of the Waterloo campaign has been ascribed. They worry the strongest constitutions, and may alone account for the declining

energy to which Lord Wolseley refers in his recent article. It is very doubtful whether he was constantly subject to a definite nerve lesion, as has been often asserted. Epilepsy is frequently mentioned as his special disorder, but on very doubtful grounds. That disease in its chronic form is incompatible with the psychical and physical conditions which go to make up a great military chief. Napoleon certainly died of cancer of the stomach. Surgeon Archibald Arnott, who attended him in his last illness, and made the *postmortem* examination, published a work in which the result of the necropsy is very carefully recorded. The stomach was covered with cancerous deposit, except near its cardiac orifice. The disease was most marked at the pylorus, which adhered to the liver. The intestines were free from disease. The specimen of malignant disease of intestine shown for many years at the College of Surgeons as taken from the body of Napoleon is now known to be spurious. As cancer of the stomach kills within a year or two, the legends that he suffered from the "germs of his last illness" when in Egypt (1798) and in Russia (1812) are absurdities. (*BMJ* 1894;ii:152.)