

in childhood is therefore unlikely to be both sensitive (that is, identifying true positives) and specific (that is, not identifying non-cases as cases). This is especially so for schizophrenia of adult onset, which is characterised by abnormalities of cognition and behaviour not manifest in childhood. It is perhaps more important, however, to find out if and why potential cases either fail to develop schizophrenia or develop some disorder other than schizophrenia. Children with conduct disorders have been shown to be at high risk of alcohol and drug misuse and antisocial personality in adult life.<sup>1</sup> Whether the pattern of misconduct in these children differs or whether intervening events lead to different conditions remains to be determined.

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1 Robins LN, Price RK. Adult disorders predicted by childhood conduct problems: results from the NIMH epidemiologic catchment area project. *Psychiatry* 1991;54:116-32.

## Side effects of dental materials

EDITOR,—Ivor A Mjör estimates that side effects of dental restorations occur at a frequency of between 1 in 1000 and 1 in 10 000 treatments.<sup>1</sup> In stating this he refers to his paper presented at the National Institutes of Health's technology assessment conference on dental materials in 1991. This paper refers to a single study by Kallus and Mjör, which recorded 24 spontaneously reported subjective side effects and 22 objectively diagnosed side effects of dental treatment in 13 325 patients of 137 Swedish dentists over 10 days.<sup>2</sup> In addition, 31 dentists retrospectively recollected 113 side effects during their entire careers (387 years).

This study is of limited value with regard to dental amalgam. The incidence of spontaneously reported subjective side effects is grossly at variance with results of a recent questionnaire survey of a representative sample of the Swedish adult population (1000 subjects). In that survey 4% of respondents believed that they had or had had health problems caused by dental amalgam. The fact that numerous symptoms apart from rare oral lichenoid lesions related to allergy to amalgam are reported to have improved after, or been cured by, removal of amalgam in uncontrolled studies will hardly lead to objective diagnoses by dentists. To assess the incidence of adverse effects of amalgam and other dental materials long term controlled studies are needed. Either comparable groups should receive different kinds of dental restorations or dental amalgam should be replaced with other restorative materials in selected groups while control groups retain their amalgam.

Dental amalgam is the single largest source of mercury for the general population without occupational exposure.<sup>3</sup> In a multielement analysis of different regions of the brain of patients with Alzheimer's disease the most notable difference from controls was a fourfold increase in mercury in the nucleus basalis Meynert,<sup>4</sup> which degenerates in Alzheimer's disease. Inorganic mercury was found to inhibit the ADP-ribosylation of the neuronal proteins tubulin and actin in rat brain.<sup>5</sup> The

concentration used (<0.5 µmol/l) was similar to the mercury concentrations recorded in the brain of monkeys 28 days after the placement of 16 radioactively labelled amalgam fillings—hence the theory that mercury from dental amalgam may be involved in the pathogenesis of Alzheimer's disease. Further research, not Mjör's premature conclusions, will shed light on this theory.

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- 2 Kallus T, Mjör I. Incidence of adverse effects of dental materials. *Scand J Dent Res* 1991;99:236-40.
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## Author's reply

EDITOR,—A large number of patients are needed to determine whether a side effect is significant. At an incidence of 1 in 1000 about 4000 patients receiving the same treatment have to be examined to confirm any reaction if 95% confidence intervals are used.<sup>1</sup> Objectively diagnosed side effects to dental restorative materials are rare. Thus controlled clinical studies to establish their incidence are difficult and costly. Clinical experience showing the safety and efficacy of dental restorations is, however, overwhelming and does not call for the incidence to be established; an estimate, as indicated in my editorial, is considered adequate. If the media focus on a cause and effect relation this undoubtedly affects the incidence of reports by patients, especially if vague, general symptoms are involved. This is a likely explanation for the report referred to by Harald J Hamre, that 4% of Swedes believed they had or had had health problems caused by dental amalgam.

The importance of self diagnosis of disease is difficult to assess. Undoubtedly, something is wrong, but differential diagnosis would require extensive investigations. So far as mercury from amalgam restorations is concerned, the comprehensive reviews that I referred to in the editorial excluded this source as a likely aetiological factor of systemic diseases. Another review, from an expert group appointed by the Swedish National Board of Health and Welfare, was published after my editorial.<sup>2</sup> It concluded that results from scientific studies since 1991 "have not shown that mercury from amalgam has an adverse effect on health, with the exception of isolated cases of allergic reactions."

The latest Swedish report pointed to the heterogeneity of patients with alleged adverse effect from amalgam fillings and identified "a considerable proportion of psychic disturbances and psychosomatic overtones."<sup>2</sup> Thus many types of specialists are required to provide adequate treatment for these patients. How easy it would be to help these patients if all it took was the removal of their amalgam fillings.

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- 1 Wendel HA. Adverse drug effect and the controlled clinical trial. *Pharmacologia Clinica* 1969;2:58-62.
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## Antibiotics for sore throats

### Patient and doctor should reach decision together

EDITOR,—Both papers representing the two sides in the controversy over whether antibiotics should be given for sore throats seem to miss the point.<sup>1</sup> That by P S Little and I Williamson concludes that antibiotics provide so little benefit that this is outweighed by the costs and that general practitioners should therefore have a policy of not using them. The other, by Pesach Shvartzman, suggests that there is insufficient information to deny patients a possible benefit of antibiotics for sore throat; the final sentence implies, therefore, that all patients with sore throats should be treated with antibiotics. In the accompanying commentary Peter Rubin regrets the paucity of data and asks for more research.

More research would probably only confirm what we already know: that antibiotics confer significant benefits in terms of relief of symptoms and prevention of suppurative complications and acute rheumatic fever.<sup>2</sup> The question is, are these benefits clinically important? Is a mean shortening of symptoms by eight hours in an illness whose mean duration is three to four days worth a visit to a doctor and the risks of antibiotic treatment (of which probably diarrhoea, candidiasis, and rashes are the most common)? Probably the only person who can answer this question is the patient.

Our job is not to attempt to formulate a universal policy or even to best guess the causative agent for each person. Rather it is to achieve a common understanding with patients.<sup>3</sup> This is not easy: "You have a 90% chance of being symptom-free in seven days whether or not you use antibiotics: however, with penicillin you have a 50% chance of being symptom-free on day 3 rather than day 3½."<sup>2</sup> The challenge is in explaining to our patients the small size of the benefits of antibiotics, derived from empirical research, rather than relying on simplistic concepts of killing bacteria that are susceptible to the antibiotic but may or may not be causing the infection.

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## Potential of antigen detection tests

EDITOR,—The Audit Commission has said that general practitioners prescribe antibiotics and other drugs irrationally and unnecessarily.<sup>1</sup> The use of antigen detection tests may be a way to diagnose infection with group A streptococci rapidly in patients with a sore throat, thus enabling more rational prescribing of antibiotics. However, the overall impact of other kinds of near patient testing has been challenged.<sup>2</sup>

We studied the impact of using antigen detection tests for group A streptococci (Abbott TestPack Strep A Plus, Concise Strep A (Hybritech), and Kodak SureCell Strep A) on the prescription of antibiotics by 34 general practitioners in 18 practices in Denmark. Patients with symptoms of a sore throat were consecutively enrolled into the study. On the basis of the clinical assessment general practitioners stated whether antibiotic treatment would have been prescribed if the test had not been available. After having read the result