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Is the MMR vaccine safe?

Media reports in 1998 of a possible link between the combined measles, mumps, and rubella vaccine (MMR) and autism or bowel disease have made many parents question the vaccination. Understanding their concerns and being familiar with the current scientific evidence about the safety of MMR are important if physicians are to allay doubts about the vaccine.

Many parents worry that MMR may cause autism or bowel disease. But the UK Department of Health, the World Health Organization, and UK medical establishments—such as the British Medical Association and the medical royal colleges—do not believe that MMR is linked to these conditions. They give several reasons.

WHAT THE EVIDENCE SAYS

A study in *Lancet* by Wakefield and colleagues originally sparked the MMR and autism scare,¹ but the study has been criticized for 2 reasons.

First, the investigation included only 12 children, 9 of whom were diagnosed as being autistic. This sample is too small to make any claims regarding a possible connection between MMR and autism. About 600,000 children per year have been given the MMR vaccine in the United Kingdom since its introduction in 1988.

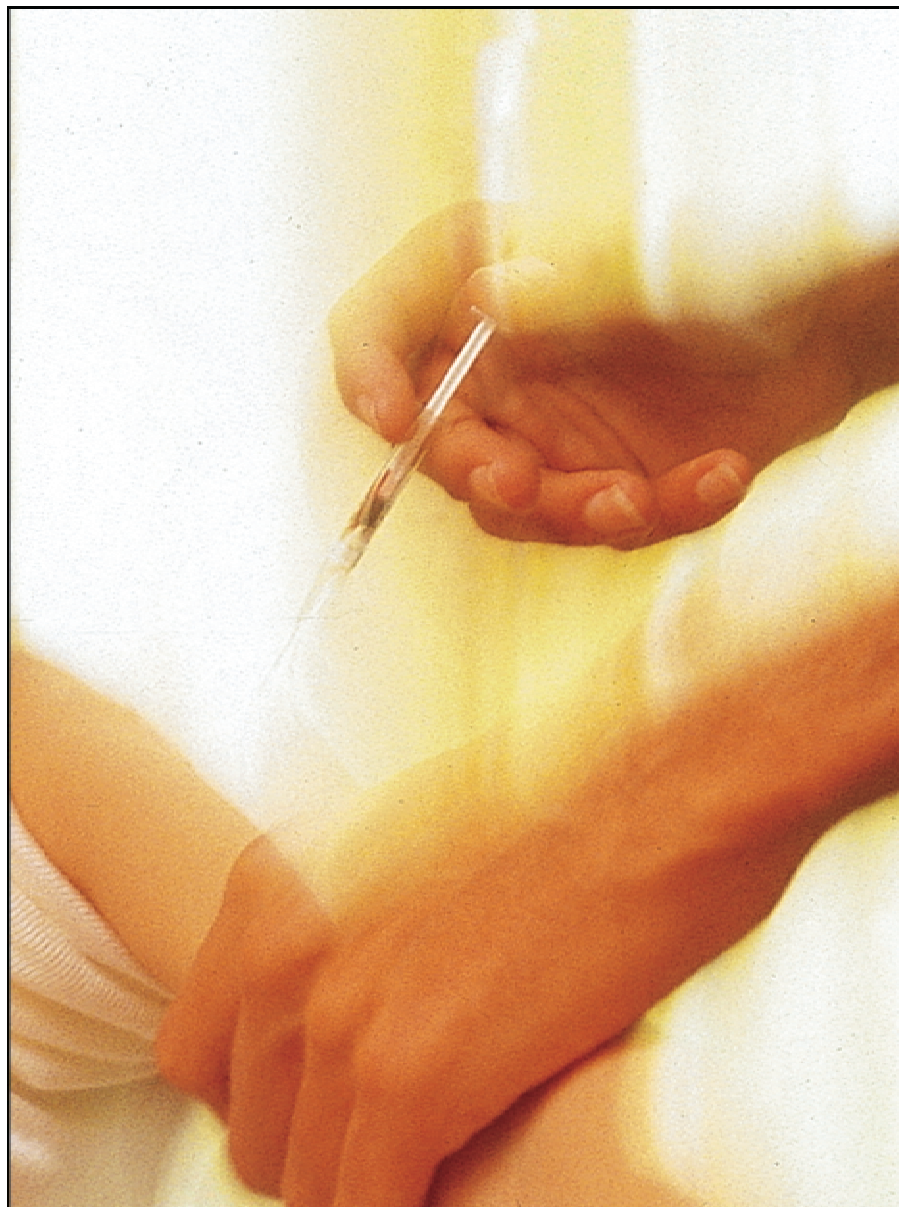
Second, the study had a strong selection bias. In 8 cases, the parents themselves had attributed their child's problems to MMR. Any apparent link between MMR and autism may arise because the age when MMR is first given (12-15 months) coincides with the age when autism is first recognized.²

Independent expert reviews have found no good evidence to link MMR and autism. In March 1998, a Medical Research Council seminar in the United Kingdom—comprising 37 experts in virology, epidemiology, gastroenterology, immunology, pediatrics, autism, and child psychiatry—examined published and unpublished “evidence”³ but concluded that none supported the MMR-

autism link. A working party of the UK Committee for the Safety of Medicines⁴ concluded the same, based on a review of the medical records of 92 autistic children released by a legal firm representing parents who believed that their child had been damaged by MMR.

Recent large-scale studies have failed to support a link between MMR and autism.^{5,6} The authors of an epidemiologic study re-

viewed the medical records of all 498 known autistic children born in the North Thames region of London since 1979, covering the period before and after the introduction of the MMR vaccine.⁵ They found no difference in MMR vaccination rates between autistic children and those of the general population, no evidence that children vaccinated with MMR at younger ages developed autism earlier than children vaccinated later, and no



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The benefits of the MMR vaccine outweigh the risks

clustering of autism development after vaccination. They also found that, although the number of cases of autism diagnosed has been rising since 1979, no sudden increase in the incidence of autism occurred after the introduction of MMR. The increase in the number of cases of autism since 1979 is most likely due to changes in diagnostic criteria.

Evidence against an MMR-autism link from the UK has been accepted by leading US organizations such as the American Medical Association,⁷ the American Academy of Pediatrics,⁸ the Institute for Vaccine Safety at Johns Hopkins University,⁹ and the Centers for Disease Control and Prevention.

COMMON MISCONCEPTIONS

Many parents believe that giving the vaccines separately is safer than using the combined vaccination. Wakefield suggested administering the single vaccines separated by 1 year,¹¹ although none of the other authors of the Wakefield report share this view. It is also commonly believed that the UK government uses MMR simply to save money, a single vaccine being cheaper than 3 vaccines. In August 1999, the UK government banned the routine use of separate measles and mumps vaccines for several reasons. First, no solid evidence supports the idea that using separate vaccines is any safer than using MMR. Second, giving separate doses leaves children unprotected for a longer period. Third, to be successful, national vaccination programs must minimize the number of vaccinations given. If separate measles and mumps injections were given, many children would inevitably

miss one or more vaccinations, leaving them open to infection.

In April 2000, parental concern in the UK regarding MMR was refueled by media reports of “compelling new evidence” for a link between MMR and autism.¹² An unpublished study had apparently found evidence of the measles virus that may have come from the MMR vaccine in the guts of 24 of 25 autistic children. The Department of Health, however, dismissed the study as “unverifiable by usual scientific means” because it used a highly selective sample and inappropriate controls.

KNOW THE REAL RISKS

The MMR vaccine has some side effects. For example, about 1 in 6 children develop a fever 7 to 12 days after immunization, and about 1 in 3,000 develop febrile seizures.¹³ Some parents think that MMR is unsafe because it has some adverse effects, but this is not the case. These side effects, most of which are benign, are acknowledged by members of the medical profession. The benefits of MMR far outweigh the risks of these recognized side effects. The vaccine has an excellent safety record. Hundreds of millions of children have safely received the vaccine worldwide.

It is important that children receive MMR. Without a high uptake of the measles component of the vaccination, the possibility of outbreaks of measles increases. Because 1 in 1,000 cases of measles is associated with encephalitis, the risk of this potentially deadly infection in children is also increased.

Carolyn Edwards
University of Leeds

ugm7cae@leeds.ac.uk

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