The MMR discussion pack
an information guide for health professionals and parents

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- The MMR Story: Mythbuster written by Dr Richard Roberts, Mr David Morgan, Dr Marko Petrovic and Ms Claire Williams and published by North Wales Health Authority, 1999.


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Further copies of the leaflet MMR your questions answered may be obtained from local health board health promotion departments. Further copies of the pack contents may be downloaded from the Health Boards Executive, Health Boards, or NDSC websites. Website addresses are given at the back of the pack.

This information pack has been endorsed by the following organisations: Royal College of Physicians of Ireland, Irish College of General Practitioners, Department of Health and Children.
**Introduction**

Some parents may feel that the issues around immunisation, in general, and MMR in particular pose a real dilemma for them about what is best for their child. The sustained negative media coverage and high-profile public debates over the last few years have also left many health professionals asking searching questions about MMR. These concerns have contributed to a decrease in the uptake of MMR vaccine and the re-emergence of these diseases in our population.

The MMR discussion pack will help professionals and parents review the evidence around MMR and will help to provide the basis for informed decision-making. It sets out the facts about the most common concerns about MMR vaccine in a way that helps health professionals and parents to explore these concerns together.

Nine main questions are covered and each question outlines the basic facts plus Key Notes for parents, together with Additional Notes for health professionals, which are fully referenced. Whilst the Additional Notes are essentially for health professionals, the information is presented in such a way as to allow full discussion between health professionals and parents, on each issue.

The format allows for exploration of all the issues in any order and as much, or as little, of the information can be photocopied to take away, as desired.
Why aren't the vaccines given separately?
MMR
2 injections of combined MMR

- Very low risk of reactions
- Effective protection against disease

Separate vaccines
6 injections of separate measles, mumps and rubella

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- Increased risk of disease
- Increased risk of missing a dose completely
- Increased risk of local reactions at injection site
- Increased trauma to child
Why aren’t the vaccines given separately?

Key Notes

1. The issue of giving vaccines separately was raised in the UK by Dr Andrew Wakefield in a 1998 press interview. The suggestion came from a belief that if children catch measles and mumps within one year of each other they are more likely to develop Crohn’s disease later. It was also claimed that MMR causes excess diarrhoea compared to single vaccines. There is no evidence to support these claims - in fact the evidence strongly rejects any link between MMR and autism or inflammatory bowel disease.

2. MMR vaccine is as effective in protecting against measles, mumps, and rubella as when each component is given on its own. The component viruses do not interfere with each other and there is no advantage in receiving the vaccines separately.

3. Giving the vaccines separately would mean a child needing a total of six injections to complete the course, instead of two. These children would remain unprotected and at risk of disease for longer. Six injections could also mean an increased risk of local reactions at the injection site. Control programmes would be less effective and this would lead to more cases of measles, mumps and rubella.

4. The use of three separate vaccines for measles, mumps and rubella has never been used in any country in the world. There have been no studies done to determine whether or not this approach is safe or effective. Likewise there is no experience with using this approach. This raises a number of unanswered questions: Is this approach safe? Will it protect children against these diseases? What order should the vaccines be given? How much time should be taken between vaccine doses?

5. In contrast the MMR vaccine has been in use for over 30 years and underwent rigorous studies to ensure that it was safe and effective before it was released for general use. The combined research evidence and decades of experience with MMR has confirmed that it is safe and effective. Indeed, the World Health Organisation recently concluded that MMR is one of the safest vaccines ever produced.

6. Although licences for single measles and mumps vaccines do exist in Ireland, no licensed single measles or mumps vaccine are manufactured for, or available for the Irish market.

7. Some of the unlicensed single antigen vaccines imported into Ireland may be less effective and some may have a higher risk of side-effects than the MMR vaccine.

8. Three separate injections to protect against measles, mumps and rubella has never been recommended in Ireland and no country in the world has recommended single measles, mumps and rubella vaccines, where combined MMR is available.
Why aren’t the vaccines given separately?

1. The idea of giving single antigen vaccines, with an interval of at least 12 months between vaccines, instead of the combined MMR vaccine was first publicised in the UK by Dr Andrew Wakefield in press interviews given after the publication of a paper in the Lancet in 1998, describing children with developmental and bowel problems.26

The idea is based on a belief that children who catch measles and mumps within one year of each other are more likely to develop Crohn’s disease later.69 Wakefield and Montgomery have also claimed that the incidence of gastrointestinal adverse events is significantly higher after MMR vaccination in the few weeks following its administration in comparison to single antigen vaccines.70 They claim that this leads to gut damage and subsequent autism. However, there is no evidence of significantly excess gastrointestinal events following MMR vaccination in the original trial data.71 Indeed there is excellent evidence for a lack of significant diarrhoea following MMR. In a study from Finland, 581 twin pairs were randomised for one twin to receive MMR and the other twin a placebo injection, then vice versa three weeks later. Diarrhoea was as common in those receiving MMR as in those receiving a placebo.72 A trial in the UK compared MMR to a single antigen measles vaccine. In a six-week period of follow-up there was no statistically significant difference in diarrhoea between the two groups.73

2. The evidence strongly rejects any link between measles or MMR and Crohn's or autism (see Question 4). The original rationale for suggesting single antigen vaccines is therefore without substance. However, some anti-vaccination groups have supported these views, which have since gained a high profile through national media and dedicated websites, resulting in increased perceived credibility.

3. The MMR vaccine is as effective in protecting against measles, mumps, and rubella as when each component is given on its own.16 There is no evidence that the component vaccine viruses interfere with each other. Immunity to the measles component and other antigens in MMR occurs at different times; measles after 6-11 days, rubella after 10-15 days and mumps after 15-21 days. It is normal for children to be bombarded with microorganisms via the gut and air, yet their immune systems cope very well.
If single antigen vaccines were to be given one year apart, a child would need a total of six injections at ages 1, 2, 3, 4, 5 and 6 years, to complete the course, instead of just two MMR vaccinations. These children would be susceptible to those diseases for longer, and there is good evidence that some children would miss doses altogether, resulting in more unvaccinated children. The result would be to undermine measles, mumps and rubella immunisation, reduce population immunity and increase the risk of children catching these diseases. The policy is not based on financial considerations, but on the best way to protect children. There is no scientific evidence to support the safety or efficacy of giving MMR as three separate vaccines at defined intervals. In contrast, MMR vaccine has been used for 30 years with an excellent safety record.

Although licences for single measles and mumps vaccines do exist in Ireland, no licensed single measles or mumps vaccine are manufactured for, or available for the Irish market.

The safety and efficacy of unlicensed measles and mumps vaccines administered in Ireland cannot be assumed. Batch testing and cold chain information is most often lacking and some strains are known to have unacceptable safety or efficacy profiles, in particular, the Urabe and Rubini mumps strains. The manufacturers withdrew Urabe from Ireland in 1993 and it has been shown to be associated with mumps meningitis post-vaccination. The Rubini has been shown to be of extremely low efficacy and has been associated with subsequent outbreaks of mumps in Spain, Portugal, Italy and Switzerland because of the extremely low level of protection it provides. The MMR vaccine contains the safe and efficacious Jeryl Lynn mumps strain.

Single antigen measles, mumps and rubella vaccines as an alternative to MMR has never been recommended in Ireland. Single antigen measles vaccine was introduced for all children in Ireland in 1985, but was superseded by MMR in 1988. Single antigen rubella vaccine was introduced in 1971 as part of a schoolgirl immunisation programme to protect women of childbearing age against rubella. Single antigen mumps vaccine has never been part of the Irish childhood immunisation programme. Licensed single antigen rubella vaccine continues to be available in Ireland, but this is primarily for non-immune women of childbearing age.
The MMR vaccine is used in 93 countries around the world and no country in the world recommends single antigen measles, mumps or rubella vaccines, where the combined MMR vaccine is available. The use of MMR vaccine, when available, is strongly supported by the World Health Organization.

France is often mentioned as a country where single antigen vaccines are given. However, the position in France is that children are given a single antigen measles vaccine from nine months of age only if they are in a nursery, and there is a risk of a measles outbreak. These children then receive two further MMR vaccinations, as in Ireland. France does not recommend single antigen mumps vaccine.79

In Japan, single antigen measles and single antigen rubella vaccines are recommended, as no MMR vaccine is available. However, Japan has suffered from endemic and epidemic measles. Over the period 1992-1997, there were 79 measles deaths in Japan. In the UK where the uptake rate of MMR has been over 90%, there have been no acute measles deaths since 1992.79 However in Ireland where the uptake of vaccine has never reached the target of 95% there were 8 deaths reported in the years 1990-1999 and 3 deaths in the year 2000.