Measles, Mumps and Rubella Infections and Encephalitis

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In the past decade, coverage of measles, mumps and rubella vaccination in the UK has not been high enough. Although vaccine coverage has improved, and currently 93% of children receive a dose of MMR vaccine by their second birthday, outbreaks of measles have occurred since 2006 including 2 deaths amongst children. This highlights how important it is to make sure that children are protected from this preventable disease.

**Measles infection and Encephalitis**

Measles causes Encephalitis in around 1 in 1,000 children. Measles Encephalitis caused the death of Roald Dahl’s daughter Olivia in 1962. He became an ardent supporter of measles vaccination as a result of the tragic loss of his daughter. He wrote a letter to parents encouraging them to get their children vaccinated. Many countries across Europe are currently experiencing large epidemics of measles because not enough children have had the MMR vaccine. Acute Encephalitis contributed to 2 of 3 measles related deaths reported in Europe in 2012.

Measles is also the cause of a disease called Subacute Sclerosing Panencephalitis (SSPE). This is a rare condition that can develop some years after natural measles infection. It is a degenerative neurological condition which progressively destroys nerve cells in the brain almost always leading to mental deterioration and death. More information on SSPE is available on our website [www.encephalitis.info](http://www.encephalitis.info).

SSPE is not caused by the MMR vaccine. MMR vaccine directly protects against SSPE. Since the introduction of measles vaccine in the 1960s, the numbers of people diagnosed with
SSPE has decreased dramatically. New cases of SSPE due to measles infection acquired in the UK are now virtually unknown and none have been reported in over 5 years.

**Mumps infection and Encephalitis**

Mumps virus frequently infects the central nervous system. Before the MMR vaccine was introduced mumps used to be the most common cause of admission to hospital with Meningitis or Encephalitis, occurring in 1 in 200-1 in 5,000 children. Mumps also causes deafness. MMR vaccine has had a dramatic impact and hardly any children are admitted to hospital with mumps these days. Outbreaks of mumps have occurred in recent years in older children and young adults who were too old to have received the two doses of MMR vaccine recommended before going to school.

**Rubella virus and Encephalitis**

Rubella virus causes severe brain injury in children if their mother is infected in early pregnancy. The brain injury is caused by Meningo-encephalitis, part of the “congenital rubella syndrome”. Rubella virus can also cause a progressive “Pan-encephalitis” later in life in children who were infected in the womb and survived but remain chronically infected.

Few young mothers will have any personal experience of the effects of rubella today, which were well known in the past. Immunisation with a rubella containing vaccine, including MMR vaccine, offers high levels of protection against disease. Rubella is now very rare in the UK with only one or two pregnant women exposed to the virus each year. This is one of the great successes of MMR vaccine.

**MMR Vaccine**

MMR vaccine is a very effective way to prevent measles, mumps and rubella. All three of these infections are important causes of Encephalitis, and before MMR vaccine was introduced all three infections were common in the UK.

There is a wide range of authoritative information available on the good safety record of MMR vaccine at [http://www.mhra.gov.uk](http://www.mhra.gov.uk)

The vaccine is unequivocally safer than letting children catch the diseases. The table below compares the risk of measles with MMR vaccine.
**Balance of risk comparing measles and MMR vaccine**

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>CHILDREN AFFECTED AFTER CATCHING MEASLES</th>
<th>CHILDREN AFFECTED AFTER THE FIRST DOSE OF MMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convulsions</td>
<td>1 in 200</td>
<td>1 in 1000</td>
</tr>
<tr>
<td>Meningitis or Encephalitis</td>
<td>1 in 200 to 1 in 5000</td>
<td>Less than 1 in a million</td>
</tr>
<tr>
<td>SSPE</td>
<td>1 in 8000 for children under 2</td>
<td>0</td>
</tr>
<tr>
<td>Death</td>
<td>1 in 2500 to 1 in 5000 depending on age</td>
<td>0</td>
</tr>
</tbody>
</table>

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