

## **Task 1**

### **What is immunisation and how does it work?**

Immunisation is the process of rendering people immune to an infectious organism by inoculating them with a form of the organism that does not cause severe disease but does provoke formation of protective antibodies. Vaccines are the most effective protection against most diseases caused by viruses and related organisms, because few antibiotics work against them.

Immunisation uses the body's natural defence mechanism-the immune response-to build resistance to specific infections. Immunisation is given as an injection or, in the case of polio vaccine, taken as drops by mouth. Immunisation helps children stay healthy by preventing serious infections.

Immunisation works by introducing a mild or dead form of the disease into the body. Some vaccines contain a very small dose of a live, but weakened form of a virus. Some vaccines contain a very small dose of killed bacteria or small parts of bacteria, and other vaccines contain a small dose of a modified toxin produced by bacteria. Once the disease enters the body, via the injection, the white blood cells make antibodies to destroy the microbe causing the disease. If the person is infected with the same microbe again, the white blood cells can quickly produce the correct antibody and the person does not suffer from the disease. This is what is known as active immunity. The first vaccination using active immunity was against smallpox and was developed by Edward Jenner.

Once a child has been vaccinated in general, the normal immune response takes several weeks to work. This means protection from an infection will not occur immediately after immunisation. Most immunisations need to be given several times to build long lasting protection. Generally vaccinations protect us all our lives; however, the protective effect of some immunisations is not always life-long and then a booster jab will be given which will top-up the original vaccine. Some vaccinations, for example the tetanus vaccine, can last up to 30 years.

Very young babies rarely catch the infectious diseases common in childhood because antibodies, obtained from the mother, protect them from these infectious diseases. Antibodies from the mother survive in the baby for several months. All that time, the baby is becoming more able to withstand infection. Around the age of 2 months it is recommended for the immunisation process to begin, this will enable the baby's body to begin to develop antibodies to takeover from those of the mother, which will gradually disappear as the baby's body begins to develop.

The effect of immunisations is very strange on certain diseases and now that most of the diseases have been eradicated when there are outbreaks some children are not protected due to the fact that parents thought the disease had been eliminated. For example, until recently, most children were given the full range of immunisations. As a result, the diseases they prevented dropped to a low level, or were almost eliminated.

Nowadays, because these diseases have become rare, some parents feel it is no longer necessary to have their children immunised. Consequently if the diseases do occur, they can easily spread as result in an epidemic.

Polio is an example. "The polio vaccine was introduced in 1957 and within five years the disease was almost eradicated." (Taken from Child Development By Pamela Minett). Fewer children are now being immunised against polio and, when a rare case occurs parents suddenly realise that their children are at risk and rush to get them immunised.

Over the past 10 years or so, there has been a lot of controversy over the MMR vaccine and its links with autism in children after having the vaccination. Research in the past has shown that there has been no links with MMR and autism and researchers have said that autism was well known long before MMR was ever used in the United Kingdom. From looking at a leaflet promoting the use of MMR it clearly states "there is no evidence, other than coincidence, to link MMR with autism." (Taken from 'MMR- The Facts' leaflets, by the Health Education Authority.) The aim of this is to persuade parents to have their child vaccinated with the MMR vaccine.

Another publication has strengthened the statement that there is no link between autism and the administration of MMR vaccines. The journal "Vaccine" has published an article from the United Kingdom that uses a self-controlled case series method to examine the age at diagnosis of autism compared with age at administration of one or two doses of MMR vaccine and the age at diagnosis of autism for children who received no MMR vaccine. There was statistically no difference between the groups. "In all instances, the relative incidence is not significantly different from 1, indicating no association between vaccination and autism in the subsequent risk period." The authors proceed by proclaiming their results do not support the hypothesis that MMR or measles containing vaccines cause autism at any time after vaccination.

A leading article and commentary in 'Archives of Disease in Childhood' (September 2001) – the journal of the Royal College of Paediatrics and Child Health - provides further support for the vaccine. It reviews the evidence on MMR safety and identifies the arguments why separate vaccines are not an alternative to MMR. The authors conclude: "There is no good scientific evidence to support a link between MMR vaccine and autism or inflammatory bowel disease; indeed there is mounting evidence that shows no link. While the final decision rests with the parents, the evidence of the safety and efficacy of MMR vaccine is so overwhelmingly conclusive that health professionals should have no hesitation in recommending its use".

This illustrates once again that there is no link between autism and the MMR vaccine, which suggests that the MMR vaccine is safe to use and cannot cause autism. A study by James A Kaye was published in the 'British Medical Journal' In February 2001 showing more evidence of no link between MMR vaccine and autism. The study reported:

- That there was a notable rise from 1988 to 1999 in the diagnosis of autism recorded by UK general practitioners in their records.
- That over the same period, there was no change in the proportion of children who had been vaccinated with MMR, which remained at over 95% for the age groups, and children in this study.
- The study therefore provides good evidence that MMR has not caused the large increase in diagnoses of autism that has taken place since 1988.
- The study authors conclude that: "These data provide evidence against a causal association between MMR vaccination and the risk of autism".

The whole of the controversy with the MMR vaccine started in 1998 when Dr Andrew Wakefield reported, "that in the "majority" of cases parents had documentary evidence that their child's physical and mental decline had followed the vaccination. He has "identified 170 cases of the new syndrome of autism and bowel disease in children who have had the triple-dose injection." Dr Wakefield is supporting the parent's views and suggests that although the Department of Health have says that the safety of the MMR vaccine has been proven and that this cannot be substantiated by science. Dr Wakefield is now studying and testing the hypothesis that the measles virus from the vaccine can lodge in the gut of susceptible children, damaging the bowel and causing autism. This is a serious report and some parents have taken in account what Dr Wakefield has said although nowadays we do tend to rely on the use of science to support our theories and the Department of Health have carried out many investigations and have said they have found no link between MMR and autism and that is left to the parents to decide whether their child should be vaccinated or not. His evidence suggests that the MMR vaccine does cause autism although he does contradict himself by saying evidence for the vaccine cannot be obtained from science and now he is using scientific experimentation to prove his theory.

There is also another study by Dr Vijendra Singh in Utah and he told an International Public Conference that his "laboratory experiments have shown that the MMR jab causes autism in young children." His work demonstrates that the jab triggers an immune reaction, which damages proteins in the brain, causing autism. Although Dr Singh has been concentrating on the brain and how adverse immune reactions can interfere with the development of the myelin sheath

that surrounds the nerves in the brain, Wakefield has studied a bowel disorder, which he and his team believe is associated with autism. It seems that the two scientists are arriving at the same conclusions of how the combined vaccine can damage a child's immune system and cause autism.

Before the controversy with the MMR vaccine there was a cause for concern in the 1970s when a study pointed to a link between the whooping cough vaccine and brain damage in babies, but more up-to-date research has failed to find a link. This demonstrates that scientists were working to try and protect children from these vaccines, which they thought were harmful.

Most vaccines protect us against disease and since the introduction of vaccination many of the diseases have been eradicated. Even though some diseases have been eradicated it is important that we are still protected because if there is a sudden outbreak then we know that we have been immunised. Immunisation is very important in the early years of life as some diseases can be fatal to young children and we needed to be protected all through our life so that our bodies are immune to diseases and there is less chance of illness. Although there has been a lot of controversy over the MMR vaccine it is now up to parents to decide whether they should protect their child or whether they should stay unprotected and prone to disease. It is much safer for your child to be immunised and the risk of harmful complications from any of these vaccines is very small – very much smaller than the risk of harmful effects from the disease itself. There are very few genuine reasons why a child should not be immunised.