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Hello and welcome to the Health Hits podcast.

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Today we'll be learning about flu, the flu vaccine and talking about a doctor who is credited with saving more lives than anyone else in the history of medicine.

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What is flu? Well flu is the short name for the influenza virus and the illness it causes, usually around the winter or early spring.

Many people will describe themselves as having flu when they simply have an infection with a common cold virus.

However, true Flu symptoms are different and usually start a couple of days after exposure to the virus. They can include high temperature, cough, sore throat, joint aches, intense tiredness. In very severe cases it can lead to hospitalisation or death.

Symptoms tend to be more intense than a cold and last longer, in part due to the fact that the virus damages our cells, rather than just provoking our immune systems alone, as the common cold virus does.

We catch the virus if it comes into contact with the pink inner lining of our eyes, nose or mouth. A single sneeze or cough by an infected person can contain hundreds of thousands of virus particles, and on a hard surface such as a door handle or lift button it can live for one or two days. The best way to avoid catching the virus in the winter months is to wash our hands regularly.

The symptoms can last one to two weeks and the mainstay of treatment is supportive, which means supporting the body as the immune system takes care of the infection. Paracetamol, ibuprofen and plenty of fluids is the general advice. Flu remedies sold in pharmacies may also contain a decongestant or caffeine to help make us feel more human.

There is no benefit from taking antibiotics in flu, or the common cold for that matter, as they will fight and kill bacteria, but these conditions are viruses.

Like other viruses such as measles, mumps or polio there is a vaccination.

Flu changes far more rapidly than these other viruses due to natural selection. Essentially if a particular flu virus has a mutation or change in its shape that makes it harder for our immune systems to recognise and kill, then it is more likely to survive and become the dominant strain.

As a result of this rapid change we require the vaccine to be updated annually in order to stay effective.

The drug companies need at least 6 months to manufacture enough flu vaccine so the World Health Organisation meets in February for the Northern Hemisphere vaccine and September for the Southern Hemisphere.

This is a long time before the next flu season and so THE three or four strains put into the vaccine are somewhat a guess, but STILL the product of careful study from influenza centres in over 100 countries.

It is for this reason that the effectiveness of the vaccine can vary from year to year, from anywhere between 30 and 80 percent.

What do we need to know about getting the vaccine?

Well it is available to anyone who wants it, but in the UK only given free of charge by the NHS to certain groups who are thought likely to become more unwell.

All children aged between 2 and 7 are offered a nasal spray version of the vaccine, and this is extended to aged 17 if they have long term health problems.

Children between 6 months and 2 years can also be given the vaccine if they have health problems but this has to be the injection as their immune system cannot yet cope with the nasal version.

All adults over 65, all health workers and carers, pregnant women and any adult with a chronic health condition affecting the lungs, liver, kidneys, heart or blood cells, or a condition making the immune system weaker, are given the flu vaccine injection.

Fit working aged people are not offered the flu vaccine by the NHS as in these groups it rarely causes serious illness, but can often account for time away from work. So some employers arrange for their staff to be offered the vaccine privately.

The virus in the vaccine has been weakened but still triggers our immune system to build antibodies against it. This means that if we come into contact with real flu our bodies start fighting it off straight away.

Because vaccination triggers our immune system it is not unusual to get mild flu symptoms for a day or so. It can also take up to 2 weeks to get the full benefits so it is possible to be vaccinated and then get flu for real very shortly afterwards.

The viruses used in the vaccine are grown in chicken egg cell lines and so children with severe egg allergy, severe enough to have been to the intensive care unit, should be vaccinated in a hospital.

There have been large studies published in the British Medical Journal and the Journal of Allergy and Clinical Immunology that support the safety of using the nasal vaccine in children with more mild egg allergy.

So that's all I'm going to cover on flu for this episode. If you would like to find out more please see the resources on the website HealthHits.info, or find us on twitter or facebook: @healthhitspod. You can leave feedback, ask questions or request topics for future episodes there.

So moving away from chickens we now move towards cows.

Edward Jenner was a British doctor who lived in the late 1700s. He noticed that milk maids would often be spared from the often deadly disease of Smallpox.

He was able to show that after deliberately infecting children, including his own, with the much milder Cowpox, they were then immune from catching Smallpox.

His discovery revolutionised our relationship with previously deadly diseases and thanks to a dedicated vaccination programme the World Health Organisation declared Smallpox eradicated in 1979.

He called the Smallpox immunity treatment a "vaccine" after the latin word for cow "Vacca". Indeed it is estimated that his discovery and subsequent work on vaccination has saved the lives of over 500 million people.

Jenner is a personal hero of mine because through simple observation and with an inquisitive mind he managed to become the father of immunology, even before people understood what viruses or the immune system were.

And that's the end of the episode. The podcast is available on the site HealthHits.info, or to download from the iTunes store or Google Play.

Thank you so much for listening and please join me again for another episode of Health Hits.