

## DEBUNKING FAKE NEWS ABOUT VACCINES

### 1. Vaccines contain toxic substances **FAKE**

Vaccines are subject to more controls by drug regulation agencies than any other medicines. The vaccines included in the vaccination schedule in Catalonia are single-dose and do not contain mercury. Thiomersal is an organic compound with mercury used as a preservative only in some multidose vaccines. This compound does not accumulate in the body and no risk associated with its presence has been described. Mercury is present naturally in the air, water and earth.

Some vaccines contain aluminium compounds as an adjuvant to increase the immune response. The quantity of aluminium present in vaccines is well below levels considered to be toxic. No correlation has been found between the concentration of aluminium in blood or hair and a person's vaccination history. Vaccines with aluminium compounds can cause more local reactions at the point where the vaccine is injected, but these reactions are mild. Aluminium is one of the metals most frequently present in nature (earth, water, plants and foods). During their first six months of life, babies receive more aluminium through milk (either their mother's milk or formula) than from any vaccine.

Formaldehyde may be used in the vaccine manufacturing process to deactivate viruses and toxins, but it is almost entirely eliminated during the purification process. Formaldehyde is produced naturally in the human body. The concentration of formaldehyde in a baby's body is approximately ten times as high as in any vaccines.

Some vaccines have components, such as gelatine or neomycin, which on rare occasions can cause allergic reactions in people who are susceptible. The risk of showing a serious allergic reaction to a vaccine is very low (one case for every million people vaccinated).

### 2. Vaccines cause autism **FAKE**

In 1998, Andrew Wakefield *et al.* published an article in *The Lancet* associating the triple viral vaccine (mumps-measles-rubella) with autism. This association has never been proved by any subsequent study. On the contrary, all current scientific evidence allows us to reject this association. It was subsequently shown that the results of Wakefield's study were erroneous and obeyed economic interests. For this reason, in 2004, ten of the 12 authors of the original article published another article in *The Lancet* in which they retracted the conclusions of the original article.

Subsequent studies, like the one carried out on more than half a million Danish children, showed that children who had not been given the triple viral vaccine had the same probability of developing autism as children who were vaccinated.

Another study carried out in the USA, including data from 95,000 children, showed that not even in children considered to be at greatest risk of autism – those with brothers or sisters affected by autism – could a relationship be established between the administration of the triple viral vaccine and the development of autistic disorders. To date, more than ten high-quality scientific studies have been published showing that vaccines do not cause autism.

### 3. Vaccines trigger chronic diseases and allergies

**FAKE**

There is no scientific evidence showing that a vaccine has caused or triggered a chronic disease. Nor is there any scientific evidence showing that vaccines cause or worsen allergic diseases such as asthma or eczema.

Chronic diseases are long-term diseases that progress slowly (in general, any disease lasting more than six months is considered chronic). The susceptibility of chronic patients to immune preventable diseases is greater than for healthy individuals. The same basic disease, the behaviour of the infection and response to treatments can cause infections to become worse than in a healthy individual.

Chronic patients can also show a lower immune response to vaccines, which means the vaccination schedule has to be adapted to the characteristics of the patient or their treatment. It may even be necessary to confirm the response with serological tests. These groups of patients can also require the administration of additional vaccines or additional doses of vaccines to provide them with adequate protection.

### 4. The adverse effects of vaccines are often hushed up

**FAKE**

Safety is one of the main aims of vaccination programmes. All vaccines are subjected to strict testing throughout the different phases of the clinical trials they have to pass to be approved and they continue to be regularly evaluated once they are on the market (post-marketing surveillance). Health professionals and the pharmaceutical industry have the obligation to report any suspected adverse reactions they become aware of. Members of the public can also report them directly.

Most adverse reactions to vaccines are mild and short-lived, such as pain around the point of injection or feverishness. Other reactions are much less frequent, which means it is very important for the drug surveillance system to monitor suspected adverse effects. All serious rare effects reported are immediately investigated.

The Spanish Drug and Health Products Agency is responsible for the Spanish Drug Surveillance System for medicines for human use. In each autonomous region there is a drug surveillance centre in charge of evaluating and recording suspected adverse reactions to vaccines in a common database. This information

is passed on at international level to the European Medicines Agency (EMA) and the World Health Organization (WHO).

## 5. The reduction in infectious diseases is not down to vaccines, it is due to other improvements

**FAKE**

Every year, vaccination prevents more than 35,000 cases of diseases that used to affect children in Catalonia just 30 years ago. Socioeconomic improvements have undoubtedly had a direct impact on transmissible diseases. Despite this, if the incidence of many infectious diseases over the years is analysed, there is no doubt of the direct, significant impact these vaccines have had. Table 1 shows the percentage reductions in the main vaccine preventable diseases in Catalonia.

| Disease        | No. of cases (1984) | No. of cases (2016) | % change   |
|----------------|---------------------|---------------------|------------|
| Diphtheria     | 0                   | 0                   | Eliminated |
| Tetanus        | 22                  | 0                   | 100        |
| Whooping cough | 5,745               | 1,722               | 70         |
| Poliomyelitis  | 0                   | 0                   | Eliminated |
| Chicken pox    | 2,229               | 7                   | 99.7       |
| Rubella        | 8,168               | 2                   | 99.9       |
| Mumps          | 20,576              | 966                 | 95.3       |

Table 1. Impact of vaccination in Catalonia (1984-2016).

Smallpox was eradicated from the world in 1979 thanks to vaccination (before the introduction of the vaccine, the disease killed almost 5 million people every year). The campaign against poliomyelitis is one of the great vaccination success stories. The American continent has been free of poliomyelitis since 1994 and Europe since 2002. There are now only two countries in the world where this disease is endemic (Pakistan and Afghanistan).

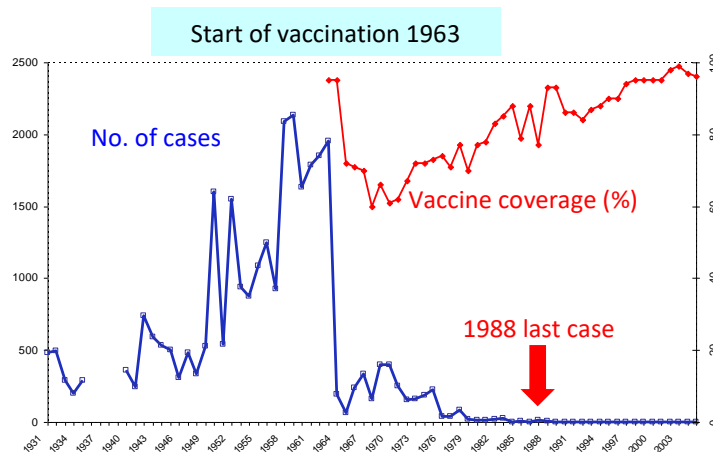


Figure 1. Impact of vaccination against poliomyelitis in Spain.

On the other hand, there are diseases for which a vaccine has been available for only a few years. Although they have been subject to the same socioeconomic impacts and hygienic improvements, improvements have only occurred since they were included on vaccination schedules. Chicken pox and invasive meningococcal and *Haemophilus influenzae* type b (Hib) infections are clear examples of this (figures 2 and 3).

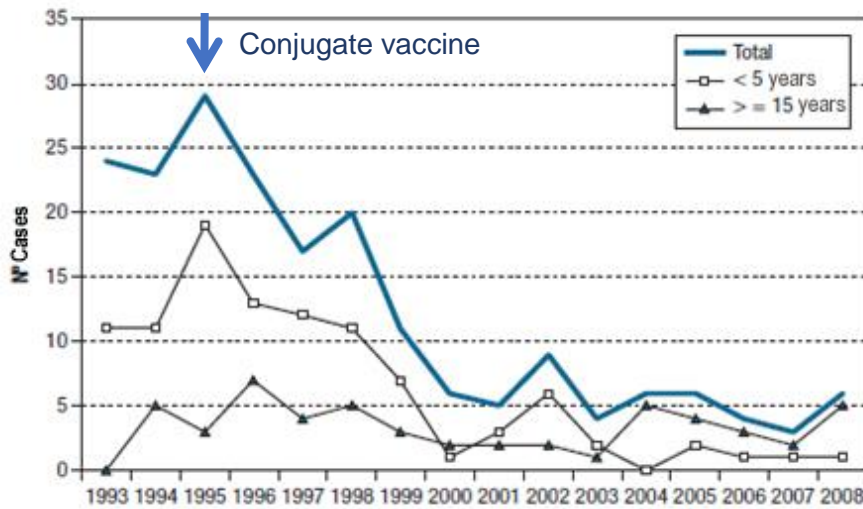


Figure 2. Impact of the introduction of the Hib vaccine in Spain (1993-2008).

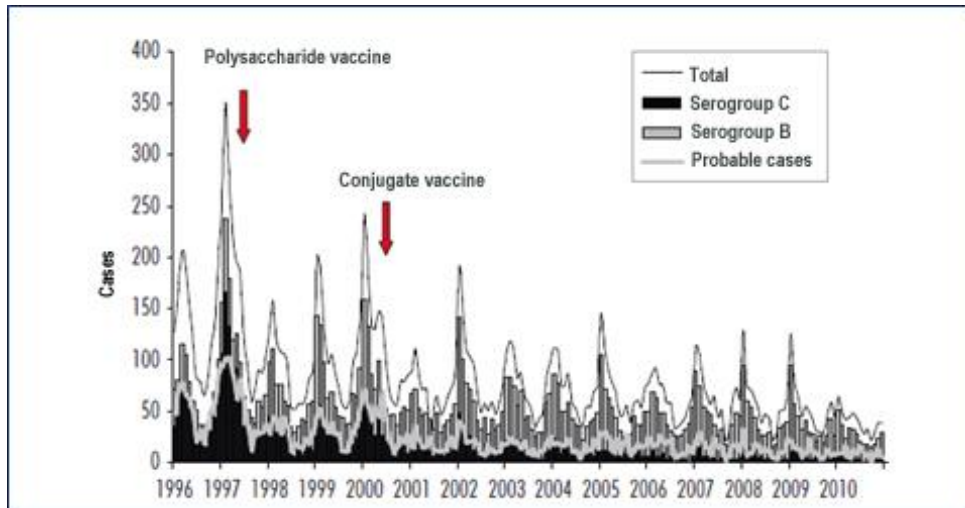


Figure 3. Development of meningococcal disease in Spain (1996-2010).

Another argument clearly demonstrating the benefit of vaccines is the increase in the incidence of diseases when vaccine coverage is reduced. Measles is the clearest example of this, with an increase of 300% in the last year and 74 deaths in the WHO European region, associated with anti-vax movements (figure 4).



Figure 4. Cases of measles in the WHO European region and the EU (2009-2018).

## 6. The diseases for which we are vaccinated are harmless

**FAKE**

Vaccines protect us against diseases that can be serious. They can have important complications and side effects and even cause death. People who are not vaccinated not only put their own health in danger, they can also pass the disease on to other vulnerable groups, such as babies, elderly people and immunodepressed patients who have a higher risk of suffering serious complications.

Measles causes one case of encephalitis in every 1,000 cases and one death for every 1,000 cases (the death rate may be up to 15% in developing countries).

Meningococcal meningitis has important side effects (deafness, amputations, cognitive problems, etc.) in between 10% and 30% of cases and causes death in 10% of cases.

Diphtheria can cause important heart, kidney and neurological complications. Between 5% and 10% of patients die.

Tetanus has a death rate of between 10% and 50%, which can reach 90% in new-born babies (neonatal tetanus).

Although for most healthy children it is a harmless disease, chicken pox is associated with serious complications in immunodepressed people, causing death in 15-20% of cases.

Vaccines are victims of their own success. As the diseases prevented by vaccines reduce and become less visible, some people may have the false perception that it is no longer necessary to be vaccinated. However, unlike smallpox, which has now been eradicated, the other vaccine preventable diseases have not disappeared and, if we stop being vaccinated, they will come back.

## 7. There are hidden economic interests behind vaccine recommendations

**FAKE**

Health professionals are governed by a Code of Ethics under which “The doctor’s duty is to prioritise caring for the patient’s health. Under no circumstances must religious, ideological, political, economic or racial considerations or the gender, nationality or social or personal status of the patient interfere with this, nor must any fear of contagion to the doctor.” This must be the primary interest governing the doctors’ actions, either when they are treating patients or when they are teaching on courses or at meetings or conferences.

Similarly, the pharmaceutical industry must be governed by a transparency law and new drugs must be evaluated by the regulation agencies that are responsible for evaluating requests to authorise the sale of new drugs and their subsequent monitoring. Their aim is to contribute to protecting the health of the population, ensuring that medicines for human use are safe, effective and high-quality for the benefit of public health.

Financial profits must not be associated with bad practice. Meanwhile, it is clear that the pharmaceutical industry is making great financial investments in research and that, as well as health benefits, it expects a financial return on these.

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