

Vaccinations - the research

Since the expansion of routine childhood immunization programs, concerns have periodically been raised regarding a potential association between vaccinations and sudden infant death syndrome (SIDS), as the timing of the immunization schedule coincides with the age at which many SIDS cases occur. This controversy has prompted extensive epidemiological studies and systematic reviews to investigate the relationship.

In a large-scale study of infants in Avon, England who had died from SIDS, affected infants were significantly less likely to have begun their immunizations compared with matched controls. After adjusting for confounding factors, infants who had received at least one immunization had half the risk of SIDS¹. In a further analysis of this study, in conjunction with comparable large studies from Germany and New Zealand, researchers found no temporal association between vaccination and a change in the risk of SIDS in the period following immunization².



The risk of SIDS does not depend on which vaccine is used. As vaccine formulations evolved, Australian infants between 1999 and 2010 were administered an increasing number of antigens within a single injection. This was delivered as either a trivalent, quadrivalent or hexavalent acellular Diphtheria, Tetanus and Pertussis (DTaP) vaccine, and protected against DTaP as well as other infections such as hepatitis B, *Haemophilus influenzae* type b (Hib) and inactivated poliomyelitis virus (IPV). A large observational study of these infants demonstrated no difference in SIDS risk across different vaccine schedules³.

A more recent French study, using a contemporary vaccination schedule that included conjugate vaccines, also found that SIDS was twice as likely among non-immunized infants compared with matched immunized controls⁴. This result mirrors the findings from the Avon study of the 1990s, reinforcing the evidence for the protective association between vaccination and SIDS mortality.

References

1. Fleming, P. J. *et al.* The UK accelerated immunisation programme and sudden unexpected death in infancy: case-control study. *BMJ* **322**, 822 (2001).
2. Kuhnert, R. *et al.* Reanalyses of case-control studies examining the temporal association between sudden infant death syndrome and vaccination. *Vaccine* **30**, 2349–2356 (2012).
3. Duszynski, K. M. *et al.* Use of different combination diphtheria-tetanus-acellular pertussis vaccines does not increase risk of 30-day infant mortality. A population-based linkage cohort study using administrative data from the Australian Childhood Immunisation Register and the National Death Index. *Vaccine* **37**, 280–288 (2019).

4. Deschanvres, C. *et al.* Non-immunization associated with increased risk of sudden unexpected death in infancy: A national case–control study. *Vaccine* **41**, 391–396 (2023).

Frequently asked questions

What does the research show?

Vaccinations are important to prevent significant illnesses in babies, but because they start at around the same time as babies are most at risk of SIDS, there was some initial concern that they were linked. However, careful research in different countries across different decades have shown that vaccinations are not linked to SIDS. One large study in England showed babies who had started vaccines were about half as likely to die from SIDS as babies who hadn't. Further analysis of this study, with other studies from Germany and New Zealand, found no change in the risk of SIDS with vaccinations. Studies found that whether babies got 3-in-1, 4-in-1, or 6-in-1 vaccines, the risk of SIDS stayed the same. Later studies in Australia (published in 2019) and France (published in 2023) have also found vaccinations to not increase the risk of SIDS.

Do vaccines cause sudden infant death syndrome?

No. While it is natural to worry about medical interventions, and parents often ask this question, research has shown that vaccinations do not cause SIDS. In fact, babies who are up to date with their vaccinations actually have a lower risk of SIDS.

I have read some really frightening information about vaccinations online and now I don't know what to believe?

There's a lot of information on the internet about vaccinations which can be very worrying, but much of it is not accurate or true. The best person to talk to for reliable information is a health professional, such as a doctor, midwife or health visitor. They will be happy to talk through any worries. You can also find trustworthy information from public health organisations such as the World Health Organisation.

How do we know that vaccines are safe?

Before they are allowed to be used, all medicines, including vaccines, are thoroughly tested to see how safe and effective they are before they are licensed. Even after they have been licensed, their safety will still be monitored. All medicines can cause side effects, but vaccines are among the safest. Research from around the world shows that they are the safest way to protect your child's health.

Is it really important that I vaccinate my child?

Yes, vaccinating your child will protect them from a number of serious illnesses that could lead to lifelong health problems or could even be fatal.

What is the key takeaway for families?

Vaccines do not cause SIDS. Instead, the evidence suggests that vaccinated babies are less likely to die from SIDS. On top of that, vaccines protect babies from many serious diseases, making them an important part of keeping infants safe and healthy.