

## DIABETES and VACCINATION - Abstracts

[JAMA Pediatr.](#) 2019 Mar 1;173(3):280-282. PMID:30667473

### Association of Rotavirus Vaccination With the Incidence of Type 1 Diabetes in Children. [No abstract]

Perrett KP<sup>1</sup>, Jachno K<sup>2</sup>, Nolan TM<sup>1</sup>, Harrison LC<sup>3</sup>.

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[Curr Diabetes Rev.](#) 2012 Nov;8(6):413-8. PMID:22934546

### Review of evidence that epidemics of type 1 diabetes and type 2 diabetes/metabolic syndrome are polar opposite responses to iatrogenic inflammation. Classen JB<sup>1</sup>.

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**Abstract** There is an epidemic in children of metabolic syndrome, obesity, type 2 diabetes and other individual diseases that form the components of metabolic syndrome. Poor diet and low exercise can not explain many facets of the epidemic including the onset in children 6 month of age, the protective effect of obesity on the incidence of type 1 diabetes and the epidemic of type 2 diabetes/metabolic syndrome in grass fed horses. Poor diet and exercise also do not explain the epidemic of type 1 diabetes in children that resembles the epidemic of type 2 diabetes/metabolic syndrome. Several papers have been published to indicate that the epidemics of type 1 and type 2 diabetes/metabolic syndrome in children are linked and are polar opposite responses to iatrogenic inflammation. Several lines of research support this. Data from different races indicates that there is an inverse relationship between developing type 1 diabetes and type 2 diabetes. Races with high risk of developing type 2 diabetes have a decreased risk of developing type 1 diabetes. Data from Italy confirmed an inverse association between obesity and type 1 diabetes. Further studies indicate the inverse relationship between type 1 diabetes and type 2 diabetes/obesity is due to cortisol production. Data indicates those with low cortisol responses have a predilection for type 1 diabetes and other autoimmune disorders following inflammation, while those with high cortisol/ immune suppressive responses develop type 2 diabetes/metabolic syndrome/obesity which resembles a Cushingoid state but are spared in the autoimmune disorders. Japanese children produce much more cortisol following immunization than Caucasian children. The later explains why discontinuation of BCG vaccination was associated with a decrease in type 1 diabetes in European children and a decrease in type 2 diabetes in Japanese children. Both the epidemics of type 1 diabetes and metabolic syndrome correlate with an increase in immunization. Finally, there is a strong mechanism data that macrophage produced interleukin 1, tumor necrosis factor and interleukin 6, which are released following inflammation, causing destruction of insulin secreting islet cells and increase cortisol release, and thus have the ability to cause both type 1 and type 2 diabetes/metabolic syndrome (which resembles a Cushingoid state). The propensity to develop type 1 diabetes or type 2 diabetes/metabolic syndrome depends on the propensity to release of cortisol which correlates with race.

[The Open Pediatric Medicine Journal](#), 2008, 2, 7-10 *Not available on PubMed*

### Risk of Vaccine Induced Diabetes in Children with a Family History of Type 1 Diabetes John Barthelow Classen\*

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**Abstract:** Cohort data from Denmark in all children born from January 1, 1990 to December 31, 2000 was analyzed to assess the association between immunization and type 1 diabetes in all Danish children and in a subgroup where children had a sibling with type 1 diabetes. Pediatric vaccines were associated with a statistically significant increased risk of type 1 diabetes in 12 of 21 endpoints in the general population. The rate ratios in children who received at least one dose of a specific vaccine were also elevated in the subgroup and were statistically the same as in the general population. Three doses of the hemophilus vaccine were associated with a rate ratio of 1.23 (1.02<<RR<<<RR<

**Miller NZ:** – Vaccines for *haemophilus influenza* type b (Hib), MMR, polio, whole cell pertussis, and the combined DTwP vaccine were all associated with a significant increased risk of type 1 diabetes.

One dose of MMR increased the risk of diabetes by 88%

Two doses of the oral polio vaccine doubled the risk of diabetes (RR = 2.01)

## Clustering of Cases of IDDM 2 to 4 Years after Hepatitis B Immunization is Consistent with Clustering after Infections and Progression to IDDM in Autoantibody Positive Individuals

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### Abstract:

**Background:** Previous studies demonstrated clusters of cases of IDDM occurring 24 to 48 months after immunization with the hemophilus, pertussis and combined measles mumps rubella vaccines. Data was analyzed to determine if similar clustering of cases of IDDM occurred after immunization with the hepatitis B vaccine. **Methods:** Data on the incidence of IDDM from hepatitis B immunized and unimmunized cohorts of children was analyzed for the presence of clusters occurring after hepatitis B immunization. **Results:** Data from Italy, France, and New Zealand indicated rises in the incidence of IDDM occurred between 24 to 48 months after the introduction of the hepatitis B immunization in young children. **Conclusion:** Several different vaccines as well as infections with natural mumps virus are followed by clusters of cases of IDDM that occur about 24 to 48 months after immunization. This suggests a similar mechanism of action, possibly the triggering of a progressive autoimmune phenomenon.

### Further interpretation by NZ Miller

- In NZ, the incidence of IDDM in children aged 1 – 14 years rose by 48% after a hepatitis b vaccination program was initiated in 1988.
- In Italy, hepatitis B-vaccinated children developed type 1 diabetes at a significantly higher rate than non-vaccinated children (RR = 1.40).
- In France, the incidence of IDDM in children 0-4 years of age rose by 61% after a hepatitis B vaccination program was initiated. A significant increase also was noted in children 10 – 14 years of age (RR = 1.31).

**Diabet Med.** 2004 Apr;21(4):397-8; author reply 398-9. PMID:15049949

**Pertussis infections, vaccines and Type 1 diabetes.** [No abstract available]

[Classen JB.](#)

Comment on [Pertussis infection in childhood and subsequent type 1 diabetes mellitus.](#) [Diabet Med. 2002]

**Ann N Y Acad Sci.** 2003 Nov;1005:404-8. PMID:14679101

**Vaccinations may induce diabetes-related autoantibodies in one-year-old children.** [Wahlberg J<sup>1</sup>](#), [Fredriksson J](#), [Vaarala O](#), [Ludvigsson J](#); [Abis Study Group](#).

<sup>1</sup> Division of Pediatrics, Department of Molecular and Clinical Medicine, Faculty of Health Sciences, Linköping University, Linköping, Sweden.

**Abstract** Vaccinations have been discussed as one among many environmental candidates contributing to the immune process that later may lead to type 1 diabetes. ABIS (All Babies in Southeast Sweden) is a prospective cohort study following a nonselected birth cohort of general population. In a randomly selected sample collection from 4400 children, GADA and IA-2A have been determined at the age of 1 year. The information on vaccinations was collected from questionnaires answered by the parents and was related to beta cell autoantibodies. When studying the induction of autoantibodies using the autoantibody level of 90th percentile as cutoff level, hemophilus influenza B (HIB) vaccination appeared to be a risk factor for IA-2A [OR 5.9 (CI 1.4-24.4; p = 0.01)] and for GADA [OR 3.4 (CI 1.1-10.8; p = 0.04)] in logistic regression analyses. Furthermore, the titers of IA-2A were significantly higher (p < 0.01 in Mann-Whitney test) in those children who had got HIB vaccination. When 99th percentile was used as cutoff to identify the children at risk of type 1 diabetes, BCG vaccination was associated with increased prevalence of IA-2A (p < 0.01). We conclude that HIB vaccination may have an unspecific stimulatory polyclonal effect increasing the production of GADA and IA-2A. This might be of importance under circumstances when the beta cell-related immune response is activated by other mechanisms.

**Autoimmunity.** 2003 May;36(3):123. PMID:12911277 No abstract available.

**A causal association between Haemophilus influenzae type b (Hib) vaccine and diabetes.** Halsey NA.

**J Pediatr Endocrinol Metab.** 2003 Apr-May;16(4):495-508. PMID:12793601

**Clustering of cases of type 1 diabetes mellitus occurring 2-4 years after vaccination is consistent with clustering after infections and progression to type 1 diabetes mellitus in autoantibody positive individuals.**

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#### **Abstract**

**OBJECTIVE:** We previously analyzed data from a hemophilus vaccine trial and identified clusters of extra cases of type 1 diabetes mellitus (T1DM) caused by the vaccine that occurred between 36 and 48 months after immunization. Published reports indicate clustering of cases of T1DM occurring approximately 2-4 years after mumps infection. Others have reported a 2-4 year delay between the onset of autoantibodies and the development of T1DM. We attempted to determine whether similar clustering of cases of T1DM occurred after immunization with vaccines other than the hemophilus vaccine.

**METHODS:** We searched MEDLINE and reviewed references from published papers to find databases on the incidence of T1DM and then searched MEDLINE to determine whether changes in immunization occurred in these regions during the times the incidence of DM was being recorded.

**RESULTS:** **Distinct rises in the incidence of T1DM occurred 2-4 years following the introduction of the MMR and pertussis vaccines. A drop in the incidence of T1DM was detected between 3-4 years following discontinuation of pertussis and BCG vaccines.**

**CONCLUSION:** The identification of clusters of cases of T1DM occurring in consistent temporal time periods allowed a link between the hemophilus vaccine and T1DM to be established. The current findings indicate that there are also clusters of cases of T1DM occurring 2-4 years post-immunization with the pertussis, MMR, and BCG vaccine. The data are consistent with the occurrence of clusters following mumps infection and the progression to T1DM in patients with antipancreatic autoantibodies.

Diabet Med. 2002 Dec;19(12):986-93. PMID:12647838

### **Pertussis infection in childhood and subsequent type 1 diabetes mellitus.**

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#### **Abstract**

**AIMS:** Pertussis has been implicated but not proven as a risk for Type 1 diabetes mellitus (DM). Previous studies have investigated paediatric, but not adult-onset Type 1 DM. We investigated association of pertussis exposures and Type 1 DM with follow-up into adulthood.

**METHODS:** Longitudinal analysis of 16 820 members (100 with Type 1 DM) of two nationally representative British birth cohorts (the 1970 British Cohort Study (BCS70) and the National Child Development Study (NCDS)) followed from birth to ages 30 years (BCS70) and 42 years (NCDS). Cox regression analysis with age of onset for Type 1 DM as the dependent variable investigated relationships with pertussis infection and immunization, modelled as time-dependent co-variables. Simultaneous adjustment was made for Wild measles, mumps and chickenpox infections; tetanus and smallpox immunizations; sex, parental social class and cohort. The potential confounding factors were modelled as fixed co-variables.

**RESULTS:** Cox regression analysis produced adjusted odds ratios (ORs) (with 95% confidence intervals (CIs)) of 2.21 (1.35-3.59) and 0.73 (0.49-1.05) for Type 1 DM (with onset at any age) associated with pertussis infections and immunization (trend over number of vaccinations), respectively. Adjusted ORs from Cox regression for Type 1 DM with onset after age 10 years are 2.59 (1.56-4.30) for pertussis infection and 0.63 (0.42-0.94) for pertussis immunization. None of the other infections or immunizations are notably associated with Type 1 DM.

**CONCLUSIONS:** Some pertussis infections may be a risk for Type 1 DM and immunization may confer protection. Further research should consider delayed Type 1 DM following pertussis exposures.

Autoimmunity. 2002 Jul;35(4):247-53. PMID:12482192 & <https://vaccines.net/newpage16.htm>

### **Clustering of cases of insulin dependent diabetes (IDDM) occurring three years after hemophilus influenza B (HiB) immunization support causal relationship between immunization and IDDM. [data from Finland]**

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#### **Abstract**

**OBJECTIVE:** The hemophilus vaccine has been linked to the development of autoimmune type 1 diabetes, insulin dependent diabetes (IDDM) in ecological studies.

**METHODS:** We attempted to determine if the Hemophilus influenza B (HiB) vaccine was associated with an increased risk of IDDM by looking for clusters of cases of IDDM using data from a large clinical trial. All children born in Finland between October 1st, 1985 and August 31st, 1987, approximately 116,000 were randomized to receive 4 doses of the HiB vaccine (PPR-D, Connaught) starting at 3 months of life or one dose starting after 24 months of life. A control-cohort included all 128,500 children born in Finland in the 24 months prior to the HiB vaccine study. Non-obese diabetic prone (NOD) mice were immunized with a hemophilus vaccine to determine if immunization increased the risk of IDDM.

**RESULTS:** The difference in cumulative incidence between those receiving 4 doses and those receiving 0 doses is 54 cases of IDDM/100,000 (P = 0.026) at 7 years, (relative risk = 1.26). Most of the extra cases of IDDM appeared in statistically significant clusters that occurred in periods starting approximately 38 months after immunization and lasting approximately 6-8 months. Immunization with pediatric vaccines increased the risk of insulin diabetes in NOD mice.

**CONCLUSION:** Exposure to HiB immunization is associated with an increased risk of IDDM. NOD mice can be used as an animal model of vaccine induced diabetes.

**Clinical Practice of Alternative Medicine 2001; 2:247-252.**

**The Safety of Military Immunization and the Risk of Insulin-Dependent Diabetes** Classen JB, Classen DC

[Med Hypotheses](#). 2001 Nov;57(5):532-8. PMID:11735306

**Vaccines and the risk of insulin-dependent diabetes (IDDM): potential mechanism of action.**

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**Abstract** Immunization with a number of different vaccines, including live and killed vaccines, has been linked to the development of insulin-dependent (type 1) diabetes in humans and animals. Multiple different mechanisms have been proposed to explain the association between vaccines and diabetes. The current paper reviews multiple different mechanisms by which vaccines are known to manipulate the immune system and can induce an autoimmune disease such as type 1 diabetes. Genetic variability may determine which of these pathways, or possible other pathways, predominate in an individual following immunization.

**Diabetes, May 2000; Vol 49(5), p. A67. Gale Academic Onefile GALE|A62891505**

**"Hepatitis B Vaccine Associated with an Increased Risk of Type 1 Diabetes in Italy."**

Paolo POZZILLI, Natalia VISALLI, Giusy COPPOLINO, David C. CLASSEN and John B. CLASSEN

**Diabetes, May 2000; Vol 49(5), p. A67. Gale Academic Onefile GALE|A62891505**

**"Hepatitis B Vaccine Associated with an Increased Risk of Type 1**

**Diabetes in Italy."**

PAOLO POZZILLI, NATALIA VISALLI, GIUSY COPPOLINO, DAVID C. CLASSEN and JOHN B. CLASSEN

<https://go.galegroup.com/ps/anonymous?id=GALE%7CA62891505&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=00121797&p=AONE&sw=w>

The hepatitis B vaccine (plasma derivate), has been linked to a rise in Type 1 diabetes in New Zealand. The study found a relative risk of 1.6 with a three years follow up. In a US study an increased risk of Type 1 diabetes when the hepatitis B vaccine was given starting after two months was also reported. The odd ratio was 1.9 with an average follow up of 22 months which was similar to the finding in New Zealand.

<https://www.webmd.com/diabetes/news/20000613/hepatitis-b-vaccine-linked-to-onset-of-diabetes#1>

Investigators compared 150,000 children who had been vaccinated at age 3 months to an equal number of unvaccinated children. To assess the risk of developing type

1 diabetes in children who got the vaccine later, after vaccination became mandatory in Italy, 400,000 children who were vaccinated at age 12 were compared with children who had not been vaccinated.

In the group as a whole, the rates of type 1 diabetes were 46 per 100,000 for children who had been vaccinated and 34 per 100,000 for children who had not. For those vaccinated at age 12, the rates were 17.8 per 100,000 for vaccinated children and 6.9 per 100,000 for unvaccinated children.

**Autoimmunity.** 1999;31(1):43-5. PMID:10593568

### **Immunization in the first month of life may explain decline in incidence of IDDM in The Netherlands.** [Classen JB](#)<sup>1</sup>, [Classen DC](#).

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**Abstract** A low cumulative incidence of IDDM was reported in Dutch males born in 1962 (Diabetologia 1992: 35: 139-142) compared to males born in previous or later years. The cause for the decreased risk has not been previously explained. We propose that children born in 1962 during an European smallpox epidemic may have received the smallpox vaccine in the first month of life and this may have attributed to the decreased risk of IDDM in these children. We have shown that immunization with several different vaccines starting in the first month of life prevents diabetes in NOD mice and BB rats (Autoimmunity 1996: 24: 137-145) while immunization at birth with the BCG vaccine is associated with an decreased risk of IDDM in humans (Infectious Diseases in Clinical Practice 1997: 6: 449-454). An even bigger decline in diabetes is seen in rodents and associated in humans when one compares immunization starting in the first month of life to immunization starting after 2 months, since the later has been associated with an increased risk of IDDM. Immunization studies in the past have typically followed patients for only several weeks to determine any unplanned effects on autoimmune disease. Due to the potential benefit of reducing the incidence of diabetes by 50% through age 18 we believe clinical trials are warranted to study the effect of timing of immunization on IDDM.

**BMJ.** 1999 Jan 16; 318(7177): 193. PMCID: PMC1114674 [letter]

### **Public should be told that vaccines may have long term adverse effects**

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#### **Summary**

- Vaccination against *Haemophilus influenzae* type B (Hib) starting after the age of 2 months is associated with an increased risk of type 1 diabetes.
- The increased risk of diabetes in Hib-vaccinated children is greater than the expected decline in complications from *H. Influenzae* meningitis.
- The public should be educated about the long-term adverse effects of vaccines and demand proper safety studies prior to widespread vaccination campaigns.

Editor—Jefferson's editorial about vaccination and its adverse effects mentions our research.<sup>1</sup> We found that immunisation starting at birth was associated with a decreased risk of insulin dependent diabetes, while immunisation starting after age 2 months was associated with an increased risk of diabetes in both rodents and humans.<sup>2</sup> We initiated a collaboration with Dr Jaakko Tuomilehto to study the effect of *Haemophilus influenzae* type b vaccine on the incidence of diabetes. Roughly 116 000 Finnish children were randomised to receive either four doses of the vaccine, starting at 3 months of age, or one dose at 24 months of age.<sup>3</sup> We calculated the incidence of insulin dependent diabetes in both groups until age 10 and in a group that did not receive the vaccine—a cohort that included all 128 500 children born in Finland in the 24 months before the study of the vaccine began.

A conference was held in Bethesda, Maryland, in May 1998 to discuss our data. At the conference we stated that the data on the vaccine support our published findings that immunisation starting after the age of 2 months is associated with an increased risk of diabetes. Our analysis is further supported by a similar rise in diabetes after immunisation with *H influenzae* type b vaccine in the United States<sup>4</sup> and United Kingdom.<sup>5</sup> Furthermore, the increased risk of diabetes in the vaccinated group exceeds the expected decreased risk of complications of *H influenzae* meningitis.

Research into immunisation has been based on the theory that the benefits of immunisation far outweigh the risks from delayed adverse events and so long term safety studies do not need to be performed. When looking at

diabetes—only one potential chronic adverse event—we found that the rise in the prevalence of diabetes may more than offset the expected decline in long term complications of *H influenzae* meningitis. Thus diabetes induced by vaccine should not be considered a rare potential adverse event. The incidence of many other chronic immunological diseases, including asthma, allergies, and immune mediated cancers, has risen rapidly and may also be linked to immunisation.

We believe that the public should be fully informed that vaccines, though effective in preventing infections, may have long term adverse effects. An educated public will probably increasingly demand proper safety studies before widespread immunisation. We believe that the outcome of this decision will be the development of safer vaccine technology.

## References

1. Jefferson T. Vaccination and its adverse effects: real or perceived. *BMJ*. 1998;317:159–160. . (18 July.) [[PMC free article](#)] [[PubMed](#)]
2. Classen DC, Classen JB. The timing of pediatric immunization and the risk of insulin-dependent diabetes mellitus. *Infect Dis Clin Pract*. 1997;6:449–454.
3. Eskola J, Kayhty H, Takala AK, Peltola H, Ronnberg PR, Kela E, et al. A randomized, prospective field trial of a conjugated vaccine in the protection of infants and young children against invasive *Haemophilus influenzae* type b disease. *N Engl J Med*. 1990;323:1381–1387. [[PubMed](#)]
4. Dokheel TM. An epidemic of childhood diabetes in the United States. *Diabetes Care*. 1993;16:1606–1611. [[PubMed](#)]
5. Gardner S, Bingley PJ, Sawtell PA, Weeks S, Gale EA. Rising incidence of insulin dependent diabetes in children under 5 years in Oxford region: time trend analysis. *BMJ*. 1997;315:713–716. [[PMC free article](#)] [[PubMed](#)]

**BMJ**. 1999 Oct 23;319(7217):1133. PMID:10531116 **Free PMC Article** [letter]

## Association between type 1 diabetes and hib vaccine. Causal relation is likely.

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Editor—We initiated and funded a collaborative study with Tuomilehto on the effect of the *Haemophilus influenzae* type b vaccine on type 1 diabetes and found that the data support a causal relation (paper submitted for publication). Furthermore, the potential risk of the vaccine exceeds the potential benefit. We compared a group that received four doses of the vaccine, a group that received one dose, and a group that was not vaccinated. The cumulative incidence of diabetes per 100 000 in the three groups receiving four, one, and no doses of the vaccine was 261, 237, and 207 at age 7 and 398, 376, and 340 at age 10 respectively.

Karvonen et al's analysis is not rational, and their conclusion is not supported by our data.<sup>1</sup> Their calculations of relative risk are also misleadingly low, and we urge readers to check them. Most researchers would compare the group who received four doses with the group that was not vaccinated or the two vaccinated groups with the group that was not vaccinated. The results of both comparisons reach significance. The cumulative difference in cases of type 1 diabetes per 100 000 between those receiving four doses and those who were not vaccinated is 54 cases (P=0.013) at 7 years and 58 cases at 10 years (P=0.029; single tail Fisher test). The relative risk is 1.26 at 7 years. The cumulative difference between those receiving four doses or one dose of the vaccine and those who were not vaccinated is 42 cases (P=0.016) at 7 years and 47 cases at 10 years (P=0.028).

The rise in diabetes, just one potential adverse effect, exceeds the benefit of the vaccine, which has been estimated to prevent seven deaths and 7-26 cases of severe disability per 100 000 children immunised.<sup>2</sup> Even the difference in cases of diabetes between the groups receiving four doses and one dose exceeds the mean expected benefit.

Temporal changes in the incidence of diabetes do not explain the differences since there were an extra 31 cases of type 1 diabetes per 100 000 children aged 5-10, and the incidence of diabetes in this group had been stable for about 10 years before this.<sup>3</sup> Furthermore, sharp rises in diabetes have been recorded in the United States<sup>4</sup> and the United Kingdom<sup>5</sup> after the introduction of the haemophilus vaccine.

Public health officials want to avoid scaring the public, but they risk depriving damaged children of compensation. Denials of safety issues may erode public confidence, especially since diabetes induced by the vaccine may be avoided by starting vaccination a few weeks earlier.

## Footnotes

Competing interests: Methods used in the authors' research (including methods of testing vaccines for the induction of diabetes and methods of giving vaccines without inducing diabetes) are covered by patents owned by Classen Immunotherapies. Dr John Classen holds shares in Classen Immunotherapies; Dr David Classen owns no shares in the company, receives no funding from it, and has no financial ties to it or this research.

## References

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2. Peltola H, Kayhty H, Sivonen A, Makela H. Hemophilus influenza type B capsular polysaccharide vaccine in children: a double blind field study of 100 000 vaccinees 3 months to 5 years of age in Finland. *Pediatrics*. 1977;60:730–737. [[PubMed](#)] [[Google Scholar](#)]
3. Tuomilehto J, Virtala E, Karvonen M, Lounamen R, Pitkaniemi J, Reunanen A, et al. Increase in incidence of insulin-dependent diabetes mellitus among children in Finland. *Int J Epidemiol*. 1995;24:984–992. [[PubMed](#)] [[Google Scholar](#)]
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### Key Points

- Distinct increases in diabetes have been documented in the USA and UK after introduction of childhood Hib vaccination campaigns.
- Children who received 4 doses of Hib vaccine were significantly more likely to develop type 1 diabetes by the age of 7 than children who received no doses of the Hib vaccine (relative risk, RR = 1.26).
- Data confirm a statistically significant causal link between the *Haemophilus influenzae* type b (Hib) vaccine and type 1 diabetes.
- The potential risk of the Hib vaccine exceeds the expected benefit.

[N Z Med J](#). 1996 Sep 27;109(1030):366. PMID:8890866 [NO ABSTRACT IN PUBMED]

**The diabetes epidemic and the hepatitis B vaccines.** [Classen JB](#).

[NZ Medical J](#) 1996 May 24; 109(1022): 195 [letter]

**Diabetes epidemic follows hepatitis B immunization program** [Classen JB](#)

Synopsis by Miller NZ :

In 1988, New Zealand began vaccinating children against hepatitis B. Cases of type 1 diabetes increased from 11.2 cases per 100,000 children in the pre-vaccine years to 18.1 cases per 100,000 children in the post-vaccine years. This amounts to a 62% increase.

[N Z Med J](#). 1999 Aug 13;112(1093):303-4. PMID:10493435 [NO ABSTRACT IN PUBMED]

**Hepatitis B vaccination and diabetes.** [Petousis-Harris H](#), [Turner N](#).

[Behring Inst Mitt](#). 1984 Jul;(75):83-8. PMID:6385957

**Mumps, mumps vaccination, islet cell antibodies and the first manifestation of diabetes mellitus type I.**

[Otten A](#), [Helmke K](#), [Stief T](#), [Mueller-Eckhard G](#), [Willems WR](#), [Federlin K](#).

**Abstract** To connect mumps and diabetes mellitus in children is an old problem in medical literature. The typical occurrence of ICA at the onset of diabetes in children, as well as the incidence of ICA approximately 3 weeks after mumps infection support the hypothesis of a direct relationship between virus infection and diabetes. But the mumps infection alone is not the key factor. Mumps vaccination may not provide protection against diabetes mellitus, it may even provoke it. (Genetic determination, expressed by the HLA-phenotype in all the patients reported, does not allow a differentiation.)

**NZ Miller:** *The mumps vaccine contains an attenuated live mumps virus, providing a plausible connection between mumps vaccination and diabetes.*

[Dev Biol Stand](#). 1979;43:269-72. PMID:520674

**Vaccine induced mumps-like diseases.**

Quast U, Hennesen W, Widmark RM.

**Abstract** Sixteen cases of parotitis and 2 cases of diabetes mellitus after mumps vaccination have been reported since the introduction of the live attenuated mumps vaccine in the F. R. Germany in the fall of 1976. Due to the post-vaccination incubation of 7 to 10 days, support is given to the assumption that these cases are vaccine induced and not coincidental wild virus infections. The diabetes mellitus cases, however, are too few to be included in this rational.