



**HE** Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive



## Hib Booster Catch-Up Campaign

Frequently asked questions for Health Professionals

### What is Haemophilus influenzae?

Haemophilus influenzae is a bacteria that can cause serious infection in humans, particularly in children, but also in individuals with weakened immune systems.

### Are there different types of Haemophilus influenzae?

There are a number of strains of Haemophilus influenzae. Strains are classified as those with capsules and those without capsules. Of the capsulated strains, six capsular types (a-f) are recognised. In the pre-vaccine era, Haemophilus influenzae type B was the most commonly reported strain and was responsible for the most serious infections. The non-encapsulated strains cause mucosal infection (such as middle ear infections, called "otitis media") but rarely lead to serious invasive disease.

### What is Haemophilus influenzae type B?

Haemophilus influenzae type B (also known as "Hib") is just one of six Haemophilus influenzae capsular types. Before a vaccine was available to prevent Haemophilus influenzae type B disease Hib accounted for approximately 80-95% of all strains that caused invasive illness.

The following table may be of use to you when explaining Hib disease to parents.

Invasive disease caused by Hib	Symptoms	Serious Complications
<b>Meningitis/Septicaemia</b>	Fever, refusing to feed, irritable/high-pitched cry in babies, pale or blotchy skin, being difficult to wake, stiff body with jerky movements or else floppy and listless, tense or bulging soft spot on the head.	Fifteen to thirty children in every hundred will develop long-term problems, such as <ul style="list-style-type: none"> <li>■ Hearing disorders</li> <li>■ Learning and language disability or delayed development</li> <li>■ Seizures (fits)</li> </ul> One child in every twenty who develop Hib meningitis will die.
<b>Epiglottitis</b> (inflammation of the epiglottis)	Swelling of the epiglottis causing noisy and painful breathing.	Severe blockage of the airway that can be fatal
<b>Septic arthritis</b> (serious infection in a joint)	Fever, painful, red, hot and swollen joints	Permanent damage to joints Septicaemia (blood poisoning)
<b>Osteomyelitis</b> (inflammation of the bone)	Fever, painful limbs	Long-term bone infection Septicaemia
<b>Cellulitis</b> (bacterial skin infection)	Sore, hot, painful area of skin	Septicaemia
<b>Pneumonia</b> (inflammation of the lung)	Cough, breathing difficulties, chest pain	Septicaemia Can cause death
<b>Pericarditis</b> (inflammation of the membrane that surrounds the heart)	Chest pain, breathing difficulties	Long-term complications Can cause death

### How is Hib transmitted?

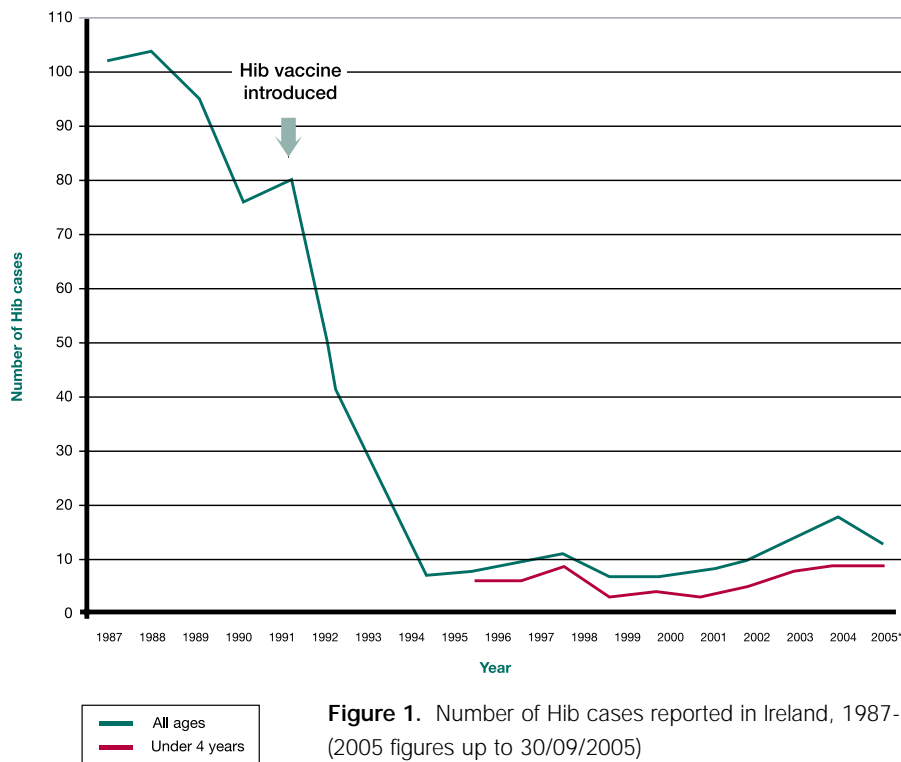
Hib lives in the nose and throat of humans and is transmitted from person to person through respiratory droplets, or contact with respiratory secretions. Hib may be carried around in the nose and throat for a short while or for several months without causing symptoms ("asymptomatic carrier"). In some individuals and particularly those most at risk, Hib will invade the body causing invasive disease (e.g. meningitis, septicaemia).

### Who is most at risk of Hib infection?

Before Hib vaccine was introduced, children under 4 years of age were most at risk from Hib disease. In England and Wales in the early 1990s over 800 cases per year were in children under 4 years of age and the age group most at risk was infants of 6–12 months. Other individuals at risk of Hib infection are those with a malfunctioning spleen, or asplenia (e.g. sickle cell disease, HIV, or other immunodeficiency).

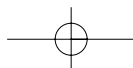
### When was the Hib vaccine introduced?

Since 1992, Hib vaccine has been offered to all children as part of the routine childhood vaccination programme in Ireland. Since July 2001 Hib vaccine is part of the "five-in-one" vaccine (DTaP-IPV-Hib) and is given at 2, 4 and 6 months of age.



**Figure 1.** Number of Hib cases reported in Ireland, 1987-2005\* (2005 figures up to 30/09/2005)

**Note:** Data by age only available since 1996



### How many cases of Hib occur each year in Ireland?

Following the introduction of this vaccine the number of cases of Hib disease in Ireland declined dramatically from approximately 100 cases per year in the late 1980s to 10 cases or less per year by 2002. Within the last year, a small number of cases of Hib disease have occurred in children who have been fully vaccinated.

### What are the numbers of Hib cases in Ireland since 2003?

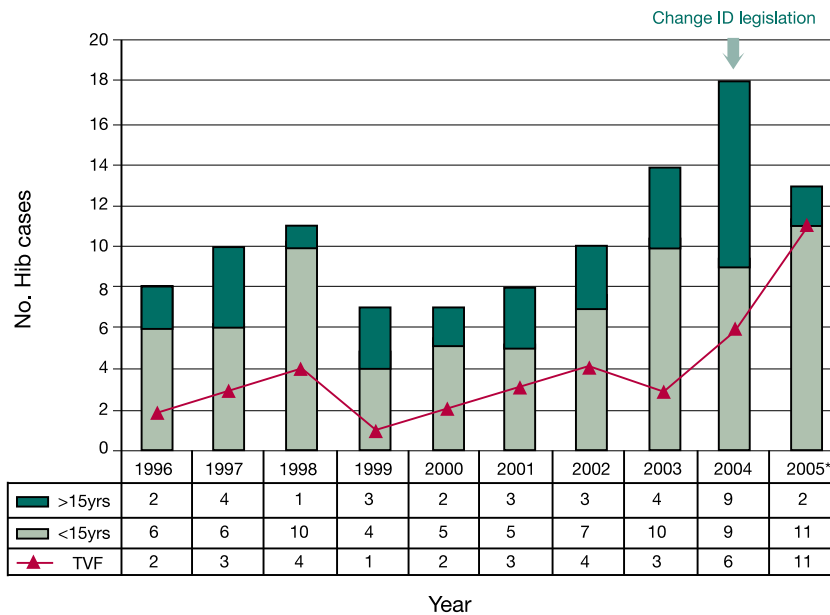
Since 2003, there has been a slight increase in total Hib disease in Ireland. The number of Hib cases in children under 15 years of age has also increased very slightly; there were 7 cases in 2002, 10 in 2003, 9 in 2004 and 11 to the end of September in 2005.

However, there has been a steady increase in the number of cases reported in vaccinated children. From 1996-2003, between 1-4 cases of Hib disease were reported annually in vaccinated children, whereas in 2004 this rose to 6 and, to the end of September 2005 there have been 11 Hib cases in children who have been fully vaccinated. These are referred to as vaccine failures.

### What is a vaccine failure?

A true vaccine failure (TVF) is defined as invasive Hib disease occurring in a child either:

- (i) >1 week after three doses were given when <1 year of age or
- (ii) >2 weeks after a single dose of vaccine was given when >1 year of age.



**Figure 2.** Number of Hib cases in those under and over 15 years of age and the number of Hib vaccine failures, 1996-2005\*

(\*2005 data, up to 30/09/2005)

### **Why are there still cases of Hib despite the vaccine being available?**

This recent increase in vaccine failures in Ireland reflects the experience of other countries such as the United Kingdom (UK) and the Netherlands. In the UK, it was found that the vaccine failures were in part due to a less effective acellular pertussis-Hib combination in the vaccine.

Recent studies have shown that Hib vaccine effectiveness declines significantly after the first year of life; children who received their first dose of vaccine at age 1–4 years in the original UK vaccination campaign (1992) were later found to have much higher antibody levels than those who had been immunised before one year of age.

The resurgence of Hib in the UK peaked in 2002 when the incidence rose to 4.63 per 100,000 in children under five years of age and occurred predominantly in fully vaccinated children. A similar increase was not seen in Ireland at the time. The UK Health Ministry responded to the increase there by launching a Hib catch-up programme in early 2003, offering an additional dose of Hib vaccine to children aged between six months and four years.

### **Why is the HSE now introducing a catch-up programme?**

The Hib vaccine is given at 2, 4, and 6 months to give protection when children are most at risk i.e. at 6-12 months. After 12 months of age the risk of Hib disease steadily declines but children aged 1-4 years continue to be at risk. It now appears that the immunity from the 2, 4 and 6 months immunisations wanes and does not give sufficient protection to some children in this age group. This has been reflected in the fact that the incidence of Hib in the <4 year olds has recently increased in Ireland and cases have been occurring predominantly in children who have been fully vaccinated. In response to this information, the National Immunisation Advisory Committee (NIAC) recommended that a catch-up Hib dose be offered to children to further protect them against Hib infection. The campaign is targeting children aged 1 year to just under 4 years, and any children reaching 12 months during the campaign. The catch-up vaccine is being introduced from November onwards. The campaign will be on-going over the winter months and should be completed in 6 months.

### **What is in the Hib vaccine?**

The Hib vaccine is made from a purified component of the sugar coat of the bacteria. The sugar is then joined to a protein to form what is called a conjugate vaccine. It is not a live vaccine and therefore cannot cause Hib disease.

### **Does the Hib vaccine contain thiomersal (mercury)?**

No, the Hib vaccine does not contain thiomersal.

### **How safe and effective is the Hib vaccine?**

The Hib immunisation programme introduced in October 1992 has had a striking impact in reducing the number of invasive Hib infection in children. The number fell by 90% and cases of Hib disease are now rare. Hib vaccine has been proven to be one of the safest vaccines available. Over 20 million doses had been used worldwide and no serious adverse reactions had been reported. Since 1996 approximately 450,000 children have been vaccinated against Hib disease in Ireland and over that period just 39 cases acquired the disease despite being fully vaccinated. A recent increase in the number of Hib cases in fully vaccinated children has led to concerns that a three dose schedule is no longer sufficient to maintain long-term protection. It has been shown that Hib vaccine efficacy is higher in those immunised at an older age (>12 months), than in children vaccinated routinely as infants.

Hence the decision to run a catch-up campaign for 12–47 month olds. Those children reaching 12 months during the campaign will also be offered the vaccine.

### How long does the protection last after having the Hib vaccine?

Studies demonstrate that giving a single dose of Hib vaccine to children over 12 months of age provides a high level of antibodies against Hib but it is difficult to calculate how long the protection might last because Hib infection is now very rare in older age groups.

### Are there side effects from the Hib vaccine?

**Local:** These include local redness, warmth or swelling at the injection site. Mild local reactions occur in about 20% of children.

**General:** Systemic reactions are uncommon and include fever, irritability, headache, vomiting, diarrhoea and rashes. Seizures have rarely been reported.

Any adverse vaccine reactions (ADRs) should be reported to the Irish Medicines Board via the yellow report card (available on [www.imb.ie](http://www.imb.ie)).

### Are there any reasons why the Hib vaccine should not be given?

**Contraindications:** Previous anaphylactic reaction to any component of the vaccine.

**Precautions:** Immunisation should be deferred in any child with acute febrile illness until the illness has resolved.

Hib vaccine may be given to immunocompromised patients, but adequate antibody levels may not be reached.

### Who needs the Hib catch-up vaccine?

The catch-up campaign is targeting children aged 1 year and not yet 4 years of age, i.e. children born between 2nd November 2001 and 1st November 2004.

The catch-up campaign will run in 3 phases:

PHASE	COHORT	STARTING DATE
1	Children aged 1 year and not yet 2 years i.e. Born between 02.11.2003 & 01.11.2004	21st November 2005
2	Children aged 2 years and not yet 3 years i.e. Born between 02.11.2002 & 01.11.2003	January 2006
3	Children aged 3 years and not yet 4 years i.e. Born between 02.11.2001 & 01.11.2002	February 2006

### What about children reaching 12 months of age during the campaign?

Children reaching the age of 12 months during the campaign (i.e. children born from 2nd November 2004 to 20th May 2005), should be given the Hib booster vaccine.

### Can the Hib vaccine be given at the same time as MMR?

Hib can be given at the same time as MMR, in different sites. Hib vaccine may also be given at any interval before or after MMR.

### What if a child has already received a dose of Hib after 12 months of age?

Any children who have received one dose of Hib after the age of 12 months have adequate protection and do not need a Hib vaccine.

### What about a child between 12-47 months of age who is not immunised or partially immunised?

Any child who is between 12-47 months of age who is non immunised or partially immunised (0,1 or 2 doses of Hib) should receive a single dose of 5 in 1 (DTaP/IPV/Hib).

As one dose of Hib after the age of 12 months gives adequate protection subsequent doses to complete the primary course should be provided as quadrivalent vaccine (4 in 1: DTaP/IPV), as required. At least 1 month should be left between these doses.

### Why is the vaccine not given to children over 4 years of age?

The vaccine is not routinely recommended for those aged 4 years and older because invasive Hib disease is very rare beyond this age. However, it is recommended that, in those individuals with a malfunctioning spleen, or asplenia, (e.g. sickle cell disease, HIV, or other immunodeficiency) irrespective of age, they should be vaccinated against Hib disease as per the schedule.

### Where do I get stocks of Hib vaccine?

Hib vaccine can be ordered through the National Cold Chain Delivery Service in the normal way. Arrangements are being put in place to deliver sufficient amounts to each general practice during the campaign.

### How should the vaccine be stored?

Hib vaccine should be stored at 2-8°C but not frozen.

### What if the brand of Hib vaccine is different from the brand previously given?

When the product brand given in previous doses is not known or not available the catch-up dose can be given with any Hib vaccine currently licensed.

### Will all children in the future receive a booster dose?

The number of Hib cases will continue to be closely monitored to make sure that the catch-up programme is effective. The best way to maintain this protection against Hib in the long-term will then be reviewed.

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[www.immunisation.ie](http://www.immunisation.ie)