

# Developing Treatments



## Treatments for children: Whooping cough

### What is whooping cough?

**Whooping cough**, also known as **Pertussis**, is a highly contagious bacterial infection of the lungs caused by the bacteria, *Bordetella pertussis*.

The disease derives its name from a characteristic severe hacking cough followed in some cases by a sharp intake of breath that sounds like 'whoop'. At the end of a coughing fit the child often vomits thick mucus that the cough clears from the bronchial airways.

Infection can occur at any age but it is most common in those under 5 years of age. The disease is not usually serious in older children, but it can be very serious and can kill babies under one year old. One third of young infants require treatment in hospital.

### Stages of the disease

Doctors and health professionals recognise 4 different stages in the progression of whooping cough. Different treatments were developed to deal with the specific symptoms at each stage.

- **Incubation Period:** 7-14 days.  
No visible symptoms.
- **Catarrhal / Inflammatory stage:** The 7-10 days after incubation.  
Difficult to diagnose. Early symptoms similar to a cold, with a runny nose, mild cough and slight fever. The individual is highly infectious during this stage.
- **Paroxysmal / Spasmodic stage:** End of 2nd week – 4th week.  
The cough is more severe, occurring in spasms, often ending with the vomiting of mucus.
- **Convalescent stage:** 4th – 6th week.  
The cough spasms become shorter and less severe, as the child gets better.

## Treatments for children: Early treatments

The wide variety of medicines used to try to treat or at the very least reduce whooping cough symptoms reveal how medical professionals struggled to find effective treatments before the 20<sup>th</sup> century.

Some of the early treatments for whooping cough seem barbaric by today's standards.

During the **inflammatory / catarrhal stage** expectorant medicines such as garlic and ipecacuanha were used to clear the build-up of mucus from the airways to aid breathing.

Ipecacuanha was used in small doses as an expectorant in the inflammatory first stage of whooping cough, to promote the secretion of bronchial mucus, to aid breathing. Larger doses were used as an emetic to make the patient vomit.

The dried root of the *Cephaelis ipecacuanha* plant was introduced from South America and used in European medicine from the 1700s.

Medical professionals recommended ipecacuanha to treat whooping cough until the 1940s. Giving a patient large doses to cause vomiting and diarrhoea, is now viewed as problematic by doctors due to the importance of the patient receiving good nutrition for making a good recovery from whooping cough.



### **Bottle of Ipecacuanha Powder, 1800s (?)**

Wealthy families often owned medicine chests containing the most useful drugs for various ailments. This bottle of ipecacuanha powder comes from a travelling medicine chest. The powder would have been mixed into a liquid to be swallowed.

### **Bottle of Ipecacuanha Wine, around 1800s, Duncan, Flockhart & Co.**

### **Bottle: 'Pulv:Ipecac:Ver:' (powdered ipecacuanha), 1936-1949**

For the **paroxysmal / spasmodic stage** antispasmodic medicines, like belladonna or grindelia, were administered to reduce the increasing severity of the coughing fits. However paregoric elixir, a narcotic medicine containing opium, was also given to children with whooping cough.

## **Belladonna: c.1520s-1970s**

“Numberless remedies have tried to cure whooping cough, but none have succeeded...The most hopeful remedy is belladonna if given in large doses”. *Haydn's Domestic Medicine*, around 1879

People have used the belladonna herb in medicine from the 1520s onwards. In the treatment of whooping cough belladonna was not to be used until the spasmodic second stage when the secretion (expectoration) of bronchial mucus was freer.

Doctors advised large and continued doses of tincture of belladonna to reduce the severity and number of coughing fits.

Pharmacists and doctors now view belladonna as an outmoded treatment for the symptoms of whooping cough.

### **Bottle for 'TINCT. BELLAD. POISON' (Tincture of Belladonna), 1800s (?)**

This glass shop round would have been used by a pharmacist for storing tincture of belladonna.

### **Bottle for 'Ext. Grindeliae Liq.' (Liquid Extract of Grindelia), 1934 Stafford Allen & Sons Ltd**

“Useful in reducing the frequency and violence of the spasmodic attacks which occur in ... whooping cough.” *The Extra Pharmacopoeia*, 1884

Grindelia has expectorant properties and exerts an antispasmodic effect. Grindelia was used to treat the spasmodic attacks which occur in the spasmodic stage of whooping cough, until the late 1940s.



### **Paregoric Elixir, 1868**

This bottle of Paregoric Elixir comes from a medicine chest. Paregoric Elixir, is a compound tincture of camphor and opium. It worked as a sedative and was believed to ease coughing spasms.

By the 1870s it was viewed by some doctors as dangerous to use on children due to the inclusion of 0.2% of opium.

Doctors used **bleeding and leeching** to deal with complications that could result from severe coughing fits.

The violent coughing fits in whooping cough can cause bleeding in the sufferer's eyes, nose, and in the pulmonary veins in the lungs.

Early doctors advocated bleeding to deal with this complication to “moderate the determination of blood to the head or lungs” that occurred during these severe coughing fits. Doctors either opened a vein using a medical lancet or applied leeches to the forehead, neck or chest.



**LEECH JAR, late 1700s (?)**

This ceramic leech jar would have originally been used for storing live leeches.

## Treatments for children: Proprietary medicines for whooping cough (c.1840 – 1960)

“There is no specific remedy for whooping cough – no drug can check the onset or stop the progress of the disease.” *Quain's Dictionary of Medicine*, 1902.

During the mid 1800s to the mid 20<sup>th</sup> century numerous medicines were manufactured for the treatment of whooping cough. Due to the lack of effective legislation controlling advertising until 1939, manufacturers could claim that a medicine cured any number of diseases. Many of these cure-alls included whooping cough in the diseases they allegedly treated.

Other proprietary medicines focused solely on relieving the symptoms of whooping cough. The ingredients in many of these medicines remained a mystery until the 1940s when all ingredients in medicines had to be declared.

All cough medicines are now considered ineffective by doctors and pharmacists in relieving whooping cough symptoms.

**Photograph shows:**

**Bevington's Drops, circa 1893-1900, Poingdestre and Truman, Chemists**

Bevington's Drops are promoted on the label as being "A certain cure for whooping cough". The packaging reveals how, due to lack of legislation controlling advertising, manufacturers could make unsubstantiated claims about their medicines. The ingredients are not known.

**The Brompton Consumption and Cough Specific and Lung Saver, 1908–1915  
George Hardy & Co.**

The Brompton Consumption and Cough Specific and Lung Saver is an example 'cure-all' medicine which the manufacturers claim on the packaging as "A certain cure" for a long list of respiratory illnesses including whooping cough.

The preparation is labelled a poison because it contains laudanum and chloroform.

**Skuse's Herbal Cough Mixture, 1915-1941, E. Skuse Ltd**

The ingredients are not known.

**Soderseine Electrolytic Solution, 1941-1969  
Soderseine**

The ingredients are not known.

**Bronchotone, 1958-1967, Wade Pharmaceuticals Limited**

Bronchotone is labelled a "respiratory, stimulant, bronchodilator, expectorant, antispasmodic", medicine, "indicated in the treatment of asthma, bronchitis and whooping cough".

The ingredients include ephedrine hydrochloride and tincture of belladonna. Ephedrine is a bronchodilator, and was used to prevent bronchial spasm. It was also given with belladonna to relieve spasms and vomiting in whooping cough in infants.



**Fennings' Hooping Cough Powders, 1916-1946, Alfred Fennings**

Fennings' Hooping Cough Powders contained glycyrrhiza (liquorice) which worked as a demulcent, reducing irritation in the cough. Glycyrrhiza also promotes the secretion of bronchial mucus, aiding breathing.

**Napoleon Cough Cure Powders, 1941-1942, H.R. Napp Limited**

The powders were to be mixed into water or warm milk. The ingredients are not known.

## Treatments for children: Embrocations and liniments

Aside from the proprietary medicines to be taken internally, manufacturers also formulated embrocations and liniments to relieve whooping cough symptoms.

Embrocations and liniments were rubbed into the skin next to the problem. They would have contained oils used to open up the airways and aid breathing. The ingredients in the majority of these preparations are not known. However oil of amber was used extensively as an embrocation to reduce coughing spasms, as was camphor liniment.



### **Lawrence's Liniment, around 1849-1879, W. P. Lawrence**

The ingredients are not known.

### **Dr Bows Liniment, 1891-1908, Dr Bow's Liniment Limited**

Dr Bows Liniment claimed to be, "A certain cure for croup, bronchitis, whooping cough and all affections of the respiratory organs".

Although the formula is not stated on the bottle the ingredients listed in 1915 were ammoniated camphor liniment, belladonna liniment, soap liniment, strong ammonia and tincture of opium.

### **Whooping Cough Embrocation, 1909-1930, Cupal Limited**

Cupal's Whooping Cough Embrocation is labelled as, "A valuable stimulating and soothing embrocation for rubbing on chest and throat in all cases of whooping cough". The ingredients are not known.

### **Homocea Embrocation, around 1933- 1941, HOMOCEA LTD**

The manufacturer's instructions direct, "For whooping cough, rub the embrocation in at the pit of the stomach, along the spine, and all over the trunk of the body". The ingredients are not known.

## Treatments for children: Preparations for inhalation (c.1890 – 1960)

Inhalation was one of the many methods used to relieve whooping cough symptoms. The majority of these medicinal preparations contained ingredients, such as cresol and creosote, derived from wood and coal tar, chosen for their antiseptic and expectorant properties.

The liquid medicines were heated using a vaporiser and vaporised into the air to relieve whooping cough. Other preparations were burnt and the patient inhaled the smoke.

Treatments for inhalation are not considered to be effective now as their antiseptic properties have no effect on the bacteria that cause whooping cough, nor do they alter the course of the disease. Inhaling smoke would also irritate the cough.

### **Vapo-Cresolene Vaporizer, 1923-1940 & Vapo-Cresolene, 1907-1952, Vapo-Cresolene Company**

Vapo-Cresolene inhalant liquid was heated in a Vapo-Cresolene Vaporizer. An advertisement from 1899 claimed that "Children, by simply breathing the vapour of Cresolene, obtain in a few seconds extraordinary relief in whooping-cough and the disorder is rapidly put an end to, generally in a few days".

### **Fumo-Taracine, 1928-1942, The Coal By-Products Company**

Fumo-Taracine is another liquid inhalant that was heated in a vaporiser. The active ingredient is probably coal tar. Coal tar possesses weak disinfectant properties and has been used as an expectorant, to promote the secretion of bronchial mucus and therefore aid breathing.



### **Karswood Creosote, 1896-1913, E. Griffiths Hughes**

Unlike other inhalants Karswood Creosote was not heated in a vaporiser but instead was inhaled from a handkerchief.

Creosote is a liquid obtained from wood tar. It possesses disinfectant properties and would have also been used as an expectorant to promote the secretion of bronchial mucus and aid breathing.

### **Hinksman's Asthma Reliever, around 1967, Hinksman and Forrest Ltd.**

Hinksman's Asthma Reliever, a powder preparation, was placed in a saucer and ignited. While it smoldered the patient inhaled the smoke well into their lungs. The manufacturer also prepared the medication in the form of cigarettes.

The ingredients are lobelia and stramonium. Stramonium was used to relieve spasmodic cough in whooping cough. It also reduced bronchial secretions, aiding breathing. Lobelia was used in preparations aimed at relieving respiratory tract disorders, like whooping cough, by stimulating the breathing.

Smoke inhalation preparations had the major drawback that the smoke could irritate the cough that the medication aimed to relieve.

## Treatments for children: 'Prevention better than cure' – the development of the pertussis vaccine

The development of the pertussis vaccine by scientists throughout the 1930s and 1940s dramatically revolutionised the treatment of whooping cough.

The cause of whooping cough remained unknown until 1906 when scientists isolated the *Bordetella pertussis* bacteria in pure culture and discovered that it caused whooping cough.

Scientists from the Whooping Cough Immunisation Committee of the Medical Research Council held clinical trials from 1948 to 1954 to find the most effective pertussis vaccine.

The introduction of the vaccination program resulted in the majority of the earlier, often ineffective, proprietary treatments for the disease disappearing from sale.



### Vaccination Shield, 1950s, S. B. Limited, London

This vaccination shield was designed to protect a baby's arm after it has been vaccinated. The product consists of an outer circular tube covered in cotton material, the centre is covered in raised wire mesh. The cotton tapes were for tying the shield to the arm.

The design allowed the arm to be protected, whilst allowing the vaccination point to be open to the air allowing it to heal effectively.

### What Was The Impact Of The Vaccine On Infection Rates?

Before the pertussis vaccine was introduced nationally on the NHS in 1957 there were often over 100,000 cases of whooping cough every year in England and Wales. After vaccination was introduced the infection rate fell to around 2,000 cases a year.

### Problems and Controversies of Immunisation

During the 1970s there were reports by the media on the potential risk of 'brain damage' to children following the pertussis vaccine. The result was a subsequent drop in the uptake of the vaccine. This in turn led to an increase in the number of cases of whooping cough between 1975 and 1985.

Scientists now agree that serious side-effects from the vaccine are very rare. As whooping cough is a severe disease the benefits of having a child vaccinated far outweigh the risks of leaving them unprotected.

### The Current Pertussis / Whooping Cough Vaccine

The current whooping cough vaccine is given as part of the DtaP/IPV/Hib jab that babies have at 2 months, 3 months and 4 months old. This jab protects against diphtheria, tetanus, whooping cough (pertussis), polio and Hib (haemophilus influenzae type b).

The acellular pertussis vaccine is an inactive version of the pertussis bacteria / infection. The vaccine prompts the body to produce antibodies to fight the inactive pertussis bacteria. As a result the individual becomes immune to pertussis.

However the vaccine only offers protection for a number of years, this is why since 2001 children between the ages of 3-5 in the UK have been offered a pre-school booster.

## Treatments for children: Use of antibiotics

Doctors now prescribe antibiotics to individuals with confirmed or suspected whooping cough to contain the spread of infection.

In addition to an effective vaccination program, prompt use of the antibiotic **erythromycin** for 14 days shortens the infectious period, potentially reducing the transmission of whooping cough. Scientists believe that after taking antibiotics for 7 days the individual will no longer be infectious.

Unfortunately antibiotics do not alter the course of the disease in the individual already infected, because by the time the disease has been diagnosed the bacteria have already damaged the respiratory tract. However, if treatment is initiated during the early catarrhal stage, symptoms may be less severe.

**Photograph shows:**  
**Erythroped SF, 1994, Abbott Laboratories**

**Erythromycin Sugar Free Suspension, 2001, Abbott Laboratories Ltd.**

Erythroped SF and Erythromycin Sugar Free Suspension are two examples of antibiotic medicines formulated especially for children. Both preparations contain erythromycin, the preferred antibiotic in the treatment of whooping cough. It works by shortening the infectious period in the individual already infected.



## Treatments for children: Non-medicinal treatments

Although the medicinal treatment of whooping cough has progressed greatly over the centuries, the non-medicinal care of whooping cough sufferers has in many ways changed very little from the advice given in medicine chest guides from the 1900s. Contemporary medical guides still emphasise the importance of good nursing, providing comfort and nourishment so that the infant makes a full recovery.