



North East & North Central London HPU

Communicable Disease Policy on:

Pertussis

Note: A re-emerging disease in some developed countries despite high uptake of pertussis vaccine, and remains a major public health problem in developing countries. In the UK, pertussis is well controlled.

Date prepared
Date for revision

17/8/02 (reviewed 01/12/08)
12/09 or before if major developments

Infectious Disease

Policy Overview

Typical scenario	Verbal notification via Microbiologist or clinician Possible delayed notification via the Reference Laboratory
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Main Concern	Early treatment of index case Identification of contacts – specifically identifying under or un-vaccinated children Antimicrobial prophylaxis of contacts
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Action required	1. Assess risk	Is it likely that siblings/other contacts require antibiotic prophylaxis
	2. Further investigation	Identification of symptomatic cases, or asymptomatic contacts that may be incubating the infection.
	3. Control	3.1 Case 3.2 Contacts 3.3 Guidelines for the management of cases & contacts of Pertussis flowchart 3.4 Outbreak control

Further contents in this policy:

- Guidelines for the management of cases & contacts of Pertussis flowchart - page 9
- Disease information - page 11
- New enhanced surveillance test for pertussis – pages 16 & 17
- HPA Enhanced Pertussis surveillance – pages 18 & 19
- School letter for parents – page 20

Other sources of information

- http://www.hpa.org.uk/infections/topics_az/whoopingcough/menu.htm
- http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Greenbook/Greenbookgeneralinformation/DH_4097254
- <http://www.cdc.gov/doc.do/id/0900f3ec80228696>

1. Assess Risk

Aim: To assess/identify at risk individuals in following groups;

- non-immunised infants
- partially vaccinated children
- other vulnerable contacts

2. Further Investigation

2.1 Clinical Case Definition ^{1, 5}

An acute cough lasting 14 days or more with one of the following symptoms and without other apparent cause (as reported by a health professional):

- Whoop
- Paroxysmal cough for more than 7 days
- Post-tussive vomiting or apnoea

2.2 Case classification ²

Probable

Meets the clinical case definition (as above), is not laboratory confirmed, and is not epidemiologically linked to a laboratory confirmed case.

Confirmed

- 1) A case that meets the clinical case definition and is confirmed by saliva test (anti-PT IgG positive)
- 2) A person with an acute cough illness of any duration who is culture positive.
- 3) A case that meets the clinical case definition and is confirmed by PCR.
- 4) A case that meets the clinical definition and is epidemiologically linked directly to a case confirmed by either culture or PCR

2.3 Laboratory diagnosis

The most straightforward method within the community is the salivary antibody test (see note below). However, this is only effective if the specimen is collected between 2 weeks and 8 weeks post onset of cough.

Note:

As of June 07, The HPA Centre for Infections Respiratory and Systemic Infection Laboratory is now providing oral fluid testing (for anti-PT IgG) to diagnose **those who have been coughing for more than two weeks**. The test is particularly suitable for the investigation of all notified cases of pertussis **which have not already been confirmed by other methods** (culture, PCR or serology) by oral fluid methods.

The method of taking the specimen is the same as that used for diagnosis and surveillance of measles, mumps, and rubella (*ie*, brushing along the gumline with the ORACOL saliva collection device (Malvern Medical Developments Ltd). It is suitable and easy for parents to use at home, and to post to the Centre for Infections Respiratory and Systemic Infection Laboratory. For further information see appendix 1 (pages 13 & 14).

Urgent Diagnosis

If an urgent diagnosis is required when the public health risk is high or when rapid protection for individuals, particularly vulnerable contacts is required (e.g. chemoprophylaxis for babies):

Contact the Atypical Pneumonia Unit and speak to Dr Norman Fry - 020 8327 6776 or Dr Tim Harrison 020 8327 6906 **in the first instance.**

3. Control**3.1 Case^{1, 5}**

The spread of Pertussis can be limited by decreasing the infectivity of the case and by protecting close contacts. To reduce the risk of transmission treat primary and other confirmed/probable case(s) if the with onset of cough is within 21 days.

Pregnant women with suspected or confirmed Pertussis should be given treatment for 7 days and started at least 3 days prior to delivery (where feasible).

Treatment of case (confirmed & probable)^{5, 7, 8, 9, 10, 11, 12}**(Also refer to flow chart on page 7)**

Whilst antibiotic treatment shortens the period of communicability, it will not reduce symptoms except when given during the incubation period or early catarrhal stage of the illness

Three days of azithromycin or seven days of clarithromycin are the best regimens

Seven days of trimethoprim/sulfamethoxazole also appeared to be effective for the eradication of B. pertussis from the nasopharynx and may serve as an alternative antibiotic treatment for patients who cannot tolerate a macrolide.

Treatment options:

	Erythromycin	Azithromycin	Clarithromycin
Dose	<p>< 2 years-125mgs PO QDS for 7-14 days</p> <p>2-8 years -250mgs PO QDS for 7 - 14days</p> <p>Over 8 years -250- 500mgs PO QDS for 7-14 days</p>	<p>* < 1 month recommended agent 10mgs/kg OD for 5 days</p> <p>Over 6 months 10 mg/kg OD for 3 days</p> <p>Body-weight 15– 25 kg, 200 mg OD for 3 days</p> <p>Body-weight 26– 35 kg, 300 mg OD for 3 days</p> <p>Body-weight 36– 45 kg, 400 mg OD for 3 days</p> <p>Adults 500mg OD for 3 days</p>	<p>< 8 kg 7.5 mg/kg bd for 7 days</p> <p>1–2 years (8-11kgs), 62.5 mg bd for 7 days</p> <p>3–6 years (12- 19kgs), 125 mg bd for 7 days</p> <p>7–9 years (20- 29kgs), 187.5 mg bd for 7 days</p> <p>10–12 years (30- 40kgs), 250 mg bd for 7 days</p> <p>Adults 250 mg every bd for 7 days</p>
Contraindications	<p>Not preferred for infants < 1 month as associated with infantile hypertrophic pyloric stenosis (IHPS). Pregnancy (not known to be harmful) and breast-feeding (only small amounts in milk).</p>	<p>Pregnancy - manufacturer advises use only if adequate alternatives not available.</p>	<p>Not recommended for infants < 1 month. Pregnancy - manufacturer advises avoid in pregnancy unless potential benefit outweighs risk.</p>

Suspected cases should be excluded from school for 5 days after commencing antibiotic treatment or 21days (3 weeks) from onset of symptoms if untreated.

Immunisation for case (confirmed & probable) ^{4, 7}

When fully recovered:

- Complete primary immunisation if incomplete (up to 10 years of age)
- Give booster if not already given and if aged between 3 years and 4 months to 10 years of age.

For children aged 10 years or over, and adults, immunisation against Pertussis is not recommended.

Immunisation schedule

The current UK vaccine schedule for pertussis is:

- Primary: DTaP/Hib/IPV (Pediace) at 2, 3 and 4 months
- Booster: DTaP/IPV +Hib (Infanrix-IPV+Hib) till 03/03/09 should ideally be given 3 years after the completion of the primary course. Normally given between 3 years and 4 months to 5 years.

Fully vaccinated means:

- 3 primary injections for those under 5 years, and 3 primary injections and a booster for those over 5 years
- Most people born before 1996 did not receive a booster and are therefore not fully vaccinated

For further information please refer to the DOH "Green Book (chapter 24)"⁴

http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Greenbook/Greenbookgeneralinformation/DH_4097254

3.2 Contacts ^{5, 7}

A **vulnerable** contact is defined as:

Someone who lives in the same household as the case or who has stayed overnight in the same room (may not be in the same house, but slept in the same bedroom/area) as the case since the onset of cough:

AND are either:

- A neonate (first 28 days of life)
- A new-born infant born to a symptomatic mother
- An un-immunised or partially immunised child aged 10 years and under
- Immunocompromised when not fully or partially vaccinated regardless of age
- Unvaccinated with asthma (moderate to severe) or congenital heart disease regardless of age

FOR GUIDANCE ON HEALTH CARE WORKER EXPOSURE – SEE SECTION 3.4.2

Treatment of contacts (also see flow chart on page 7)

If there is a vulnerable contact within the household, **every member** of the household should receive chemoprophylaxis regardless of immunisation status and age.

If there are no vulnerable contacts within the household, no chemoprophylaxis should be given to any members of the household.

It is the intention of the guidelines produced to reduce use of chemoprophylaxis. The reason for identifying vulnerable contacts is that the evidence does not support extensive use of chemoprophylaxis if there are no vulnerable contacts.

Chemoprophylaxis for a contact ^{5, 7, 11, 12}

	Erythromycin	Azithromycin	Clarithromycin
Dose	<p>< 2 years-125mgs PO QDS for 7-14 days</p> <p>2-8 years -250mgs PO QDS for 7 - 14days</p> <p>Over 8 years -250-500mgs PO QDS for 7-14 days</p>	<p>* < 1 month recommended agent 10mgs/kg OD for 5 days</p> <p>Over 6 months 10 mg/kg OD for 3 days</p> <p>Body-weight 15–25 kg, 200 mg OD for 3 days</p> <p>Body-weight 26–35 kg, 300 mg OD</p>	<p>< 8 kg 7.5 mg/kg bd for 7 days</p> <p>1–2 years (8-11kgs), 62.5 mg bd for 7 days</p> <p>3–6 years (12-19kgs), 125 mg bd for 7 days</p> <p>7–9 years (20-29kgs), 187.5 mg bd for 7 days</p>

		for 3 days Body-weight 36–45 kg, 400 mg OD for 3 days Adults 500mg OD for 3 days	10–12 years (30-40kgs), 250 mg bd for 7 days Adults 250 mg every bd for 7 days
Contraindications	Not preferred for infants < 1 month as associated with infantile hypertrophic pyloric stenosis (IHPS). Pregnancy (not known to be harmful) and breast-feeding (only small amounts in milk)	Pregnancy - manufacturer advises use only if adequate alternatives not available	Not recommended for infants < 1 month Pregnancy - manufacturer advises avoid in pregnancy unless potential benefit outweighs risk

Three days of azithromycin or seven days of clarithromycin are the best regimens

Seven days of trimethoprim sulfamethoxazole also appeared to be effective for the eradication of *B. pertussis* from the nasopharynx and may serve as an alternative antibiotic treatment for patients who cannot tolerate a macrolide.

Immunisation for a contact ^{4, 7}

- Complete primary immunisation if incomplete (up to 10 years of age)
- Give booster if not already given and if aged between 3 years and 4 months to 10 years of age

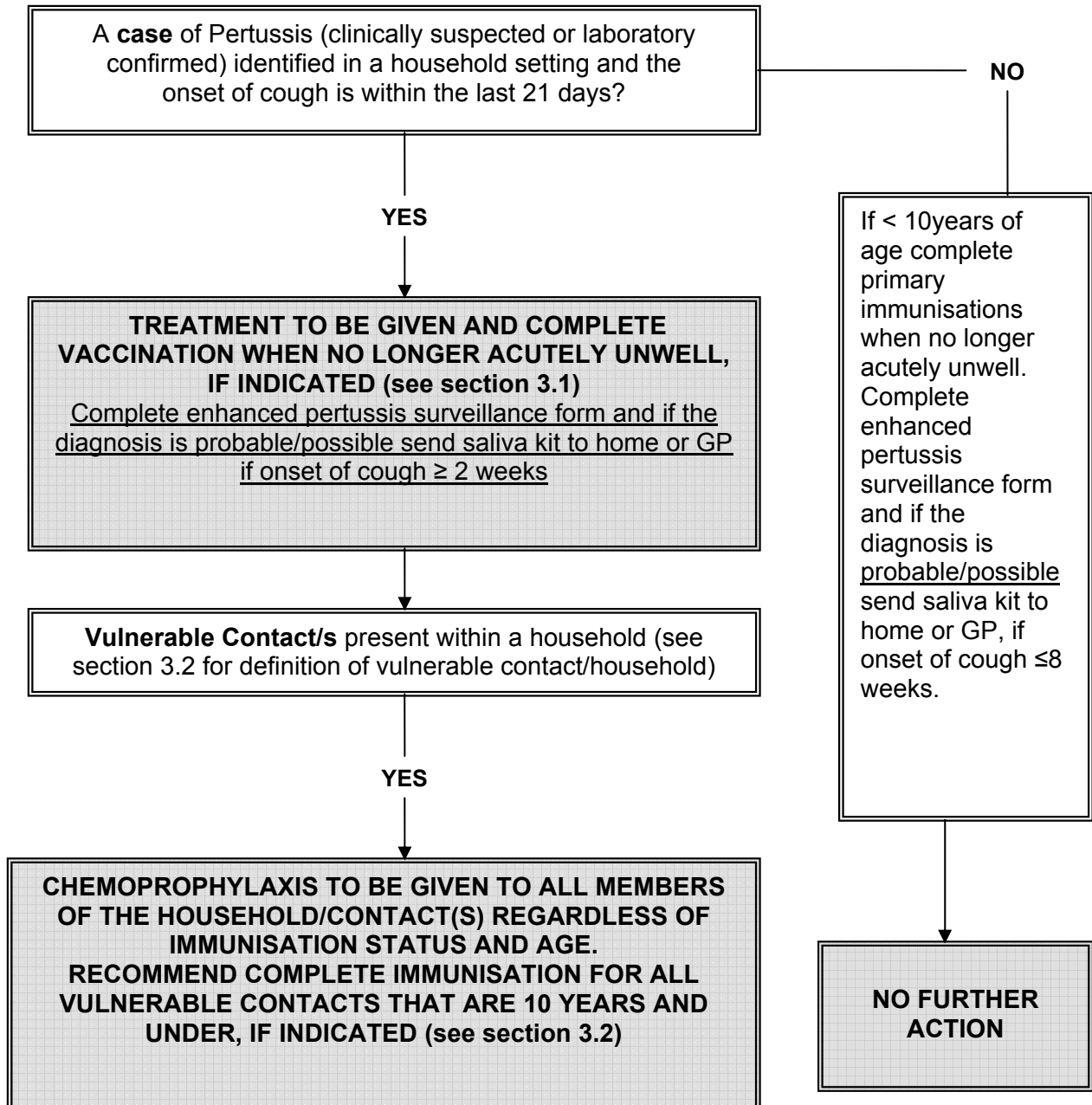
For children aged 10 years or over, and adults, immunisation against Pertussis is not recommended.

For further information please refer to the DOH “Green Book (chapter 24)”⁴

http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Greenbook/Greenbookgeneralinformation/DH_4097254

3.3 Guidelines for the management of cases and contacts of Pertussis – flowchart

(Based on Dodhia H & Miller E 1998¹; Dodhia H, et al 2002⁵; & South Yorkshire HPU Guidelines, (2005)⁷



3.4 Outbreak Control ²

Optimum control strategies for pertussis outbreaks in various settings are not well defined, but the mainstays of pertussis prevention (1) are assuring vaccination of children <5 years of age; (2) early treatment of cases to prevent further transmission; and (3) antimicrobial prophylaxis of contacts of cases.

If cases are occurring among young infants, consideration should be given to lowering the age of vaccination of infants; the first dose of DTaP or whole cell DTP can be given as early as 6 weeks of age, with a minimum interval of 4 weeks between each of the first three doses.

3.4.1 School & nursery setting ⁸

In school outbreaks, provision of antimicrobial prophylaxis to classroom contacts (non-immune) of confirmed cases is recommended, but it is unclear under what conditions more aggressive school-wide prophylaxis should be administered.

During outbreaks, suspected cases should be excluded from school for 5 days after commencing antibiotic treatment or 21 days (3 weeks) from onset of paroxysmal cough if untreated. Contacts without symptoms do not need excluding.

3.4.2 Health care setting ¹²

Nosocomial transmission of pertussis among patients, HCWs, or both pose a high risk of transmission to children without immunity or to patients who are immunocompromised.

Control measure should be implemented when one/more clinically suspected cases/confirmed cases attends a health care setting. Cases should be isolated promptly.

HCWs

- HCWs that have had *transient close contact* with a case and have been directly exposed to large particle droplets/secretions from the respiratory tract of a case around the time of admission to hospital – resuscitation, intubation and suctioning should be given chemoprophylaxis (see section 3.2 for treatment guideline for contacts of probable/confirmed cases).

Health care workers with Pertussis, or health care workers who are symptomatic after exposure to a case, should be relieved from direct patient contact from the beginning of the catarrhal stage through the third week after onset of paroxysms, or until 7 days after the start of effective therapy.

Disease Information^{2, 3}

a) Clinical features

An acute bacterial disease involving the respiratory tract. It is characterised by paroxysmal coughing followed by an inspiratory whoop.

b) Agent

Bordatella pertussis

(Parapertussis, caused by the bacterium *B. parapertussis*, is similar to, although usually milder than pertussis.)

c) Incidence

An endemic disease common to children (especially young children) everywhere, regardless of ethnicity, climate or geographic location. Outbreaks occur periodically

d) Reservoir

Humans are believed to be the only host

e) Transmission

Primarily by direct contact with discharges from respiratory mucous membranes of infected persons by the airborne route, probably by droplets. Frequently brought home by an older sibling and sometimes by a parent.

f) Diagnosis

1. A case that meets the clinical case definition and is confirmed by saliva test (anti-PT IgG positive)
2. A person with an acute cough illness of any duration who is culture positive.
3. A case that meets the clinical case definition and is confirmed by saliva test or PCR.
4. A case that meets the clinical definition and is epidemiologically linked directly to a case confirmed by either saliva test, culture or PCR

g) Pre-exposure Control

Raise public awareness, particularly parents of infants, to the dangers of whooping cough and to the advantages of initiating immunisation at 2 months of age and adhering to the immunisation schedule. This continues to be important because of the relatively rare adverse reactions.

What is Whooping Cough (Pertussis)?

Whooping cough is a respiratory tract infection caused by the bacterium *Bordetella pertussis*.

What are the symptoms?

Whooping cough starts with an irritating cough, cold and a fever. Over the next week the cough gradually changes to one which comes in prolonged bouts over 1-2 weeks. These prolonged episodes of coughing often last for few months. The characteristics of the bouts are that the sufferer has repeated violent coughs without being able to get their breath.

The episodes may be followed by a “whoop” as the person becomes able to breathe again and may also be followed by bouts of vomiting. Adults have a milder illness that lasts two to three weeks. Infants under 6 months are most at risk of complications.

How is whooping cough diagnosed?

Diagnosis is ideally by a saliva test. However if the results are required quickly there may be the need to perform a swab from the back of the nose.

How does whooping cough spread?

Usually by direct contact with discharges from the respiratory tract or by inhalation of airborne respiratory droplets expelled by the sufferer. There are no carriers

How long is the incubation period?

The incubation period is normally 7-10 days, but can be up to 3 weeks.

How long is an affected person infectious for?

Whooping cough is highly communicable during the early stage before the bouts of prolonged coughing begin. This disappears after 3 weeks of illness.

How may the spread of whooping cough be prevented?

Immunisation with pertussis vaccine is the most important method of controlling the spread of whooping cough.

Pertussis vaccine is given at 2, 3 and 4 months of age and combined with diphtheria, tetanus, polio and Hib. A pre-school booster is given to your child when they are between 3 years and four months and 5 years old. This booster vaccination contains pertussis,

diphtheria, tetanus and polio. However if you are under 10 years and have not had any of the infections it is still important to receive the immunisation.

Cases

A known case may be isolated in hospital until they have completed 5 days of a 7 day course of antibiotics (usually erythromycin).

Contacts

Chemoprophylaxis (refers to the administration of a medication for the purpose of preventing disease or infection) can be given to close unvaccinated vulnerable contacts, who may be more at risk from infection

Treatment with antibiotics may be required for **all** household contacts of the case to prevent the spread of this infection to those in the household who may be vulnerable due to age, incomplete immunization history and/or chronic illness. This assessment will be carried out by the Health Protection Unit in conjunction with your GP.

Close contacts who have not received 3 doses of diphtheria/tetanus/pertussis vaccine should be immunised in line with the Department of Health guidance. If you are unsure of these you can visit www.immunisation.nhs.uk and/or speak with your GP or Practice Nurse

7th Floor, Holborn Gate, 330 High Holborn, London WC1V 7PP

Office telephone 020-7759 2860 Fax number 020-7759 2737

Further information:

References:

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7. Health Protection Agency. Guidelines for Chemoprophylaxis and immunisation in persons exposed to Pertussis. February 2005. South Yorkshire Health Protection Unit.
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8. Richardson M, Elliman D, Maguire H, Simpson J, Nicoll A. Evidence base of incubation periods, periods of infectiousness and exclusion policies for the control of communicable diseases in schools and preschools. *Pediatr-Infect-Dis-J* 2001;20 (4):380-91
9. Altunajji S, Kukuruzovic R, Curtis N, Massie J. Antibiotics for whooping cough (pertussis)
Cochrane Database Syst Rev. 2005 Jan 25;(1):CD004404
10. GP notebook www.gpnotebook.co.uk
11. BNF 58 Sept 2008

12. CDC. Guidelines for the Control of Pertussis Outbreaks, 2000 (amendments made in 2005 and 2006). Chapter 3a: Recommended antimicrobial agents for the treatment and post exposure prophylaxis of pertussis: 2005 CDC Guidelines" (Feb. 1, 2006) (original replaced by MMWR) <http://www.cdc.gov/vaccines/pubs/pertussis-guide/guide.htm>

Appendix 1

New enhanced surveillance test for pertussis (June 07)

We are pleased to announce the launch of a new enhanced surveillance test for pertussis. This test is used to estimate IgG antibody levels in oral fluid directed against *Bordetella pertussis* pertussis toxin (PT). A pilot study of testing oral fluid from notified cases of pertussis has been carried out in two areas of the country (Thames Valley and Leicestershire). Follow up of notified cases by oral fluid was found to be acceptable to Health Protection Units, clinicians (mainly G.P.s) and patients. Laboratory confirmation of notified cases was obtained in 46% of oral fluid specimens submitted. This represented confirmation of 22% of all notified cases in the two areas. Total ascertainment of cases by enhanced surveillance in England and Wales increased by 2% nationally as result of this small pilot study.

HPUs should be aware that since 2002 the HPA has been providing a realtime polymerase chain reaction (PCR) service for infants admitted to hospital (now available for < 1yr olds) with suspected pertussis; and sero-diagnosis by detection of raised serum IgG antibodies to pertussis toxin (PT) for patients who have been coughing for 2 weeks or more. Clinicians who are aware of these methods may still be reluctant to take blood in this patient group, so they may content themselves with notifying the infection but not confirming it by laboratory testing. To address this last group, HPA Centre for Infections Respiratory and Systemic Infection Laboratory is now providing oral fluid testing (for anti-PT IgG) to diagnose **those who have been coughing for >2 weeks.**

All HPUs are now invited to promote the investigation of all notified cases of pertussis **which have not already been confirmed by other methods** (culture, PCR or serology) by oral fluid methods.

The method of taking the specimen is the same as that used for diagnosis and surveillance of measles, mumps and rubella. It is suitable for parents to use at home, and to post to the Centre for Infections Respiratory and Systemic Infection Laboratory.

Smooth running of this extension to surveillance will rely on good communication between HPA Cfl Immunisation Department and HPUs, to avoid cases already confirmed by other methods being followed up again. HPA Cfl will inform HPUs of cases they are aware have already been confirmed by culture, PCR or serological methods.

For further information about the laboratory methods please contact the HPA Centre for Infections Respiratory and Systemic Infections Laboratory (telephone 020 8327 7330), or <http://www.hpa.org.uk/cfi/rsil/bordetella.htm>

For further information about the oral fluid kits (which include a brief laboratory request form) please contact the Immunisation Department on 020 8327 7914.


Clinicians will also be asked to complete the enhanced surveillance form as is currently done for cases confirmed by other methods. The information requested for national surveillance matches closely that already collected by HPUs for local purposes.

Graham Bickler (Chair Vaccine Programme Board)

Natasha Crowcroft, Liz Miller, Norman Fry, Tim Harrison, Robert George
(HPA Centre for Infections)

Gillian Smith (LaRS immunisation lead) June 2007

Appendix 2

<p><u>Health Protection Agency</u> <u>Enhanced Pertussis surveillance</u></p> <p>FOLLOW-UP OF NOTIFIED PERTUSSIS OR LABORATORY CONFIRMED <i>B. PERTUSSIS</i> INFECTION</p>	 <p>Form version 1/07</p>
<p>You have been sent this form following either:</p> <p>a) Notification of clinical pertussis <input type="checkbox"/> (An oral fluid swab will be sent out for the patient. Oral fluid should be taken at least 2 weeks after the onset of coughing.)</p> <p>OR</p> <p>b) Laboratory confirmation of <i>B. pertussis</i> infection by culture, serology or PCR <input type="checkbox"/> (An oral fluid swab should not be sent to the patient.)</p> <p>Note: If a case is notified after a laboratory confirmation, you may receive this form twice in error. Please accept our apologies. It is not necessary to fill it in twice.</p>	<p>For HPA use only:</p> <p>Study no.:</p> <p>Date of notification:</p> <p>Date of laboratory confirmation:</p> <p>Date of specimen:</p>
<p><i>Please complete as far as possible, ticking appropriate boxes</i></p>	
<p>PATIENT DETAILS</p>	
<p>Surname: _____ First name: _____ Sex: M <input type="checkbox"/> F <input type="checkbox"/></p> <p>Date of birth: ____/____/____ Age: _____</p>	
<p>PLEASE COMPLETE WITH NAME AND ADDRESS OF GP (or Clinician)</p>	
<p>Name of GP/Clinician: _____</p> <p>Address of GP/Clinician: _____</p> <p>_____</p> <p>Postcode: _____</p>	
<p>CLINICAL HISTORY OF PATIENT</p>	
<p>Date of onset: ____/____/____</p> <p>Duration of cough: <14 days <input type="checkbox"/> 14-21 days <input type="checkbox"/> >21 days <input type="checkbox"/></p> <p>Would you describe the patient's symptoms as clinically typical pertussis? Yes <input type="checkbox"/> No <input type="checkbox"/></p>	

Please indicate if there were any of the following symptoms or complications:

None Paroxysms Inspiratory whoop Post-tussive vomiting Apnoeic attacks

Pneumonia Convulsions Conjunctival haemorrhage Death

Other (describe): _____

Did the patient receive erythromycin (or other macrolide) ? Yes No

If yes, was this: for prevention: Duration of course _____ days Date started ____/____/____

for treatment: Duration of course _____ days Date started ____/____/____

Was the patient admitted to hospital ? Yes No

VACCINATION HISTORY OF CASE

Has the patient been vaccinated against pertussis? Yes No

If yes, how many doses were given **PRIOR** to onset of pertussis?

Dates of vaccination (if available) 1st dose ____/____/____ 2nd dose ____/____/____ 3rd dose ____/____/____

Booster ____/____/____

SOURCE OF INFECTION

In the month before onset, did this case have contact with a known or suspected case of pertussis? Yes No

Not known If yes, please specify where and age of contact: _____

Please add any additional comments:

Completed by (please print): _____ **Signature:** _____

Position held: _____ **Local HPU:** _____ **Date:** ____/____/____

PLEASE RETURN THIS FORM TO:

Prof Elizabeth Miller, Immunisation Department, HPA Centre for Infections
61 Colindale Avenue, London NW9 5EQ
Tel: 020 8327 7914 Fax: 020 8327 7404



Appendix 3

NORTH EAST & NORTH CENTRAL LONDON LOCAL HEALTH PROTECTION UNIT

7th Floor
Holborn Gate
330 High Holborn
London
WC1V 7PP
Tel 020 7759 2860
Fax 020 7759 2737
www.hpa.org.uk

Date:

HPU Case Record Number :

Protect your children against pertussis (whooping cough)

Dear Parent / Carer,

For your information, we have been notified of a suspected/ confirmed case of pertussis at *X School*. As pertussis is infectious, we are anxious to prevent any more cases occurring.

Pertussis begins as a mild upper respiratory infection. Initially symptoms resemble a mild cold, including sneezing, runny nose, low grade fever and slight cough. Within two weeks, the cough becomes more severe and is characterized by episodes of numerous rapid coughs followed by a high pitched 'whoop'.

Immunisation with pertussis vaccine is the most important method of controlling the spread of whooping cough and the safest way that parents can protect their children against pertussis. If your child is not up to date with his/her pertussis vaccinations please arrange this through your GP as soon as possible.

The current UK vaccine schedule for pertussis is:

- Primary vaccinations at 2, 3 and 4 months
- Booster dose is normally given between 3 years and 4 months to 5 years.

For parents who feel they would like more information on pertussis vaccination, we would be pleased to discuss any queries you may have. In addition, more information can also be sourced from

NHS Direct by calling 0845 46 47 or the internet at www.immunisation.nhs.uk

Please contact your GP/Practice Nurse/ School nurses with this letter to arrange pertussis vaccination for your child.

Thank you for taking the time to read this letter.

Yours sincerely,
XXXXXXXXXX