

Measles – Management of Index Case and their Contacts Policy

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Version Control Sheet

Version	Date	Author	Status	Comment
1	-	-	In-active	Information not available.
2	01.2009	Dr C Mitchell	In-active	Applicable to all clinical staff of the Whittington Hospital NHS
3	25.01.12	Infection Prevention and Control Team	Active	Applicable to Whittington Health Integrated Care Organisation (WHO)

1 Introduction

Pathogenesis

Measles is caused by a paramyxovirus. The primary site of infection is the respiratory epithelium of the nasopharynx. Viraemia with subsequent infection of the reticuloendothelial system occurs 2-3 days after invasion. A second viraemia occurs 4-7 days after the initial phase, which may result in infection of the lower respiratory tract and other organs. Measles virus is shed from the nasopharynx.

Case Definition

- Generalised rash lasting for more than 3 days; and
- Temperature in excess of 38°C; and
- Coryza or conjunctivitis.

2 Purpose

The purpose of this policy is to ensure that risk of secondary cases of measles amongst staff and patients at Whittington Health Integrated Care Organisation (ICO) are minimised.

This policy replaces all previous community and hospital based Measles – Management of Index Case and their Contacts policy documents.

3 Duties

3.1 Duties within the Organisation

Chief Executive

The Chief Executive has ultimate responsibility to ensure the control of infection is addressed according to Department of Health directives. This responsibility is delegated to the Director of Infection Prevention and Control (DIPC). The Trust Board is responsible for ensuring that a robust system is in place and there is a clear line of accountability. The DIPC reports directly to the Chief Executive on infection prevention and control matters.

Infection Prevention and Control Team

The Infection Prevention and Control Team are responsible for the provision of an effective infection control service to the ICO; they are responsible for the preparation and implementation of infection control policies and guidelines and are responsible for giving expert advice and training related to all infection control practices. They are responsible for ensuring this policy is raised and reviewed at the Infection Prevention and Control Committee (IPCC) to ensure evidence based guidelines are available for all staff.

Director of Infection Prevention and Control

The DIPC is responsible for developing an organisational strategy for infection prevention and control.

Heads of Services, Departments / Team Leads / Service Managers

Heads of Services, Departments/Team Leads/Service Managers are responsible for ensuring that their staff are familiar with the policy.

All Clinical Staff

All clinical staff must read and understand the policy and incorporate the guidance to help reduce the risk of health care associated infections.

Non-Clinical Staff

Non-Clinical staff should ensure that they are familiar with the policy and be aware of their role in the prevention of health care associated infection in their working environment.

3.2 Consultation and Communication with Stakeholders

This policy has been produced in conjunction with relevant stakeholders.

3.3 Approval of Policy

The IPCC and the Clinical Policies Approval Committee (CPAC).

4 Definitions

Measles – an acute, contagious viral disease, usually occurring in childhood and characterised by eruption of red spots on the skin, fever, and catarrhal symptoms. Also called *rubeola*.

Measles Contacts – person(s) who have come in close proximity to someone suffering from measles.

Isolation – social separation of a person who has or is suspected of having a contagious disease.

Rash – a skin eruption.

Immunisation – the process of inducing immunity to an infectious organism or agent in an individual through vaccination.

5 Development of the Policy

The policy was written by Health Protection Unit staff in collaboration with Whittington Health IPCT using HPA guidance. It has been circulated to IPCC members for approval.

5.1 Prioritisation of Work

This policy has been updated so it can be referred to by all staff working in the ICO.

5.2 Responsibility for Document Development

The Infection Prevention and Control Team (IPCT).

5.3 Equality Impact Assessment

Under the Race Relation (Amendment) Act 2000 the ICO is required to undertake equality impact assessments on all policies/guidelines and practices. This obligation has been expanded to include equality and human rights with regard to disability, age, gender and religion.

The Equality Impact Assessment Tool (Appendix 4) is designed to help the author to consider the needs and assess the impact of this policy/guideline and practice.

6 Measles Management

6.1 Clinical Management

Incubation period: 10-12 days from exposure until prodrome. Period from exposure to onset of rash onset averages 14 days (range 7-18 days).

Prodrome: lasts 2-4 days (range 1-7 days). Characterised by fever followed by the onset of cough, coryza and or conjunctivitis.

Koplik's spots: a rash present on the mucous membranes, which is considered to be pathognomonic for measles. It occurs 1-2 days before the skin rash and lasts for 1-2 days after the rash has faded. Koplik's spots appear as punctuate blue-whitish spots on the bright red background of the buccal mucosa.

Measles rash: maculopapular eruption, which lasts 5-6 days. It begins at the hairline, and then involves the face and upper neck. Over the next 3 days the rash gradually proceeds downwards and outwards until it reaches the hands and feet. The maculopapular rash is usually discrete, but may become confluent particularly on the upper body. Initially lesions blanch under pressure, but after 3-4 days they do not blanch with pressure. Fine desquamation occurs over more severely involved areas. The rash fades in the same order that it appears, from head to extremities. The rash may be difficult to recognise in non- Caucasians.

6.2 Complications

Approximately 30% of reported measles cases have one or more complications. Complications are more common in children under 5 and adults of above 20 years of age. The Centre for Disease Control (CDC) surveillance data from 1985-1992, reported the following incidence of complications (CDC. Measles-United States, 2000. MMWR 2002;51:120-3).

Complication	Reported Frequency
Diarrhoea	8%
Otitis media	7% (almost exclusively in children)
Pneumonia	6% (viral or bacterial supra-infection)
Encephalitis*	0.1% (6 days after skin rash)
Death	1-2/1,000 cases in the USA (60% due to pneumonia)
Subacute Sclerosing panencephalitis (SSPE)	5-10 cases/1,000,000

*Characterised by raised WBCs and elevated protein in cerebrospinal fluid. Fatality 15%, residual neurological damage 25%, seizures 0.6%-0.7% of reported cases.

Measles during pregnancy results in a higher risk of premature labour, spontaneous abortion, and low birth weight infants.

Modified Measles (mini-measles) occurs primarily in patients who received immunoglobulin as post-exposure prophylaxis and in young infants who have residual maternal antibody. It is usually characterised by a prolonged incubation period, mild prodrome, and a sparse discrete rash of short duration.

Measles in an immunocompromised person may be severe with a prolonged course. It may occur without a typical rash and the patient may shed the virus for several weeks after an acute illness.

6.3 Epidemiology of Measles

Occurrence: Worldwide

Reservoir: Human disease

Temporal pattern: Peaks in late winter and spring

Transmission: Primarily person-person spread via large respiratory droplets.

Airborne transmission: Via aerosolized droplet nuclei contributes to spread in confined spaces for up to 2 hours after a person with measles occupied the area.

Communicability: highly communicable >90% secondary attack rates in susceptible persons. Measles may be transmitted 4 days prior to 4 days after rash onset

6.4 Clinical and (CDC and Health Protection Agency) Classification of Measles

A suspect case is a person with a febrile illness accompanied by a generalised maculopapular rash.

A probable case meets the measles case definition and has no or non-contributory serologic or virologic testing and is not epidemiologically linked to a confirmed case.

A confirmed case meets the measles case definition and is epidemiologically linked to another confirmed or probable case; or is laboratory confirmed. A laboratory confirmed case does not need to meet the clinical case definition.

6.5 Laboratory Diagnosis of Measles

There are 3 types of identification tests:

1. Detection of measles antibodies (Measles IgM) in the saliva (salivary test). This test is of value to characterize the epidemiology of the infection.
2. Significant rise in measles IgG by any standard serological assay (enzyme linked immunoassay, HA)
3. **Serum serology for measles IgM antibody should be taken from all suspected cases in the community.**

The salivary test may be obtained from the Microbiology Registrar (ext. 5085, bleep 3069) or the Infection Prevention and Control Team (ext. 3261, aircall). Detailed instructions for taking saliva samples are enclosed within the test packaging.

6.6 Management of Index Case and Contacts

STEP 1 Establish clinical classification and isolate index case

- **In Emergency Department: admit to Cubicle 14**
- On ward: admit to side room (preferably negative pressure room) with door closed.
- Nurse using immunocompetent staff.
- Alert Infection Prevention and Control Team (x 3261).
- Inform the Health Protection Unit on 020 7811 7100 or out of hours 07623 541 417.
- The HPU will require contact details for the case (or parent, guardian, next of kin as appropriate).
- For the case the HPU will also require information on date of onset of rash, MMR history, travel history, contact with other case(s) if known.

STEP 2 Contact Information (if the case was NOT isolated within 15 minutes of arrival into the department)

- Record names of all parent/guardians, siblings/children and record names of staff who were primary contacts.
- Record name, current location, contact number, date of birth, measles history/ MMR status of patients exposed to the case for > 15 minutes.
- Check if contacts are pregnant or immunocompromised.

Children aged > 13 months

- Check the MMR status of exposed children >13 months on the RiO Child Health System (**you will need to check that you can access the RiO records of children outside of Islington!**)
- Children with no history of MMR should be offered vaccination <72 hours post exposure.
- Children aged >18 months with record of one MMR should be offered MMR 2 if more than 4 months since MMR 1 (contact in the community via their GP, in-patients via responsible clinician unless 'live' vaccination is contra-indicated).

Vulnerable Contacts

- Collect name, **current location (ie. hospital ward or in the community, contact number, date of birth, measles history/MMR status of patients exposed to the case for >15 minutes** and discuss with the HPU.

6.7 Contacts (Inside and outside the ICO including out of hours contacts)

During working hours

Infection Prevention and Control Nurses ext 3261 or bleep 2669

ST Doctor in Microbiology ext 5085 or bleep 3069

Dr Michael Kelsey (Consultant Microbiologist) ext 5082

Dr Julie Andrews (DIPC & Consultant Microbiologist) ext 3894

Lead Pharmacist, Antimicrobials	ext 3732 or bleep 3138
Medicines Information	ext 5021
Health Protection Unit	Tel 020 7811 7100

Out of hours

On-call ST doctor in Microbiology	aircall via UCLH switchboard on 020 7387 9300
On-call pharmacist	air call via Whittington switchboard
Health Protection Unit	call 07623 541 417

7 Training

Training delivered by the IPCT:

- Bi-annual update of healthcare staff in Emergency Department.
- Link workers study days.
- And any other approved bespoke training as required.

All training undertaken by members of staff will be recorded on Electronic Staff Record (ESR).

8 Consultation, Approval and Ratification Process

8.1 Consultation Process

This policy is based on previous ratified policies which have been approved by the relevant Stakeholders and will be circulated to the IPCC members for comments.

8.2 Policy Approval and Ratification Process

Approval by members of the IPCC and ratification by CPAC.

9 Dissemination and Implementation

This policy will be available to staff working in the ICO electronically via the intranet.

10 Process for Monitoring Compliance and Effectiveness

10.1 Standards/Key Performance Indicators

The Health Protection Unit, in collaboration with the IPCT, will monitor secondary cases of measles and review compliance with this policy to ensure no possible steps were missed.

10.2 Responding To Issues Relating to Policy Implementation

Actions

The DIPC and the IPCC are expected to read and interrogate any monitoring report presented to identify issues/deficiencies and act upon them. Required actions will be identified and completed within a specified timeframe. All agreed actions pertaining to the above will be recorded in the minutes of the IPCC.

Changes to Practice

Required changes in practice will be identified and actioned within a specific timeframe. The DIPC will take each change forward where appropriate. Lessons learnt will be shared with all the relevant stakeholders. All agreed actions pertaining to the above will be recorded in the minutes of the IPCC.

11 References

Immunisation Against Infectious Disease – ‘The Green Book’ Chapter 21, 2010.

12 Associated Documentation

Appendix 1 – Monitoring Arrangements for Policies

Appendix 2 – Management of Immunosuppressed Individuals Exposed to Measles

Appendix 3 – Management of Pregnant Woman Exposed to Measles

Appendix 4 – Management of Infants Under 9 Months of Age Exposed to Measles

Appendix 5 – Equality Impact Assessment Tool

Appendix 6 – Checklist for the Review and Approval of Procedural Document

Appendix 7 – Patient’s Potential Exposure to Measles

Tool to Develop Monitoring Arrangements for Policies

<p>What key element(s) need(s) monitoring as per local approved policy or guidance?</p>	<p>Who will lead on this aspect of monitoring? Name the lead and what is the role of the multidisciplinary team or others be if any.</p>	<p>What tool will be used to monitor/check/observe/ Assess/inspect/ authenticate that everything is working according to this key element from the approved policy?</p>	<p>How often is the need to monitor each element? How often is the need complete a report ? How often is the need to share the report?</p>	<p>What committee will the completed report go to?</p>
<p>Element to be monitored</p>	<p>Lead</p>	<p>Tool</p>	<p>Frequency</p>	<p>Reporting arrangements</p>
<p>Following identification of an index case, ensuring that the correct procedure has been followed and contact tracing undertaken.</p>	<p>Infection Prevention & Control Team</p>	<p>Measles Contact Tracing Form (as seen in Appendix 7)</p>	<p>Upon identification of an incident/cluster</p>	<p>Infection Prevention & Control Committee</p>

Appendix 2: Management of Immunosuppressed Individuals Exposed to Measles

Individuals with compromised immunity (as defined in Green Book Chapter 6: <http://www.dh.gov.uk/GreenBook>) should be considered for HNIG as soon as possible after exposure.

For individuals with severe defects of cell mediated immunity, HNIG should be considered even in the presence of measurable antibody. **For persons already receiving immunoglobulin intravenous replacement therapy, receipt of a replacement dose within 3 weeks before measles exposure should be sufficient to prevent measles infection.**

All other individuals with immunosuppression who are not already on IVIG replacement therapy should be assessed at the time of an exposure. Since the ability to develop and maintain antibody depends on condition and/or treatment, immunosuppressed individuals should be classified according to Table 1 and then managed as per Table 2.

Table 1: Classification of immunosuppressed individuals

GROUP A	GROUP B
All patients with malignant disease, other than those in group B, until at least six months after completion of immunosuppressive chemotherapy or radiotherapy.	Patients on treatment for Acute Lymphoblastic Leukaemia (ALL) within and until at least six months after completion of immunosuppressive chemotherapy.
Patients who have received a solid organ transplant and are currently on immunosuppressive treatment.	Patients who have received a bone marrow transplant until at least 12 months after finishing all immunosuppressive treatment, or longer where the patient has developed graft-versus-host disease.
Patients receiving systemic high-dose steroids until at least three months after treatment has stopped. This would include children who receive prednisolone, orally or rectally, at a daily dose (or its equivalent) of 2mg/kg/day for at least one week, or 1mg/kg/day for one month. For adults, an equivalent dose is harder to define but immunosuppression should be considered in those who receive at least 40mg of prednisolone per day for more than one week.	Patients with severe primary immunodeficiency (who would not be expected to have made a good initial response to vaccine or disease in childhood).
Patients with immunosuppression due to human immunodeficiency virus (HIV) infection who do not have a diagnosis of AIDS.	Patients with a diagnosis of Acquired Immunodeficiency Syndrome (AIDS).
Patients receiving other types of immunosuppressive drugs (e.g. azathioprine, cyclosporin, methotrexate, cyclophosphamide, leflunomide, anti-TNF alpha and the newer cytokine inhibitors) alone or in combination with steroids, until at least six months after terminating such treatment.	

Table 2: Algorithm for Assessing Susceptibility in Immunosuppressed Contacts of Measles¹

Age group	History	Immunosuppressed Group A	Immunosuppressed Group B*
Born before 1970	Of measles infection	Assume immune	Regardless of history and even if known to be measles antibody positive previously, test ² again at time of exposure. Issue immunoglobulin if measles antibody negative or equivocal. If not possible to test within three days of exposure, offer immunoglobulin. *excluding patients who are already on IVIG replacement therapy for either primary immunodeficiency or severe defects of cell mediated immunity
	No measles infection	Test ² and issue only if measles antibody negative or equivocal.	
Born between 1970 and 1990	Of measles infection	Test ² and issue only if measles antibody negative or equivocal.	
	No measles infection	Test ² and issue if measles antibody negative or equivocal. If not possible to test within six days of exposure, offer immunoglobulin.	
Born after 1990	One measles vaccine	Test ² and issue if measles antibody negative or equivocal. If not possible to test within three days of exposure, offer immunoglobulin.	
	Two measles vaccines	Test ² and issue if measles antibody negative or equivocal. If not possible to test within three days of exposure, offer immunoglobulin.	
	Unvaccinated	Offer immunoglobulin, ideally within three days.	

1. This table **may not apply** to immunosuppressed patients born and raised abroad. For this reason, an individual risk assessment, ideally with rapid IgG antibody testing is recommended. See detailed guidance at: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1238565307587.
2. Measles IgG antibody testing using commercial assays is now available in all HPA Regional Laboratories and in several NHS laboratories. Although not all offer an out of hours or weekend service, antibody testing should be possible within one working day of receiving the serum sample.

Appendix 3: Management of Pregnant Women Exposed to Measles

Pregnant women should be offered HNIG if they have been in contact with a confirmed or epidemiologically linked case and are likely to be susceptible. Assessing susceptibility should be based on a combination of age, history and/or antibody screening (see Table 3). HNIG may attenuate the infection in the mother and, although there is no direct evidence, an attenuated maternal infection is likely to have a reduced risk of foetal loss.

Table 3: Algorithm for assessing measles susceptibility in pregnant women¹

Age group	History	Management of pregnant woman
Born before 1970	Of measles infection	Assume immune
	No measles infection	Assume immune
Born between 1970 and 1990	Of measles infection	Assume immune
	No measles infection	Test ² and issue within six days only if measles antibody negative.
Born after 1990	One measles vaccine	Test ² and issue within six days only if measles antibody negative.
	Two measles vaccines	Assume immune.
	Unvaccinated	Test ² and issue if measles antibody negative. If not possible to test within six days of exposure, offer immunoglobulin.

1. This table **may not apply to pregnant women born and raised abroad**. For this reason, an individual risk assessment, ideally with rapid IgG antibody testing is recommended. See detailed guidance at: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1238565307587.
2. Measles IgG antibody testing using commercial assays is now available in all HPA Regional Laboratories and in several NHS laboratories. Although not all offer an out of hours or weekend service, antibody testing should be possible within one working day of receiving the serum sample.

Appendix 4: Management of Infants under 9 months of Age Exposed to Measles

Infants aged less than 6 months who are contacts of a confirmed or epidemiologically linked case should be given HNIG as soon as possible after exposure if indicated according to criteria in Table 4.

Infants aged 6 to 8 months -a clinical decision to use either HNIG or MMR is required (Table 4). HNIG is preferred where there may be particular reasons to avoid measles (such as underlying lung disease or recent severe illness) or those who are exposed in the household setting when disease may be more severe. Outside of the household, when ongoing exposure from further waves of infection are likely, MMR may be preferred as it should also provide longer lasting protection against subsequent exposures.

Table 4: Algorithm for post exposure prophylaxis in infants of UK born mothers¹

Relevant infant history	Age of exposed infant (completed months)		
	0-2 months	3-5 months	6-8 months
Mother is the index case	HNIG	HNIG	MMR vaccine
Mother is known antibody negative or equivocal	HNIG	HNIG	MMR vaccine
Mother born before 1970	Nothing	HNIG	MMR vaccine or HNIG
Mother born between 1970 and 1984 and has had natural measles	Nothing	HNIG	MMR vaccine or HNIG
Mother born between 1970 and 1984 and is unsure of status	HNIG	HNIG	MMR vaccine or HNIG
Mother has had measles vaccine or born after 1984	HNIG	HNIG	MMR vaccine
Infant born before 32 weeks gestation	HNIG	HNIG	MMR vaccine

1. This guidance **may not apply** to infants of **non-UK born mothers**. For this reason, an individual risk assessment is recommended. See detailed guidance at: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1238565307587.

Appendix 5 - Equality Impact Assessment Tool

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval.

		Yes/No	Comments
1.	Does the procedural document affect one group less or more favourably than another on the basis of:		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	Is there any evidence that some groups are affected differently?	No	
3.	If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?	No	
4.	Is the impact of the procedural document likely to be negative?	No	
5.	If so can the impact be avoided?	N/A	
6.	What alternatives are there to achieving the procedural document without the impact?	N/A	
7.	Can we reduce the impact by taking different action?	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the Director of Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the Director of Human Resources.

Appendix 6 - Checklist for the Review and Approval of Procedural Document

To be completed and attached to any procedural document when submitted to the relevant committee for consideration and approval.

	Title of document being reviewed:	Yes/No	Comments
1.	Title		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	Rationale		
	Are reasons for development of the document stated?	Yes	
3.	Development Process		
	Is it clear that the relevant people/groups have been involved in the development of the document?	Yes	
	Are people involved in the development?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	Content		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
5.	Evidence Base		
	Are key references cited in full?	N/A	
	Are supporting documents referenced?	N/A	
6.	Approval		
	Does the document identify which committee/group will approve it?	Yes	
7.	Dissemination and Implementation		
	Is there an outline/plan to identify how this will be done?	Yes	
8.	Document Control		
	Does the document identify where it will be held?	Yes	

	Title of document being reviewed:	Yes/No	Comments
9.	Process to Monitor Compliance and Effectiveness		
	Are there measurable standards or KPIs to support the monitoring of compliance with and effectiveness of the document?	Yes	
	Is there a plan to review or audit compliance with the document?	Yes	
10.	Review Date		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so is it acceptable?	Yes	
11.	Overall Responsibility for the Document		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes	

Executive Sponsor Approval

If you approve the document, please sign and date it and forward to the author. Procedural documents will not be forwarded for ratification without Executive Sponsor Approval

Name		Date	
Signature			

Relevant Committee Approval

The Director of Nursing and Patient Experience's signature below confirms that this procedural document was ratified by the appropriate Governance Committee.

Name		Date	
Signature			

Responsible Committee Approval – only applies to reviewed procedural documents with minor changes

The Committee Chair's signature below confirms that this procedural document was ratified by the responsible Committee

Name		Date	
Name of Committee		Name & role of Committee Chair	
Signature			

Patient's Potential Exposure to Measles

Please note that exposed patients who may be immunocompromised as a result of infection, steroids, chemotherapy etc, or who might be pregnant are most at risk. Please contact the Infection Prevention & Control Team on extensions 3216 or 2669.

Contact with: Patient name:..... DOB:..... Hosp. No:..... DOA:..... Patient location:..... Rash onset date:..... Date from which case was infectious*..... <p style="text-align: center;">For Occupational Health & Virology use</p>							
NAME [BLOCK CAPITALS] It is important to enter <u>full name</u> , legibly and with the correct spelling	DOB This is vital for us to check previous blood tests	Hospital No./ Bed No.	Admission/ discharge date	Date of earliest contact	History of MMR Yes/No	History of measles yes, date?	Comments

Microbiology Fax 5009

* Measles are infectious from 4 days before the skin lesions first appear & 4 days after they disappear.