

NATIONAL STANDARD METHOD

INVESTIGATION OF NOSE SWABS

BSOP 5

Issued by Standards Unit, Department for Evaluations, Standards and Training
Centre for Infections



Association of Medical Microbiologists



INVESTIGATION OF NOSE SWABS

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STATUS OF NATIONAL STANDARD METHODS

National Standard Methods, which include standard operating procedures (SOPs), algorithms and guidance notes, promote high quality practices and help to assure the comparability of diagnostic information obtained in different laboratories. This in turn facilitates standardisation of surveillance underpinned by research, development and audit and promotes public health and patient confidence in their healthcare services. The methods are well referenced and represent a good minimum standard for clinical and public health microbiology. However, in using National Standard Methods, laboratories should take account of local requirements and may need to undertake additional investigations. The methods also provide a reference point for method development.

National Standard Methods are developed, reviewed and updated through an open and wide consultation process where the views of all participants are considered and the resulting documents reflect the majority agreement of contributors.

Representatives of several professional organisations, including those whose logos appear on the front cover, are members of the working groups which develop National Standard Methods. Inclusion of an organisation's logo on the front cover implies support for the objectives and process of preparing standard methods. The representatives participate in the development of the National Standard Methods but their views are not necessarily those of the entire organisation of which they are a member. The current list of participating organisations can be obtained by emailing standards@hpa.org.uk.

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The HPA aims to be a fully Caldicott compliant organisation. It seeks to take every possible precaution to prevent unauthorised disclosure of patient details and to ensure that patient-related records are kept under secure conditions¹.

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The reader is informed that all taxonomy in this document was correct at time of issue.

Please note the references are now formatted using Reference Manager software. If you alter or delete text without Reference Manager installed on your computer, the references will not be updated automatically.

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AMENDMENT PROCEDURE

Controlled document reference	BSOP 5
Controlled document title	Investigation of nose swabs

Each National Standard Method has an individual record of amendments. The current amendments are listed on this page. The amendment history is available from standards@hpa.org.uk.

On issue of revised or new pages each controlled document should be updated by the copyholder in the laboratory.

Amendment Number/ Date	Issue no. Discarded	Insert Issue no.	Page	Section(s) involved	Amendment
7/ 13.10.08	6	6.1	All 14	All Appendix	ESL replaced with DEST Flow chart inserted

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INVESTIGATION OF NOSE SWABS

Type of specimen: Nose swab

SCOPE OF DOCUMENT

This document describes the processing and bacteriological investigation of nose swabs.

INTRODUCTION

Nasal colonisation with *Staphylococcus aureus* increases the risk of staphylococcal infections at other sites of the body such as postoperative wounds and dialysis access sites². It is also associated with recurrent skin infections and nosocomial infections in nurseries and hospital wards. *S. aureus* is a major cause of morbidity and mortality in haemodialysis patients³ as most patients carry the organism in their anterior nares.

Eradication of nasal carriage of *S. aureus* may be beneficial in certain clinical conditions such as recurrent furunculosis. Systemic, in addition to topical, treatment is appropriate for nasally colonised patients who have infection elsewhere. Topical antibacterial agents such as mupirocin and chlorhexidine/neomycin are preferred to systemic formulations when a patient is identified as a carrier⁴.

Nose swabs may be used to investigate carriage of Lancefield group A streptococcus and Methicillin Resistant *Staphylococcus aureus* (MRSA) ([BSOP 29 - Investigation of specimens for screening for MRSA](#)).

Surveillance screening of neonates may include a nose swab ([BSOP 23 - Investigation of gastric aspirates and infection screen swabs from neonates](#)).

There is no clear evidence regarding the significance of isolating *Haemophilus influenzae* and *Streptococcus pneumoniae* from nose swabs as a predictor of involvement in infections such as sinusitis.

Although nose swabs are not the ideal specimen for the examination of nasal discharge, they are sometimes received. Nasal discharge may be a presentation of diphtheria. However, nose swabs are not routinely cultured for *Corynebacterium diphtheriae*. Nasal swabs should not be taken to investigate the presence of *Bordetella pertussis*⁵.

Rhinoscleroma, due to infection with *Klebsiella rhinoscleromatis*, is a rare form of chronic granulomatous nasal infection affecting the nasal passages and sinuses which can also include the pharynx and larynx^{6,7}. The disease is progressive and manifests itself by tumor-like growths with local extension. Although common in Eastern Europe, Central Africa, Latin America and South East Asia, rhinoscleroma appears to be poorly communicable.

Ozaena (ozena) is a chronic atrophic rhinitis⁶. The condition can destroy the mucosa and is characterised by a chronic, purulent and often foul-smelling nasal discharge. *Klebsiella ozaenae* may have an etiological role.

Rhinosporeidium seeberi, an aquatic protistan protozoan, producing polypoid masses may affect the nasal mucosa of persons living in India, Sri Lanka, parts of SE Asia, America and parts of Europe⁸, including Eastern Europe. Close collaboration between physicians, ENT surgeon, microbiologist and histopathologist is necessary to reach a diagnosis. Superficial swabs are likely to be inadequate; scrapings or biopsy material are most likely to yield the organism ([BSOP 19 - Investigation of sinus aspirate](#)).

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TECHNICAL INFORMATION/LIMITATIONS

N/A

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1 SAFETY CONSIDERATIONS⁹⁻²¹

1.1 SPECIMEN COLLECTION

N/A

1.2 SPECIMEN TRANSPORT AND STORAGE

Sealed plastic bag

1.3 SPECIMEN PROCESSING

Containment Level 2

Laboratory procedures that give rise to infectious aerosols must be conducted in a microbiological safety cabinet

Refer to current guidance on the safe handling of all organisms documented in this NSM

The above guidance should be supplemented with local COSHH and risk assessments

Compliance with postal and transport regulations is essential

2 SPECIMEN COLLECTION

2.1 OPTIMAL TIME FOR SPECIMEN COLLECTION

Before antimicrobial therapy where possible

2.2 CORRECT SPECIMEN TYPE AND METHOD OF COLLECTION

Plain sterile cotton wool swab. Sample the anterior nares by gently rotating the swab over the mucosal surface

2.3 ADEQUATE QUANTITY AND APPROPRIATE NUMBER OF SPECIMENS

N/A

3 SPECIMEN TRANSPORT AND STORAGE

3.1 TIME BETWEEN SPECIMEN COLLECTION AND PROCESSING

Specimens should be transported and processed as soon as possible

3.2 SPECIAL CONSIDERATIONS TO MINIMISE DETERIORATION

Swabs should be transported in Amies transport medium with charcoal²⁰

If processing is delayed, refrigeration is preferable to storage at ambient temperature

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4 SPECIMEN PROCESSING

4.1 TEST SELECTION

MRSA - see [BSOP 29 - Investigation of specimens for screening for MRSA](#).

4.2 APPEARANCE

N/A

4.3 MICROSCOPY

([BSOPTH 39 - Staining Procedures](#))

4.3.1 Standard

Gram stain is not normally indicated but may be useful if rhinoscleroma is suspected

4.4 CULTURE AND INVESTIGATION

4.4.1 Pre-treatment

N/A

4.4.2 Specimen processing

Inoculate each agar plate with a swab (see [QSOP 52 - Inoculation of culture media \(formerly BSOP 54\)](#))

For the isolation of individual colonies, spread inoculum with a sterile loop

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4.4.3 CULTURE MEDIA, CONDITIONS AND ORGANISMS FOR ALL SPECIMENS:

Clinical details/ conditions	Standard media	Incubation			Cultures read	Target organism(s)
		Temp °C	Atmos	Time		
Boils <i>S. aureus</i> carriage	Blood agar	35-37	5-10% CO ₂	16-24 h	≥16 h	<i>S. aureus</i>
Lancefield group A streptococcus carriage	Blood agar	35-37	5-10% CO ₂	16-24 h	≥16 h	Lancefield group A streptococcus
For these situations, add the following:						
Clinical details/ conditions	Supplementary media	Incubation			Cultures read	Target organism(s)
		Temp °C	Atmos	Time		
Nasal diphtheria	Hoyle's tellurite agar	35-37	air	40-48 h	daily	<i>C. diphtheriae</i>
Rhinoscleroma	CLED/ MacConkey agar	35-37	air	16-24 h	≥16 h	<i>K. rhinoscleromatis</i>
Other organisms for consideration - MRSA (BSOP 29 - Investigation of specimens for screening for MRSA)						

4.5 IDENTIFICATION

4.5.1 Minimum level in the laboratory

C. diphtheriae	to species level and urgent (same-day) toxigenicity test
Lancefield group A streptococcus	to Lancefield group level
S. aureus	to species level

Organisms with unusual or unexpected resistance, and whenever there is a laboratory or clinical problem, or anomaly that requires elucidation should be sent to the appropriate reference laboratory.

Note: All work on suspected *C. diphtheriae* isolates which is likely to generate aerosols must be performed in a safety cabinet²²

A medical microbiologist must be informed of all suspected isolates of *C. diphtheriae* as soon as possible (same-day toxigenicity testing is available from the reference laboratory)

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4.5.2 Referral to Reference Laboratories

For information on the tests offered, turn around times, transport procedure and the other requirements of the reference laboratory [click here for user manuals and request forms](#).

Isolates associated with outbreaks, where epidemiologically indicated and organisms with unusual or unexpected resistance and whenever there is a laboratory or clinical problem or anomaly that requires elucidation should be sent to the appropriate reference laboratory.

4.6 ANTIMICROBIAL SUSCEPTIBILITY TESTING

Refer to NSM on Susceptibility Testing ([BSOP 45 - Susceptibility Testing](#))

5 REPORTING PROCEDURE

5.1 MICROSCOPY

5.1.1 Microscopy reporting time

N/A

5.2 CULTURE

Report presence or absence of specific pathogens, also report results of supplementary investigations:

Negatives	" <i>Staphylococcus aureus</i> NOT isolated"
	"Lancefield group A streptococcus NOT isolated"
Positives	" <i>Staphylococcus aureus</i> isolated"
	"Lancefield group A streptococcus isolated"

Also, report results of supplementary investigations

5.2.1 Culture reporting time

Written report: 16 – 72 h stating, if appropriate, that a further report will be issued

Supplementary investigations: toxigenicity testing of *C. diphtheriae*

MRSA - see [BSOP 29 - Investigation of specimens for screening for MRSA](#)

5.3 ANTIMICROBIAL SUSCEPTIBILITY TESTING

Report susceptibilities as clinically indicated

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6 REPORTING TO THE HPA²³ (LOCAL AND REGIONAL SERVICES AND CENTRE FOR INFECTIONS)

Refer to the following:

Individual SOPs on organism identification

Health Protection Agency publications:

"Laboratory reporting to the Health Protection Agency. A guide for diagnostic laboratories."

"Hospital infection control: Guidance on the control of infection in hospitals"

Local Memorandum of Understanding

Refer to current guidelines on CDSC and COSURV reporting

Local guidelines

Isolation of possible *C. diphtheriae* should be reported urgently to the CCDC

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7 ACKNOWLEDGEMENTS AND CONTACTS

This National Standard Method has been developed, reviewed and revised by the National Standard Methods Working Group for Clinical Bacteriology (http://www.hpa-standardmethods.org.uk/wg_bacteriology.asp). The contributions of many individuals in clinical bacteriology laboratories and specialist organisations who have provided information and comment during the development of this document, and final editing by the Medical Editor are acknowledged.

The National Standard Methods are issued by Standards Unit, Department for Evaluations, Standards and Training, Centre for Infections, Health Protection Agency, London.

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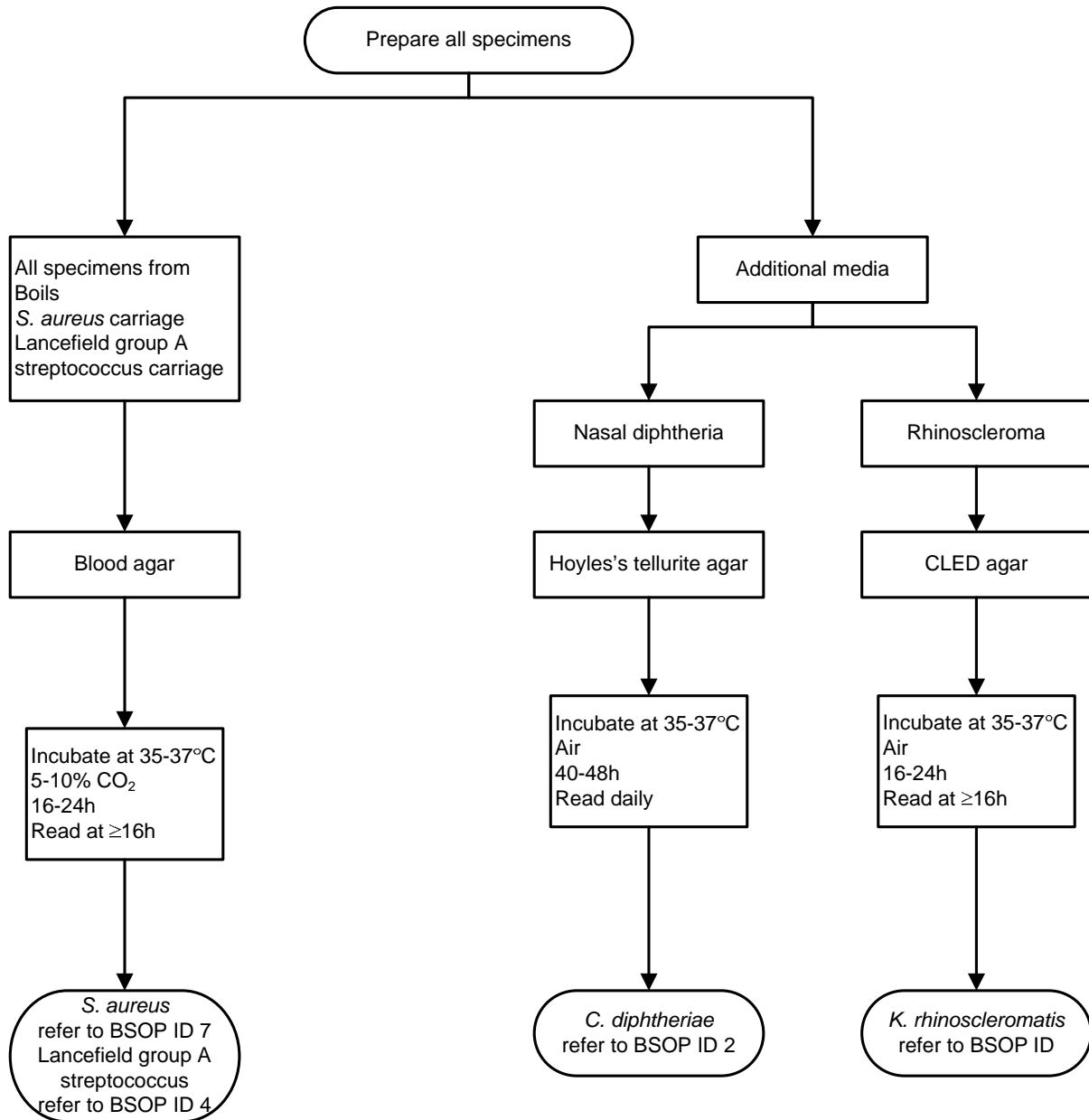
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APPENDIX



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