

Microscopy for Sexually Transmitted Infections Training and Competency Assessment

Contents	Page No
1. Introduction	3
2. The Training Objective	3
3. Departmental Microscopy Trainers	4
4. The Training Period	4
5. Training Materials	4
6. The training programme	6
7. Assessment of competency	7
8. Training and competency development team	7
9. References	8

1. Introduction

Nationally there is no accredited training programme that certifies personnel as competent to perform microscopy in a Genitourinary medicine clinic setting, although there are 2 well-established courses run by the Bacterial Special Interest Group (BSIG) of the British Association for Sexual Health and HIV (BASHH) in brightfield and darkfield microscopy.

This Microscopy Training and Competency assessment programme has been developed following consultation with the multi-disciplinary team (MDT) at Barts and The London NHS Trust and is supported by the NE London HIV & Sexual Health Clinical Network and the BASHH BSIG.

The Log Book can be used by any member of the multi-disciplinary team, i.e. doctors, nurses and lab technicians and has been designed to support the development of microscopy skills and competence. It is intended to provide evidence of completion of training and assessment of competence, and as such may be used to train and assess nurses who provide routine "in-house" microscopy services in GU clinics. It may also prove useful for specialist registrars and specialist laboratory personnel. As training is a continuous process, the training log is designed to be used contemporaneously rather than to be completed at the end of the training period. It can be used to support personal development plans and provide evidence of competence at appraisal.

2. The Training Objective

2.1 Brightfield microscopy:

The trainee should be able to set up the microscope and use it to accurately recognise the appearance of *Neisseria gonorrhoeae*, non-gonococcal urethritis (NGU) and *Candida species*. In addition, the trainee should be able to grade a Gram-stained vaginal smear according to the Ison Hay criteria¹ as endorsed by the BSIG of BASHH and diagnose bacterial vaginosis appropriately. The trainee should also be able to recognise the appearance of *Trichomonas vaginalis* on vaginal "wet mount" preparations.

2.2 Darkfield microscopy:

The trainee should be able to set up the microscope for darkfield microscopy and accurately recognise *Treponema pallidum*. However, it is recognised that many units may not see sufficient cases of primary syphilis to provide training and competency assessment in the actual identification of *T.pallidum*. Departments may wish to send trainees on the BSIG dark ground microscopy course to gain experience in this area.

In-service training should provide experience sufficient for a trainee to become competent in all aspects of microscopy. The trainee should be conversant with the ethics of his/her profession and keep up to date with health and safety requirements and relevant scientific literature.

3. Departmental Microscopy Trainers

A Registered Nurse or Doctor with at least one year's experience in microscopy should be identified to oversee the training of individual trainees. A Microscopy Trainer must have attended the BASHH Microscopy Course or have received equivalent training and be familiar with the content of the theoretical training, be competent in the provision of microscopy training and have experience in teaching and mentoring staff.

4. The Training Period

There is no minimum training period however the maximum time for completion of the Log Book competency section (appendix 2) would normally be 3 months after the end of the training period. A longer period of time may be required in some instances, e.g. in smaller training centres and this should be at the discretion of the microscopy trainer. If the microscopy trainer has concerns at any stage of the training or competency assessment programme, s/he should consult with the named line manager.

There is no requirement that the trainee should have previous experience in microscopy however all training should be carefully planned and the trainee should be aware of how competence is to be achieved within the training period. Once a trainee has been signed off as competent, a period of 3 – 6 months supervised practice should follow.

All persons assessed as competent to perform microscopy should attend a regular update session and audit their practice against BASHH standards eg the standard for diagnosis of gonorrhoea by urethral Gram-stain in men.² every three to five years. Trainees should also participate in the quality assurance procedures for their individual clinic laboratory on an on-going basis.

5. Training materials

5.1 BASHH DVD

It is recommended that the trainee familiarises him/her self with the educational DVD "Microscopy for Sexually transmitted Infections" (STIs) produced by the BSIG of BASHH.² Use of the DVD can contribute towards theoretical training. The trainee should also be familiar with individual departmental microscopy guidelines.

5.2 Slide library

Every department of GU medicine should maintain an up-to date library of Gram-stained slides for teaching purposes. This should contain at least two good examples of marked slides that illustrate each of the organisms, spores and grades of vaginal flora listed in table 1 below. Library slides should not be incorporated into a test set of slides used to assess competency.

Table 1	Slide library
Polymorphs	From a variety of anogenital sites, e.g. male urethral, female cervical, rectal
Epithelial cells	
Yeast cells	
Pseudo mycelium	
Gram positive cocci	
Intracellular Gram negative cocci	from a variety of ano-genital sites, e.g. (male urethral, female cervical)
Extra cellular Gram negative cocci	from a variety of ano-genital sites, e.g. (male urethral, female cervical)
spermatozoa	
Grade 0-4 vaginal flora (Ison- Hay)	
mobiluncus	
Ungradeable vaginal Gram-stained smears	
Red blood cells	
Poorly stained slides	
Staining artefacts	

Wet preparations containing normal findings and evidence of *T.vaginalis* infection will need to be shown to the trainee on a rolling basis as they appear in clinic as a fresh preparation is needed to identify *T.vaginalis* infection.

6. The training programme

6.1 Introductory training course

Before attending introductory training, trainees should become familiar with:

- Basic cell structure and function

- Health & Safety requirements for the laboratory with specific reference to departmental safety policies
- Departmental Microscopy guideline

During introductory training, the trainee should undergo

- theoretical training (either via lectures or through use of the BASHH microscopy DVD).
- Instruction in preparation of slides for microscopy and how to perform a Gram stain
- Instruction regarding the components of a microscope and how to set it up for use

The training should be recorded in the training log (appendix 1)

6.2 In-service training and completion of the training log

During the training period the trainee will be required to demonstrate suitable knowledge of the following:

- local laboratory health and safety requirements
- quality assurance issues
- sample taking and preparation issues

In addition, on 3 separate occasions, the trainee will be required to:

- Perform a microscope set up for bright field microscopy
- Demonstrate how to perform a Gram-stain
- Prepare a suitable "wet" preparation
- correctly recognise the brightfield microscopic appearance of all of the conditions listed in table 1.
- Correctly identify *T. vaginalis* on 3 separate occasions in vaginal "wet mount" preparations*
- Perform a microscope set up for dark field microscopy
- Correctly identify treponemes* (oral treponemes may be considered for use if there are no treponema pallidum available)

(*subject to availability)

This period of in-service training should be recorded on the training log located in appendix 1.

7. Assessment of competency

To achieve competency the trainee must demonstrate proficiency and appropriate knowledge in the all of the training areas. Single assessments will be carried out in the following areas:

- identification of individual components of the microscope
- microscope set up for brightfield microscopy
- Laboratory health and safety

- quality assurance
- specimen collection and slide preparation
- demonstration of the Gram-stain technique
- use of the microscope for brightfield microscopy
- use of the microscope to examine wet preparations
- microscope set-up for darkfield microscopy
- use of the microscope for darkfield microscopy

The identification of microscopy findings and the action required, if appropriate, will be assessed on 3 separate occasions for each microscopy finding/genital condition, as identified in sections 9 and 10 of the competency assessment record (appendix 2). The record should be completed as each assessment is carried out.

Guidance for preparing and marking “test sets”

Test slides

Test sets should be composed of well-stained slides that provide good example of the features that the trainee is required to identify, as laid out in table 1.

Test slides should include specimens from various anogenital sites showing normal and abnormal Gram-stained smears. Positive wet slides for *T. vaginalis* can be assessed as and when they become available in the clinical setting. In some settings, where TV is rarely seen, a single identification will suffice for competency purposes. Slides from the slide library should not be used in any formal competency assessment.

8. Training Log Development Team

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This Log Book is based on the format of the NHSCSP Cervical Cytopathology Training Log developed by the NHS Cervical Screening Programme.

9. References

1. Ison CA, Hay PE. Validation of a simplified grading of Gram stained vaginal smears for use in genitourinary medicine clinics. *Sex Transm Infect.* 2002 Dec;78(6):413-5
2. Microscopy of Sexually Transmitted Infections. BASHH. Available from www.bash.org/