

## **Taking Conjunctival or Corneal swabs**

It is a general rule that tests should only be carried out if they are necessary and they are only necessary if the result of the test will have an effect on the treatment or care of the patient. For most patients presenting with conjunctivitis, this is not the case. Viral conjunctivitis is self limiting and even in acute bacterial conjunctivitis, where the patient is treated with topical antibiotics, the chances that an individual will benefit from the treatment is very small as the condition is also self limiting (Sheikh and Hurwitz 2006, Jefferis et al 2011).

It is for this reason that the National Institute for Health and Care Excellence in the UK (NICE 2012) states that 'when infective conjunctivitis is hyperacute or persistent, a swab should be taken. Swabs are not usually useful in acute infective conjunctivitis'. Hyperacute bacterial conjunctivitis is an infection which develops quickly and is characterised by copious, purulent discharge, eyelid swelling, and chemosis that develops over 12 to 24 hours and is usually caused by *Neisseria gonorrhoea* (BMJ 2011) Persistent conjunctivitis is likely to be chlamydial.

Although BMJ (2011) and Udeh et al (2008) suggests that rapid adenovirus immunoassay or point of care testing for adenovirus (rather than swabbing) would ensure that antibiotics were not given inappropriately, the diagnosis of viral rather than bacterial conjunctivitis is very straightforward by clinical signs, symptoms and examination without the use of such tests and this is highlighted by the NICE guidance

There are several indications for taking swabs for the identification of organisms from the conjunctiva and cornea including situations where *Neisseria gonorrhoea* infection or chlamydia is suspected, for the identification of herpesvirus infections of cornea or conjunctiva and where fungal infections are suspected. Surveillance during an outbreak of particular types of adenovirus causing keratoconjunctivitis such as possible type 8 outbreaks, many of which are nosocomial may require swabs to be taken.

It is difficult to ascertain with any degree of certainty how much the processing of eye swabs costs but two sources found suggest around £10 (moss side medical centre 2013, NHS Fife 2010).

### **General points**

- Swabs should be taken before the instillation of fluorescein as it inhibits bacterial growth and viral PCR (Roy et al 1998 Goldschmidt et al 2006 ).
- Bacterial swabs should also be taken before the instillation of topical anaesthetic and it should not be used to facilitate swabbing as it inhibits bacterial growth Pelosini 2009).
- The action of taking viral and chlamydial swabs may be most uncomfortable and corneal swabbing must be facilitated by the instillation of topical anaesthetic however, topical anaesthetics also inhibit viral testing (Goldschmidt 2006). Pelosini et al (2006) found that proxymetacaine 0.5% is the least inhibitory on bacterial growth and is therefore the most appropriate to be used before vigorous conjunctival swabbing and taking corneal swabs and scrapes. Wölfel et al (2006) suggest that after the topical anaesthetic has taken effect, any residue should be washed out of the eye intensively as even a 1/16 solution inhibited PCR.

## The process

- Identify the correct culture medium and swab stick.
  - Calcium alginate or cotton swabs, or swabs with wooden sticks may contain substances that inactivate some viruses and inhibit PCR testing (CDC 2013, WHO 2006)
- Identify the patient, explain what the process is and what you are swabbing for and get informed consent. It is not good enough to just talk about 'swabs'. Potentially difficult conversations about chlamydia have to take place. It may feel difficult for the clinician, but the patient's consent is not informed if they don't know what you are looking for and just because it's difficult doesn't mean it can be avoided! Discussion allays fears and anxieties about the procedure.
- Label the media and if swabs from both eyes are to be taken, label right and left and take separate swabs for each eye.
- Wash hands at the beginning and end of the procedure and at any point where hands become contaminated.
- The patient should be sitting at an appropriate height for the nurse's and patient's safety and if possible, the head should be well supported.
- Ask the patient to look upwards to protect the cornea.
- Bacterial swabbing is intended to collect free bacteria within discharge and on the tissue. Some sources (Leeds 2013) suggest that obvious pus should be wiped off before swabbing takes place. The action of collecting this can be relatively gentle. Swab firmly along the lower fornix from the nasal side outwards; from the inner towards the outer canthus rotating the swab to collect any discharge. This sweeps organisms away from the lower punctum and picks up as many as possible.
- Virus is only found inside cell bodies so swabbing needs to be more vigorous to collect cells from the tissue. Rubbing the swab vigorously over the conjunctival surface of the lower fornix and the upper lid after eversion is likely to be most effective (Field et al 2009, Wolfel et al 2006)
- The area for chlamydia swabbing must be free from mucous and pus. Chlamydiae are intracellular prokaryotic parasites so again, cell bodies must be collected rather than discharge. Swabbing must be vigorous, as in the case of virus collection, above.
- Corneal swabs should be taken very carefully to ensure that no unnecessary tissue is disturbed or damaged. This should be undertaken at a slit lamp
- Place stick in culture medium and break off if necessary. Securely cap media.
- As, particularly in the case of viral and chlamydial swabs and corneal swabs, sensitive tissue has been damaged, the patient needs to know that the eye

may feel uncomfortable for a while. Field et al (2006) suggest that it is good practice to instil a drop of an artificial tear to aid comfort after the procedure.

- Wash hands
- Label bottles correctly
- Inform the patient about the timescales for reporting. Let them know whether you will be in touch with them, or not (for example if the organism is not found) and what may happen if you do (for example, a referral to a sexual health clinic for treatment of chlamydia).
- Transport correctly
  - Where gonococcal infection is suspected, this should be stated on the request form and eye swabs should not be refrigerated as N. gonorrhoea is unlikely to be recovered after refrigeration (<http://www.pathology.leedsth.nhs.uk/testandtubes/ShowTest.asp?ACT=ShowTest&TestID=611>).
  - Generally, most laboratories state that viral and chlamydial swabs should be refrigerated (focusdx 2913m centracare2013, allinahealth 2013).
  - Bacterial swabs can be kept at room temperature and this aids the laboratory who will incubate the swab at 35-37 degrees Celsius (Allinahealth 2013, lifelabs 2013).

## References

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