

Pearls for Pragmatic Microbiology in Your 21st-Century Ophthalmology Practice

Courtesy of the University of Pittsburgh Department of Ophthalmology and the Charles T. Campbell Ophthalmic Microbiology Laboratory

- <http://eyemicrobiology.upmc.com> (search for *eye microbiology*)

General:

1. The majority of microbiology laboratories are not ophthalmic laboratories and are not necessarily accustomed to the nuances to handling ocular specimens and testing. Communication with your local microbiology laboratory in advance of requesting testing is, therefore, critical.
2. Obtaining a quality smear can be critical to early and appropriate treatment of keratitis and conjunctivitis.
3. Laboratory antibiograms are useful to help guide empiric antibacterial therapy. However, topical antibiotic susceptibilities are derived from systemic standards. Resistance is over-reported and clinical response is more important.
4. A transport medium like Bartels ChlamTrans™ is useful for culture and PCR of both ocular viruses like adenovirus and Herpes family viruses as well as PCR of Chlamydia and Acanthamoeba.
5. Fungal PCR has not yet been validated for clinical use.
6. Anti-fungal susceptibility testing is not routinely performed but can be obtained if needed for refractory infections.

Keratitis:

7. If you do not know what you are treating, do not start steroids. It can especially worsen fungal and Acanthamoeba infections.
8. Topical natamycin is generally superior to voriconazole for filamentous fungi.
9. Herpes simplex should be in your differential for recurrent corneal erosions.

Acanthamoeba:

10. Culture isolation for Acanthamoeba is equivalent to PCR testing.
11. Acanthamoeba should be in your differential for corneal epithelial dendritiform lesions, and debridement can be both diagnostic and therapeutic.
12. Acanthamoeba infections do not have to be painful.
13. Acanthamoeba infections can be associated with contact lens or case exposure to tap water.

Boston type 1 keratoprosthesis:

14. These patients are at high risk of infection. Surveillance contact lens cultures can be beneficial to guide antibiotic prophylaxis and detect early infection.
15. Intrastromal injection of antimicrobial agents can maximize drug delivery and potentially prevent intraocular spread of infection.
16. The Endophthalmitis Vitrectomy Study criteria do not apply for keratoprosthesis associated endophthalmitis. Early pars plana vitrectomy is critical in these infections.

Infectious uveitis and chorioretinitis:

17. An anterior chamber tap for PCR can be useful for viral uveitis or chorioretinitis.
18. Large vitreous samples or “biopsies” may assist in diagnosis, and obtaining an undiluted sample may be important in certain situations.
19. Vitreous fluid testing should be directed by pre-operative differential diagnosis as there is limited sample volume.
20. Communication with your lab **prior** to obtaining sample is important.

Blepharitis:

21. Lid margin cultures are useful in the management of refractory blepharitis as well as in the diagnosis of keratitis and intraocular infections.
22. Clinical studies are pending but hypochlorous acid 0.01% (Avenova) is a well-tolerated, broad-spectrum topical antimicrobial agent that can improve lid margin health.
23. Demodex is an under-recognized cause of chronic blepharitis. Tea-tree oil scrubs (ex. Cliradex or Blephadex) as well as topical and/or systemic ivermectin are among the treatment options.

Conjunctivitis:

24. Culture and/or PCR can be useful when the diagnosis is in doubt.
25. Topical corticosteroids should only be used if patient has conjunctival membranes and/or reduced vision due to bilateral subepithelial infiltrates.
26. Non-steroidal anti-inflammatory agents, topical cyclosporine 1%, or other immunomodulatory agents may prevent recurrence following tapering of the corticosteroids.