
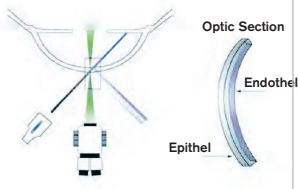
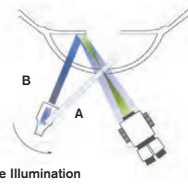
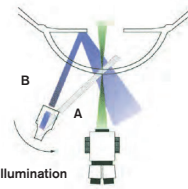
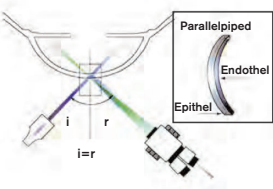
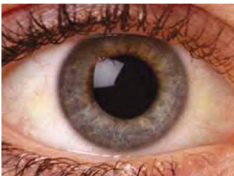

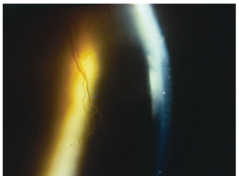
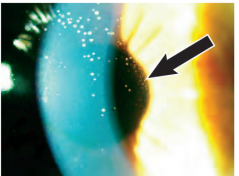
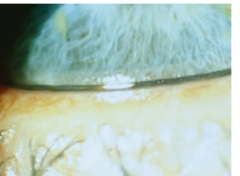
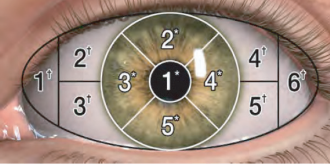


Slit Lamp Illumination Techniques

Diffuse	Direct Focal	Direct Retro	Indirect Retro	Specular Reflection
				
Overview of lids, lashes, ocular surface	Detail view and localisation of opaque or translucent objects	Detail view of transparent, translucent or refractile objects	Detail view of transparent, translucent or refractile objects	Endothelium & regularity, smoothness of flat surfaces
				
Clear, quiet eye	Subepithelial Scar	Blood Vessels	Mucin Balls	Tear Prism

Staining & Lid Assessments

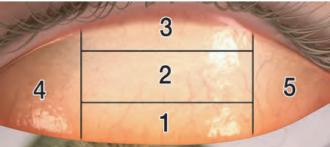
Staining Assessment Zones¹

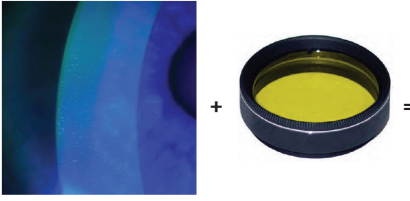


* corneal zones (5), † conjunctival zones (6)

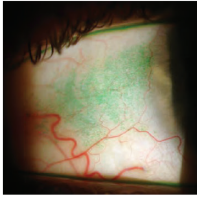
	Sodium Flourescein	Lissamine Green	Rose Bengal
Key Uses	Tear stability, integrity of CORNEA and conjunctiva, lid roughness	Integrity of CONJUNCTIVA, cornea and dry eye assessment	Integrity of CONJUNCTIVA, cornea and dry eye assessment
Comments	Use cobalt (blue) light with yellow filter in observation path	Use white light with optional rose filter in observation path	Use white light. (NOTE: Lissamine Green, if available, avoids stinging associated with Rose Bengal)

Lid Assessment Zones²

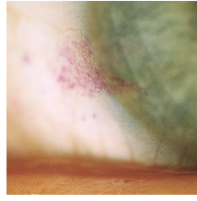




Fluorescein illuminated by cobalt (blue) light + Deep yellow filter in optical path = Enhanced visibility of staining & tears



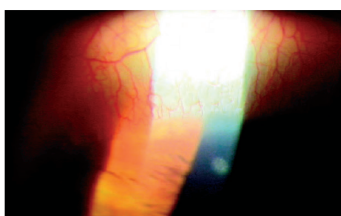
Lissamine Green



Rose Bengal

Corneal Inflammation vs. Infection³

	Inflammatory Event	Microbial Keratitis
Pain	Mild	Moderate - Severe
Location	Usually peripheral	Often central
Staining to defect size	< 1:1	~ 1:1
Anterior Chamber Reaction	Usually none / mild	Cells &/or hypopyon
Injection	Localised, mild-moderate	General, moderate - severe
Appearance of infiltrates	Often multiple, smaller, round or oval, grey-white, translucent	Usually single, irregular shape, > 1 - 1.5mm in size, yellowwhite, opaque
Lid oedema	Rare	Common
Occurrence	up to ~15%	~0.04% (DW), ~0.2% (EW)
Therapy	Monitor; steroid, NSAID, combo or palliative as needed	Anti-infective, often fortified



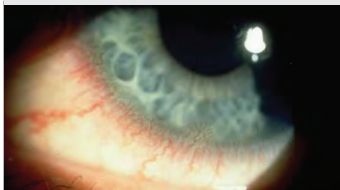
Peripheral Infiltrate (sterile)



Peripheral Ulcer (bacterial)

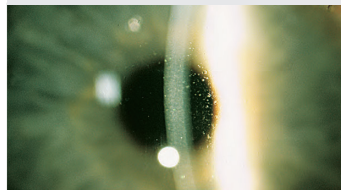
Signs of Oxygen Deficiency

Limbus



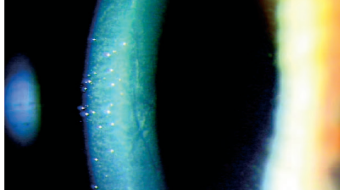
Limbal vessel engorgement & neovascularisation

Epithelium



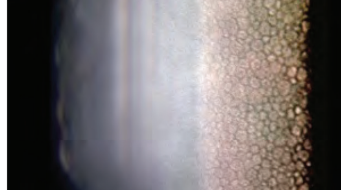
Epithelial Microcysts

Stroma



Stromal Folds

Endothelium



Endothelial Polymegethism

1. Lemp MA. Report of the National Eye Institute/Industry workshop on clinical trials in dry eyes. Contact Lens Assoc Ophthalm J 1995, 21(4):221-232. 2. Allansmith MR, Korb DR, Greiner JV et al. Giant papillary conjunctivitis in contact lens wearers. Am J Ophthalmol 1977 83:697-708. 3. Aasuri MK, Venkata N, Kumar VM. Differential diagnosis of microbial keratitis and contact lens peripheral ulcer. Eye Contact Lens 2003 29(1S):S60-62. Photos courtesy of the Johnson & Johnson Vision Care Institute, Gary Andrasko, OD and Thomas Quinn, OD. All photos used by permission.

Clinical Grading Scales

Normal Maintain		Borderline Monitor		Abnormal Intervene	
0 - Normal	1 - Trace	2 - Mild	3 - Moderate	4 - Severe	
bulbar redness					
limbal redness					
lid redness					
lid roughness					
corneal staining					
meibomian gland dysfunction					

IMPORTANT NOTE: These grading scales were derived from those developed by Professor Nathan Efron with permission. Adapted from Supplement to the book Contact Lens Practice, 2nd edition, by Nathan Efron, published by Butterworth-Heinemann, 2010, ISBN 978-0-7506-8869-7. This is offered as an educational tool that you may choose to use as part of your patient evaluations. These materials are not intended as, and do not constitute medical or optometric advice.