Contact Lens Preliminary Examination & Patient Selection

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Reading assignment:
Clinical Manual of Contact Lenses
4th Edition
Bennett & Henry
Section 1, Chapter 1 pgs 2-29
Pay particular attention to clinical cases
Goals

- Determine if pt is a good cl candidate
- Determine if any special restrictions, considerations, counseling necessary
- Determine baseline data: pre-existing conditions
- Determine most appropriate lens type, material, design, wt, replacement schedule, care regimen
Case Hx

- Medical
- Ocular
- Previous contact lens experience
Medical hx

- Document any conditions & associated meds which *may* contraindicate or restrict lens wear such as:
  - Allergies (seasonal or chronic)
  - Sinusitis
  - Dry mouth, mucous membranes
  - DM
    Slowed healing, possible corneal anesthesia
  Monitor A1C, PG
  High Dk, no overnight use
- Convulsions, epilepsy, fainting spells
  Should be identified as CL wearer
- Collagen vascular disorders
- Pregnancy
  Possibly some swelling/curvature changes
  Most patients wear successfully throughout
Med hx continued

- Thyroid conditions
- Psychiatric conditions/tx
  - Will the condition compromise the patient’s ability to be compliant in wearing and caring for the lenses?
  - Antidepressants often assoc with dry eye
Examples of some systemic conditions associated with dry eye

- K. sicca
- RA (rheumatoid arthritis)
  » Other autoimmune diseases as well
- Hormonal problems
- Pregnancy
- Thyroid conditions
Med hx

- Examples of systemic conditions associated with compromised healing
  - Diabetes: insulin dependent or poorly controlled
  - Suppressed immune system
    - Chemotherapy
    - HIV
    - Chronic illness
    - Steroid therapy
Systemic meds

- Inquire regarding dosages, frequency of use
- Ocular complications more likely with higher doses and/or frequent use
- LOOK UP possible ocular side effects!!
Systemic meds which may cause dry eye &/or affect accommodation

- Immunosuppressives
- Antihistamines
- Acutane
- Antidepressants
- Anticholinergics (atropine, scopolamine)
- Estrogen HRT
- Pain meds
- Muscle relaxants
- Many others
Smokers (in social hx in EMR)

- Document # per day, how many years
- Much greater risk of corneal infiltrates & CL associated complications in general
  - Overnight wear not recommended
- Greater incidence of dry eye sx's
- Are you around smoke a lot?
Ocular history

- Previous correction
- Strabismus, amblyopia, diplopia, vision therapy
- Allergies
- Dry eye
- Nocturnal lag ophthalmos
Injuries

- Corneal ulcers, infections
- Ocular meds
- Glaucoma, cataracts, etc
- Recurrent infection or inflammation
CL Hx

- Type CLs worn, wt, replacement, solns
- Previous Dr. & RX if available
- What was good or bad about previous CLs
- Why stopped or why want to change CL type
Motivation / patient Goals

- Why Dr recommends CLs
- Why does the pt want CLs or a change in CLs
  - Use open-ended questions
- What does the pt want to be able to do while wearing CLs? Environment?
  - Social
  - Sports
  - Occupational
Cosmesis #1 REASON FOR SEEKING CLs

- Inability or desire not to wear specs
  - Skin allergies
  - Nasal problems
  - Epidermolysis bullosa
- Eye color change
- Mask scars / deformities
Enhanced vision

- Keratoconics/irregular corneas
- Anisometropia
- High refractive errors
  - > useable visual field
  - > retinal image size for myopes
  - < distortion & prism: always viewing through optical center
Occupational / hobbies

- AOA Guidelines for Occupational Wear of Contact Lenses
- Some occupations/hobbies may require lenses while others may prohibit wear
- Be specific in record re occupation, hobbies
Oakland A’s first baseman Mark McGwire willingly endured more than 100 hours of chair time to get the perfect tint and fit for his lenses.
Enhance healing and relieve pain by minimizing lid interaction.

Currently std of care = silicone hydrogel:
- High O2 transmission
- Air Optix Night & Day, & Air Optix Aqua
- Biofinity, Avaira
- PureVision, Acuvue Oasys
Fitting bandage cls

- Overnight use
  - Removal schedule varies
- Minimal movement
- Possible instillation of topical meds
- Monitor frequently
- Some conditions may require longterm tx
Other therapeutic uses

- Keratoconus
- Post surgical/graft
- Extreme dry eyes
- Bill for therapeutic/medically necessary fit
CL Contraindications

**May include:**

- Uncontrolled diabetes
  
  Delayed healing, loss of corneal sensitivity, dry eyes, variable refraction, basement membrane disorders

- Horizontal prism or > 2 D vertical

- Extreme dry eyes even after tx
  
  Possibly sclerals would work

- Active ocular infections & inflammations
Testing

- C.E. required by Tx law
- Testing specific to CLs
- Extra fee
C.E.

- Refraction/VA
- Binocular status
- Accommodative status
- Ocular health eval
Refraction

- Calculation of CL power & to predict residual astigmatism (RA)
  - Use to decide between GP, soft, sphere or toric
- For spherical SCL wearers RA = refractive cyl
- For Rigid lens wearers: CRA = refractive astg - keratometric astg: best scenario is if corneal astigmatism equals vertexed refr astigmatism
  42.50 @ 180/43.50 @ 090 -2.00-1.00X180
What about this one?

- 42.00@180/43.00@090
- Refr: -2.00DS
Spec RX: -8.00-2.50X180
Ks: 42.5@180/44.75@090
What would RA be with:
- Rigid lens ?
- Soft sphere ?
- Need to vertex to corneal plane for both soft and rigid contacts
- Horiz -8 vertexes to -7.25
- Vert -10.50 vertexes to -9.50
- RX at corneal plane is -7.25-2.25 X180
- RA with RGP is 0
- RA with soft sphere is -2.25
Binocular/accom status

- Myopes must accom and converge more with CLs than specs
- Hyperopes must accom & converge less with CLs than with specs
- Implications
  - Hyperopic versus myopic incipient presbyopes
  - Phorias & tropias
- Prism in CLs, bifocals in CLs
What if patient accustomed to removing spectacles for near?

- Educate patient BEFORE FITTING
- Take into consideration when deciding lens type
Ocular health

- Baseline data
- Identify conditions needing tx prior to fitting
- Identify conditions which may restrict/contraindicate CL wear
SLE: Not this way!
Biomicroscopy

- Follow routine to insure eval of entire ant seg
  - Front to back or vice versa
- Lids
- Conjunctiva
- Cornea
- Limbus
Examples of things to document

- Blepharitis, MGD
- Entropian, trichiasis
- Palpebral & bulbar conj abnormalities
- Tarsal abnormalities
- Corneal staining, scars, infiltrates, edema, inflammation, neovascularization, dystrophies, etc.
  - Active versus inactive
Illumination methods

- Diffuse
- Direct
- Specular
  - Tear film
  - Endothelium
Indirect
- Neo, infiltrates, other subtle entities

Retro
- Neo, infiltrates, other subtle entities
- Marginal retroillumination: microcysts, vacuoles

Sclerotic scatter
- Edema with rigid lenses
Diffuse illumination
Direct illumination
Indirect illumination
Specular illumination
Retro illumination
Sclerotic scatter
Dry eye

- Most frequent problem associated with lens wear & most common cause for dc wear
  - Determine type & degree
    » Affects lens type, soln type, wearing schedule
  - End of day dryness

- Dry Eye Questionnaire: Appendix A pg 26

- Remember UHCO has an awesome Dry Eye Clinic you can refer to
Tear film

- Quantity
- Quality
Quantity

- Tear meniscus height: WNL 1.5mm or >
- Schirmer: prefer > 10mm in 5 min
- Zone Quick Phenol Red Thread Test: prefer >9mm in 15 sec
  - Avg = 24mm/15 sec
- Lissamine green / rose bengal
- Consider patient’s age, meds
Tear meniscus/prism/lacrimal lake

- Helpful in borderline dry eye pts
- Instill fluorescein, wait minute or 2
- Observe height, if deficient = aqueous deficiency
Quality

- Slit lamp observation
- Interference patterns/tearscope
  - Specular reflection
- T.B.U.T.: prefer 10mm or \(>\) (Staph bleph common cause for low TBUT)
- TBUT VERY SHORT IMMED AFTER CL REMOVAL
- No forced blinks
- Impression cytology
Staining with fluorescein

- Stains damaged tissue & soft lenses
  - Use yellow barrier filter (Wratten #12 or 15) & cobalt, brightest illum
  - Use large molecule HMW or irrigate if applying soft lenses soon
Corneal curvature: required by Tx law (if possible)

- Manual Keratometry
- Autokeratometry
- Topography
Corneal shape & curvature

- Used to predict corneal & residual astigmatism & to select lens base curve
- Aspheric surface with greatest curvature (steepest) at apex
- Central “cap” approx 4 mm diameter almost spherical
- Surrounded by zone flattening progressively toward periphery
- Cap may or may not be centered over visual axis
Corneal shape

- Flattens more rapidly toward periphery
- Rate of flattening & degree of eccentricity varies in different meridians & between patients. Use topography instead of Ks for.
- Use topography to visualize
Irregular corneas

- Post-surgical, irregular astig, degenerations, etc.
- **Keratoconus**
  - Thinning and protrusion of the cornea
  - Onset usually in adolescence
  - Increasing degree of irregular astigmatism
  - Distorted keratometry mires
Keratometry

- Based on laws of reflection for **spherical** convex mirrors.
- Small area measured, approx 3mm & not apex.
- Changes may not correspond with CL assoc refractive changes.
- Useful in selecting initial trial BC, but final lens based on observation of fit.
Procedure

- Focus eyepiece: MANDATORY
- Verify calibration with steel ball of known curvature
  - Take 3 readings in each meridian
  - Should be within 0.12D of each other
- Measure H & V meridians
- Note if distortion present
Over Ks

- Performed while wearing CL
- Used to detect flexure with rigid lenses
Autokeratometry

- Mires or infrared beams reflected & measured by photosensors
- Often combined with autorefractiion
- May also have adaptor for reading CL base curve
- Current models good accuracy but only if good technique used
Topography

User-friendliness varies between brands

- Cost varies greatly between brands
- Options available varies between brands
- Analyzes thousands of data points
- Curvature & elevation maps, front and back surfaces, thickness, tear film eval, HVID measurement, and much more
Use topography

- To measure large area of cornea
- To measure curvatures outside the range of the keratometer
- To dx keratoconus or irregular astigmatism
- Monitor progressive corneal changes
- To fit and follow orthokeratology patients
- To screen and manage refractive surgery patients
Topography

- In your own clinic could perform on all patients-good PR
- UHCO clinic: extra fee required
- Lecture by Dr. Morrison to follow
Anatomical measurements

- These assist in determining initial lens type, initial lens parameter, fit method
- Horizontal visible iris diameter (H.V.I.D.)
  - Used for specialty fits
- Palpebral aperture height & lid position relative to upper and lower limbus
  - To determine CL OAD, desired lens position
Pupil diameter

- Measure in dim & average illum
  - For dim illum: small=<5mm, med=5-7mm, large=>7mm
    » Prefer RGP OZW to be 1-2mm > than pupil in dim lighting
    » If large pupils select GP with large OZW or soft lens with large OAD
Lid tension

- Determine by lid eversion
- Too flaccid or too tight may cause problems
  - RGP bifocals, lid attachment RGPs
Rate & nature of Blink

- 10-15/min normal
  - Significantly greater or less can be a problem
  - Soft preferred if greatly decreased rate

- Complete versus incomplete
  - If 10-50% incompleteness, GP contraindicated

- Observe while talking to pt, without them knowing what you’re doing
Soft versus rigid

- Desired wearing schedule
- Environment during lens wear
- Refractive/corneal curvature data
- Myopia control
- Cost/lens care
- Patient bias/preconceptions
- Comfort
- Safety
Read carefully: there will be test questions from the following:

- Table 1.1 pg 19 of text
- Table 1.2 pg 20 of text
- Table 1.3 Good, Borderline, & Poor CL Candidates pg 22 of text
- Clinical cases pages 23-27
- Clinical proficiency checklist
Patient education

- Benefits of CLs versus spectacles
- GP versus soft
Documentation/ counseling

- Type of lens & solns recommended and why
- Recommended wt and replacement sch
- Approx # of required visits and cost
- Any risks, special considerations.....
- If a minor, document that have discussed the above with the parent
Goals of preliminary exam

- Determine if pt is a good CL candidate
- If so, what type of CLs
- Any special considerations
- Educate patient on all of the above