Building A Successful Glaucoma Practice

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Barriers to treating glaucoma

• “I don’t have any glaucoma patients.”

• “I don’t have the right equipment.”

• “What happens if I can’t control the IOP.”

• “I feel uncomfortable initiating therapy.”
The Glaucoma Paradigm Shift

- Intellectual shift
- Diagnostic shift
- Therapeutic shift
Why has there been a paradigm shift?

- New evidence –
  - Peak IOP
  - Importance of diurnal curve
  - 24 hour IOP data
  - Blood flow alterations
  - Corneal thickness data
- “New” studies –
  - OHTS, EMGT, CIGTS, CNTG
- Newer drugs
The Intellectual Shift

• Glaucoma is an optic neuropathy that is multifactorial in etiology and clinical presentation
  – Marked by characteristic visual field and optic nerve head changes
The diagnostic shift

• Shift towards earlier diagnosis

• Change in the definition of the stages of glaucoma

• More aggressive monitoring of suspects
Therapeutic Shift

- Treat earlier
- Treat more aggressively
- Better understanding of what adequate therapy is
- Changing treatment paradigm
Glaucoma Risk Analysis

• The most important means of increasing recognition of glaucoma

• Greatly increases your level of suspicion for the disease
Glaucoma Risk Factors

- FINDACAR

- The more risk factors one has, the more likely one is to develop glaucoma

- The more risk factors one has, the lower the IOP target should be
Glaucoma Risk Factors

- F - Family history
- I – Intraocular pressure
- N – Nearsightedness
- D – Diabetes (or other CV disease)
- A – Age
- C – Corneal thickness
- A – Asymmetry
- R - Race
A risk factor analysis is critical

- For the diagnosis
- To increase your level of suspicion
- For initiating therapy
- For changing therapy

- BUT…are any of these more important than others?
OHTS – A Closer Look

- 90% of untreated group did not progress
- 95.6% of tx group did not progress

- It proved that *in those individuals who are going to progress* to POAG lowering IOP by 22.4% will delay the onset by at least 5 yrs.

- Who are “those individuals at risk”? 
OHTS – The Nitty Gritty

- The most predictive factors for conversion:
  - Older age
    - 22% increase/ decade
  - Larger horizontal and vertical C/D
    - 32% increase/0.1 larger
  - Higher baseline IOP
    - 10% increase/ mm Hg
  - Thinner corneas
    - 71% increase in risk/ 40 microns thinner
The Optic Disk As A Risk Factor

- The Disk provides certain clues
- Glaucoma affects the ONH very characteristically
- Family tendencies
- Look for change over time
Characteristics of Normal Disk

- Neuroretinal rim equal superiorly and inferiorly
- Temporal rim is thinnest
- ISNT Rule of Jonas
- Rim color – pink & symmetrical
- REMEMBER: C/D has a horizontal and vertical component
Pathologic Changes Due To Glaucoma

- Thinning of neuroretinal rim
- Deepening of optic cup
- NFL atrophy
- Increase cupping
- Splinter hemes
- PPA (Peripapillary atrophy)
- Vessel changes
Neuroretinal Rim

- What is it?
- ISNT Rule of Jonas
- In glaucoma the rim thins:
  - Sup/temp & inf/temp 1st
  - Temporal next
  - Nasal last remnant
- Can recede focally or globally
- Look at the donut, not the hole!
Superior and Inferior rim thinning OS
Look at the donut, not the hole!!
Equipment Needs

- Visual field analyzer
- Pachometer
- Fundus camera
- OCT
- Gonioscopy lens
- Tonometer
Visual field instruments

• White-on-white, SWAP or FDT?

• Which strategy to employ?

• Are they still in?
Visual Fields and Glaucoma

• Are they still cool?

• Are they considered the standard of care?

• How often?

• Do they better measure early detection or progression?
Which VF instrument is best?

- SAP, SWAP or FDT
  - FDT and SWAP similar in flagging abnormal locations
  - FDT defects were more extensive in 62%
- SWAP more specific and accurate than SAP but harder to administer
- FDT questionable in end stage glaucoma
- Use 10-2 strategy in advanced glaucoma
Are certain VF parameters more predictive for progression?

- Johnson, Sample et al. – AJO 8/2002 177-185
- Highest predictors of conversion
  - GHT “outside normal limits”
  - 2 hemifield clusters worse than 5% level
  - 4 abnormal (P<.05) locations on pattern deviation probability plot
  - Specificity increased with 2nd confirmatory VF test
FIGURE 1. Representation of the point clusters that comprise the glaucoma hemifield test segments.
Pachymetry

• An absolute essential

• The new standard of care

• Exactly why again...? – Thick corneas may be protective
The pachymetry issue

• Juicy Data
  – 36% of pxs w/ IOP >25.75 AND K thickness < 555 microns developed POAG
  – 6% of pxs w/ same IOP but K thickness > 588 converted to POAG

• Juicy Data II
  – 15% pxs w/ C/D .3/.3 and K thickness < 555 microns converted but...
  – 4% of pxs w/ same disk parameters and K thickness> 588 microns converted
The percentage of participants in the observation group who developed primary open-angle glaucoma grouped by vertical cup:disc ratio and by CCT measurements.
Risk of Progression as a Function of IOP vs. Central Corneal Thickness

The percentage of participants in the observation group who developed primary open-angle glaucoma grouped by baseline IOP and by CCT measurements.
More Pachymetry Chatter

• African-Americans have thinner corneas
• Perhaps thin corneas translate to poor connective tissue at the disk as well
• Is there a fudge-factor for K thickness?
  – Baseline of 545 microns
  – Add or subtract 2.5mm Hg for every 50 microns deviation (Doughty and Zaman, Surv Ophthalmol, 2000).
Optic nerve/Retinal imaging

- Are these the standard of care?
- If so why?
- Do we hafta have one?
- Are they all the same?
- Is one better than another?
Risk Factors For Conversion

An abnormal HRT value indicates an almost 6 times greater risk of developing glaucoma.
OCT and Glaucoma

- The New “It Girl”
- Greatly enhanced glaucoma software
- Extremely efficient predictors of early glaucoma
Overlay of the RNFL and GCC (OS) with RTVue FD OCT
 GCC Report: Normal

Patient Information
Exam Date and Quality

GCC Thickness Map

Deviation Map

Significance Map

Parameter Table

Fovea Mask
GCC Report: Glaucoma

GCC Thickness Map
- Dark colors represent GCC thinning (blue and green)

Deviation Map
- Black areas indicate 50% GCC loss or worse compared to NDB

Significance Map
- Green areas - within normal
- Yellow areas – borderline
- Red areas - outside normal
GCC Progression Analysis (visit every 6 months)

5% loss confirmed

optovue RTVue™
Imaging Overlay of the pRNFL and GCC Related to OS 30-2 Visual Field
• Stereo Fundus photography

• Gonioscopy lenses
Get your practice “glaucoma-ready”

- Staffing issues
  1. Do you have enough?
  2. Are you using them properly?
  3. DO THEY UNDERSTAND GLAUCOMA?
  4. *Do they know you treat glaucoma?*
Staffing Issues

• At a minimum you should have an appointment secretary, an optometric assistant and a billing clerk
• They should all be trained to work as a cohesive unit
• A well-trained staff is a fantastic marketing tool
Marketing your glaucoma practice

1. Internal marketing
2. External marketing
3. Interprofessional marketing
Billing and Coding Issues

• In General:
  – Be as specific as possible
  – If you do it, bill it
  – CPT codes and ICD-9 codes must correlate
  – Medical record must correlate with what you bill
Specific Glaucoma Procedures

1. Gonioscopy – 92020
2. Fundus Photography – 92250
3. Optic Disk Imaging – 92133
4. Extended ophthalmoscopy – 92225/92226 -50
5. Pachymetry - 76514
6. Visual field analysis – 92083

(some have technical and analytical components)
Don’t forget these codes

- 99212
- 99213
- 92004/92014
- 92015
A year in the life...

- ONH evaluation – 2x/year
- IOP – 4x/year (at least)
- Gonioscopy – yearly
- VF – yearly (once a baseline has been established)
- ONH imaging – yearly
- Disk photos- baseline and then PRN (more often than you think)
- Pachymetry – baseline, then PRN
- Full exam and refraction - yearly
A year in the life...

- 92004
- 92015
- 99212 x 2
- 99213
- 92133
- 92083
- 92250
- 92225-50
- 92226-50
- 92020
- 76514
The Glaucoma Examination

- New patient, initial exam
  - Raise your clinical suspicion
  - Everybody’s a candidate
  - Risk analysis
  - What procedures should you perform?
  - What are you trying to achieve?
New patient exam

1. History is important
2. Perform a complete ophthalmic exam
3. Pay particular attention to IOP (denote time)
4. Detailed, dilated evaluation of ONH
5. Pachymetry
6. Patient discussion
The New Patient

- You don’t have to make the diagnosis on the first exam
- You don’t have to start treatment on the first day
- You don’t have to perform every test on the first day
- People don’t go blind from POAG overnight!!!
The new patient

• Reschedule for “further testing”
  – When?
  – Which tests first?
  – What are you trying to achieve?
  – This parallels other specialties
The established glaucoma px

• Standard of care: exams Q3mth
• On *EVERY* visit
  – Review of history
  – Review of risk factors
  – Review of compliance and side effects
  – VA
  – IOP
  – And generally something else...
# GLAUCOMA PROGRESS

<table>
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<tr>
<th>NAME</th>
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<th>FHX</th>
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<th>C/D</th>
<th>Dil</th>
<th>Gonio</th>
<th>VF</th>
<th>OCT</th>
<th>FP</th>
<th>VA</th>
<th>Ref</th>
<th>Sx</th>
<th>Meds</th>
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Notes:__________________________

Pachymetry: Date______

OD______ OS______
HOW TO USE YOUR DROPS:

Use the ______________ top drop ____ times a day in _____________ eye(s).

Use the ______________ top drop ____ times a day in _____________ eye(s).

Use the ______________ top drop ____ times a day in _____________ eye(s).

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Use the ______________ top drop ____ times a day in _____________ eye(s).
Glaucoma follow-up exams

• What are you looking for?
  – Deviation from baseline
  – Signs of progression (rim recession, VF worsening, parametric progression)
  – IOP trends
  – Long term stability
• Px education is key at each visit
• If progression is suspected or if meds are changed see earlier than 3 mths
Glaucoma suspect template

1. Complete ophthalmic exam, then...
   - 3-4 wks – IOP/ VF (or imaging), decide to treat, follow further or discharge
   - If following – 3-4 wks IOP and imaging (or VF)
   - Decide to treat, follow further or discharge
   - If following – 3 months IOP, gonio, ONH evaluation
   - If treating 4-6 weeks to assess tx efficacy
A few words of wisdom

• Make the patient a partner
• Information is power
• It may take multiple VF before a defect is evident
• Construct a diurnal curve
• A patient may be a G suspect for years
When you decide to treat...

- Choose the most important initial therapy
- Px discussion
  - Risks/benefits of tx
  - Potential side effects
  - Px becomes a “lifer”
- Schedule follow-up
  - Q 4-6wks until target IOP is reached
  - Check IOP at similar time?
When deciding to treat...

• Identify...
  – Risk factors for conversion
  – Risk factors for progression
  – Risk factors for rate of progression
    • Initial peak IOP
    • Age
    • C/D ratio
    • Systemic/vascular status
  – Noscitur a sociis!
Factors to consider when setting a target IOP

- Age
- Race
- ONH status
- Stage of Glaucoma
- VF status
- Systemic status
- Peak IOP
General Rule #1

- 30% decrease as an initial target
- Target decrease from highest untreated IOP
- CNTGS, OHTS
General Rule #2

- Mild glaucoma – decrease IOP 30%
- Moderate glaucoma – decrease IOP 40%
- Severe glaucoma – decrease IOP 50% (at least)
Regarding IOP

- Are we doing it correctly?
- Must we correct for pachymetry?
- Who should measure the IOP?
- Serial tonometry vs diurnal curve
- What exactly are we measuring?
- Is IOP a risk factor or a causative agent?
Eric’s 7 Simple Rules For Treatment

1. Choose 30% IOP decrease as initial target
2. Squash the diurnal curve (Keep IOP peak <18mm)
3. Assess risk factors for progression and rate of progression
   (CT<555, IOP >26, C/D 0.5)
Eric’s Rules cont.

4. If you are going to treat: treat aggressively

5. KISS

6. Be mindful of perfusion issues

7. Above all, do no harm