“When you first start to study a field, it seems like you have to memorize a zillion things. You don’t. What you need is to identify the core principles—generally three to twelve—that govern the field. The million things you thought you had to memorize are simply various combinations of the core principles.”

John S. Reed
Former Chairman of the New York Stock Exchange
Chairman of the board of trustees, MIT

Chapter 1
Getting started

Chapters
1. Getting started
2. Understanding our patients
3. Clinical evaluation
4. Prescribing for distance
5. Prescribing for midrange
6. Prescribing for reading
7. Managing the patient
8. Managing your practice

It’s easier than you think
- You need only one easy formula
- You can do it in an hour
- You don’t need a closet full of stuff
- You can make $$
A few secrets

1. Experts prescribe the same handful of items over and over.
2. There’s only 3 things you really need to know about everything.
3. If things aren’t going well, it’s not your fault.

Pearls

- Try it yourself
- Keep it simple
- Don’t prescribe too many things
- Make it ‘enough better’ to matter
- Functional reserve
- Concept of ‘less bad’
- Know when and how to fold ‘em

What you need to have for your exam

- Trial frame, trial lenses, Jackson cross cyl
- Distance and Near VA Charts
- Lap desk
- Over the bed table
- Stand lamp

Test Equipment

- Trial set and frame
- Jackson X-Cylinder ± (±0.50D)
- Retinoscope
- Keratometer
- Over the bed table
- Lap desk
- Stand lamp

Distance VA Charts

<table>
<thead>
<tr>
<th>7</th>
<th>7 2 6 9 3 5 8 4 6 7</th>
</tr>
</thead>
</table>

Feinbloom ETD RS Digital

Near Reading Charts

- The three elephants in the circus walked around very slowly
- We could not guess what was inside the big box on the table
- MN Read
- Lighthouse ‘Game’ Card
What LVAs you need to have to demonstrate

- Telescopes:
  - Handheld 2.2x Galilean, 4x Keplerian
  - Biotic: 2.2x Galilean, 4x Keplerian
- Hand and stand magnifiers (illuminated):
  - 3x, 4x, 5x, 6x
  - Dome magnifier
- Prism Readers:
  - +4, +6, +8
- CCTV or equivalent
- Filter sunglasses:
  - Gray, Blue-Blocker, Plum, Amber, Red
- Consumer catalog

Testing Telescopes (Monoculars)

- 4x12 Keplerian TS
  - (Maybe also a 6x)

Hand/Stand Magnifiers

\[ M = D + 4 \ ?(+1) \]

- Condenser Magnifier
- 2x
- 4x = 3x + 1 (+12)
- 4x = +16

Reading glasses

Bifocals with adds up to +4

- Prism half-eyes
  - +4, +6, +8
  - 2pd BI more than add power
- Microscopes (Monocular only)
  - 3x (+12) and up

Electronics

- Filters
  - Selective absorption
  - Subjective gain
Chapter 2
A general understanding of our patients

Overview
- Characterize your patients
  - Standardize functional goals
  - Understand the implications of diagnosis
- Finding out what you need to know— the 5 "What’s"
- There’s just about 3 options for everything

Characterize by age
- Age-based Needs
  - Children
  - Adults
  - Seniors

Characterize by needs
- Activity Ranges
  - Distance
  - Midrange
  - Near

Characterize by pathology
- Diagnosis
  - Central vision loss
  - Peripheral vision loss
  - Contrast
“The 5 What’s”

- What’s their acuity
- What’s their dominance
- What’s their contrast
- What’s their fields
- What’s their goals

Patient Intake

- Patient goals?
  - Derived from homework before appointment:
    - Distance, midrange, near
- Reasonable?
  - Vision
  - Capacity
  - Motivation
  - Realistic?
- Current status: what are they using now?
  - How close are they to their goals now?

Psycho-Social Issues

- Reading is a solitary activity
  - Plenty of options
  - Non-visual alternatives
- Distance vision is a social activity
  - Body language
  - Eye contact
  - Isolation, depression
  - QoL
  - No non-visual alternatives

Chapter 3
The Clinical Exam

Qualify the patient

- Can we get:
  - the acuity we need
  - ample field of view
  - ample contrast
  - appropriate working distance
  - dexterity
  - fluency
  - motivation

What are we trying to accomplish?
What’s not working?

- Replace the macula
- How big is the macula?
- What is a degree?
- How much acuity do they need?
- 20/40, 6/12, 0.8
How Big is the Macula?

What is our basic rehab approach for central vision loss?
- We make things BIGGER!

What is our basic rehab approach for peripheral vision loss?
- We make things SMALLER!

Constraints of Magnification
- Optics
  - Working distances
  - Depth of field
- Field of view
- Distortion
- Image movement
- Individual
  - Unnatural
  - Disorienting
  - Fatiguing
  - Reduced fluency

Basic LV Exam
- History: Goals
- Acuity
  - Distance
  - Near (working distance?)
- Refraction
- Dominance
- Contrast
- Fields
- Response to magnification

Functional- Quick and Easy
- Face Test
  - Functional VA
  - Scotomas
  - Contrast
- Finger Touch
  - Fixation
  - Localization
  - Depth Perception
Chapter 4
Prescribing for distance vision

Improving Distance Vision
- Only three options
  - Refraction
  - Move closer
  - Bring it closer optically

Refraction
- Trial frame
- Retinoscopy
- 2-line acuity gain
- Spend more time with VA >20/70
- Make sufficient power changes

Move closer
- Some times you can, sometimes you can’t
  - Social Ranges
  - Physical barriers
- Television
  - Field of View
  - Faces
  - Text

Telescope Optics 101
- Galilean vs. Keplerian
- Larger objective lens:
  - Brighter image
  - Shallower depth of field
- Larger, multi-element eyepiece:
  - wider FOV
- Longer eye-relief:
  - Narrower FOV

Telescopes
- Handheld Monoculars
- Clip-ons
- OTC headborn
- Custom spectacle telescopes
  - Bioptics
  - Full-diameter
  - Near-centered
Characteristics of Telescopes

<table>
<thead>
<tr>
<th></th>
<th>Galilean</th>
<th>Keplerian</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
<td>Small</td>
<td>Big</td>
</tr>
<tr>
<td><strong>Shape</strong></td>
<td>Std. Tube</td>
<td>VES, BTL</td>
</tr>
<tr>
<td><strong>Focusing</strong></td>
<td>Fixed, Manual</td>
<td>Manual, AF</td>
</tr>
<tr>
<td><strong>Powers</strong></td>
<td>1.8 – 6x</td>
<td>3 – 8x</td>
</tr>
<tr>
<td><strong>Fields</strong></td>
<td>2.2x</td>
<td>3x, 4x, 6x</td>
</tr>
</tbody>
</table>

What should the TS VA be?

- 20/40

What should the TS FOV be?

- ≥10 degrees

---

**How much power?**

- Enough magnification to achieve the goal
  
  - Acuity demand:
    - Average = 20/40 goal (6/12)
    - High = 20/30 goal (6/9)
  
  - 2x power for BCVA up to: 20/80 (6/24)
  - 3x power: 20/125 (6/40)
  - 4x power: 20/180 (6/48)
  - 6x power: 20/240 (6/72)

- Sporting events?

- More than 6x is tough to keep stable on head

- More than 7x- time for binoculars

---

**How much Field?**

- What is a degree?

- How much FOV is enough?

  - It’s never enough

  - Goal ~ 10 deg

  - 5.5x = Galilean

  - 3.3x = Keplerian

  - It gets more natural with time

  - Maximize for close distances

  - Reading caps vs. focusing

  - Let the patient compare

  - 4x Keplerian vs. 4x Galilean

---

**Response to Telescopes**

- **Test Distance VA with handheld TS**
  
  - 20/100 or better use 2.2x Galilean (with best DV Rx)
  
  - 20/125 to 20/300 use 4x Keplerian (with DV Rx if high)

- **Hard Signs**

  1. Visual acuity: 20/40 +/-

  2. Dominance: dominant sees better

  3. Contrast: faces good thru TS

- **Soft Signs**

  1. Appropriate activity goals

  2. Dexterity

  3. Motivation

---

**Establishing a Prognosis**

- **3 Hard Signs and 3 Soft Signs**

  - **Quantity:**

    - Excellent

    - Promising

    - Fair

    - Guarded
Telescope Prescribing Decisions

- What type of telescope?
  - ≤ 3x: Galilean
  - ≥ 3x: Keplerian
- Field of view: ≥ 10 degrees
- Which eye or both?
- Type of mounting
- Carrier Rx
- Eyepiece corrections
- Near focus options
  - Reading caps
  - Focusable

Which eye? Or both?

- Monocular
  - Prescribe for the dominant eye if at all possible
  - Suppression difficulties undermine acceptance
- Binocular systems
  - Challenging to keep aligned
  - More natural cyclopean eye experience
  - Wider FOV, Acuity and CST summation
  - Fewer suppression issues, lessens impact of scotomas
  - Binocular Working distance fixed

Eyepiece position

- Types of mountings:
  - Permanent (glued) vs. adjustable
- Minimum 3mm above eyepiece to top of lens
- Align the bottom of eyepiece to top of pupil
- The higher the eyepiece the higher the TS angle
  - The greater the head translation
- Lower and straighter position for
  - midrange applications
  - Use a head strap
  - Use wide nosepads

Carrier lenses

- Use their habitual distance Rx
  - Single vision or multifocal
  - Avoid progressives and trifocals
- Minimum 10mm between bottom of eyepiece and top of seg
  - Seg high but not too high
  - Seg low but not too low

3-Step Fitting Procedure

1. Align TS eyepiece for the sighting eye
2. Align bottom of eyepiece with top of pupil by adjusting nosepads
3. Adjust TS line of sight

Telescope Training

- Give a tour of the device
- Translation
- Focusing
- Localization
  - Distance
  - Near
- Tracking
  - While stationary
  - While moving
Bioptic Driving
- What are we trying to accomplish?
- Ring scotoma
- State laws
- New vs. experienced driver

Supporting mid-range vision
- Lighting
- Contrast
- Larger targets
- Near Telescopes

Non-Optical Midrange

Chapter 5
Prescribing for Midrange

Chapter 6
Prescribing for reading
Treating reading vision

- Only 3 ways!
  - Stronger reading glasses
  - Magnifiers
  - Electronics
  - OK, also larger print

Define your patient’s definition of ‘reading’

3 Types of reading
- Spot
- Reading to write
- Reading to read

Testing reading

- Charts
- Use N notation
- What’s the smallest text they can read fluently now?
  - With habitual Rx
  - With habitual magnifier
- Confirm working distance
  - How much mag to get to your goal?
  - Where do they hold things now?
  - Impact of lighting

Prescribing for reading

- Prescribe for an acuity ‘reserve’
- If they’re close (2D or better) use:
  - higher add (at least an add ‘+2’)
  - prism reader
  - dome magnifier
  - hand magnifier
  - better light
- Careful Rx’ing glasses for WD <8"
- If need Rx or less
  - HM or SIM
- If need Rx or more and/or ↓ contrast
  - consider digital

Factors impacting fluency

- Scotomas
- PRL
- Metamorphopsia
- Sight vocabulary
Prescribing for spot reading
- Use Number Chart
- Hand held vs. stand
- Illuminated?

Prescribing for writing
- Prescribe glasses for writing (~8-10” WD)
- Large print checks
- Felt-tipped 20/20 Pen
- Prescribe magnifier for text

Prescribe for the “least unnatural”
- Working distance
- Field of view
- Ergonomics
- Illumination
- Dexterity
- Cognitive status

Reading Training

Method:
1. Patients with central vision loss were trained binocularly, in four consecutive sessions.
2. Serially presented words printed at each patient’s reading acuity limit.
3. Patients read 10 blocks of 100 words in each session.
4. They were encouraged to read the whole word and were discouraged to read letter by letter.

Results (n=10)
1. Reading speed increased (p=0.01)
2. Continuous text reading improved (p=0.017)
3. Fixation stability (PRL) improved 62% better eye, 58% worse eye

Chapter 7
Managing the patient
Managing patient expectations

- Explain how the macula works
- Explain why stronger glasses won’t help
- Impact on QoL
- Provide a prognosis
- Make recommendations
- Describe character of their adaptation
- Establish purchase and refund details
- Schedule fu visits

Patient management

- Address the value it will offer
- This is the newest technology
- Easier and more natural to use
- ‘Hi-tech’ and ‘Cool’ appearance
- Reasonably priced
- Offer a prognosis for their adaptation

Explore the issues

- The patient’s job:
  -
  -
  -
  -
  -
  -

  “We can teach them to ride the bike, but they have to do the pedaling.”

Manage Decision Making

- Our job:
  -
    - Why changing eyeglasses won’t help
      -
      -
      -
      -

    - (from 1 to 10)
  -
  -

- There’s only so much we “mortals” can do!

Recruit the Patient

**DON’T:**
-  
-  
-  

**DO:**
-  
-  
-  
-  
-  
-  
- Take all measurements first!
- Give them brochures

Reinforcement: The “Sale After the Sale”

- Support adaptation
  - Training / practice materials
  - Therapist referral (?)
- One month training and adaptation period
- Schedule follow up
  - Phone
  - Office / Clinic
Chapter 8
Managing your practice

Train your referers

- **Do:**
  - Present low vision care value immediately
  - Ask about functional issues
  - Assume all patients want LV care
  - Have info and referral sheets in each exam lane

- **Don’t:**
  - Wait for patient to ask
  - Say they will show you some ‘gadgets’
  - Wait until the patient has 20/200
  - Underestimate the value of low vision care

Screening patient candidates

- Can you read newspaper headlines?
- Can you see TV or recognize faces beyond 4 feet away?
- Does your vision make it difficult for you to walk?
- Does a magnifier help you to read, OR, does a binocular help you see at a distance?

Referral Form Letter

We are pleased to make this referral to you for vision rehabilitation services.

Patient Name: ____________________________
Phone Number: ____________________________

- Please contact the patient
- The patient will contact you

Diagnosis: ____________________________
BCVA: R: _______ L: _______
Visual Fields: R: _______ L: _______

Specifically, we seek assistance for this individual in the areas of:
- Reading
- Writing
- Seeing Signs
- Mobility
- Other(s): ____________________________

Notes: ____________________________
Referring Practice Name/Address/Phone:

Appointment Letter

Dear ____________________________

- We have scheduled your vision rehabilitation appointment with Dr. _______ on _______ at _______ o’clock. Please let us know at least 24 hours in advance if you will be unable to keep your appointment.

- A map and several information sheets are enclosed. Please complete all the information forms BEFORE you arrive for your appointment.

- Please read the ABOUT YOUR APPOINTMENT SHEET before your visit so you can receive the full benefit of your examination.
Patient Preparation

ABOUT YOUR APPOINTMENT
more effectively using special lenses, magnifiers, or other methods.

WHAT YOU SHOULD BRING WITH YOU
Please bring ALL of your present eyeglasses, magnifiers and other devices that you now use to help you to see better. Don’t bring large or heavy items. Wear your hearing aid if you use one!

PREPARING FOR YOUR VISIT
Please complete the “Vision Loss Questionnaire” enclosed. Also, please bring a list of specific visual activities that you would like to improve and place them in priority order. You can bring along samples of materials you would like to see better.

History in Advance

1. Cause of vision loss:  ___Disease    ___Stroke    ___Trauma    ___Congenital
2. Which eye sees better: ___right  ___left  ___about the same
3. How long have you had your present vision problems? ___years
4. Can you read: ___Newspaper    ___Large print    ___Headlines
5. How close must you sit to the TV to see it adequately? __feet  ___cannot see TV
6. How close must you be to a person to see their face clearly? __feet  ___cannot see faces
7. About your visual field:
   a. Do you have trouble seeing to the: ___right  ___left  ___up  ___down
   b. Do you bump into objects to the: ___right  ___left  ___up  ___down
   c. Do you lose your place while reading at: ___beginning of lines  ___end of line
8. About light:
   a. Does sunlight make your vision: ___better  ___worse  ___no change
   b. Do you see better on a dull, overcast day? ___yes  ___no
   c. Does bright light make reading easier? ___yes  ___no

Fees

ABOUT COSTS
Insurance usually does NOT pay for low vision aids, though they may pay for the examination and treatment visits. Special refractive and magnification testing for the visually impaired is usually not covered by insurance and you will be charged $xxx for this part of the exam which is due at the time of your appointment in addition to any co-pays and deductibles related to the services that are covered by your insurance.

Determine your value

Thank you!

hg@ocutech.com
Subject line: Fearless Low Vision
Include your name