The Role of Optometry in the management of Chronic Systemic Disease

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Three Phases of Optometric Care

- Prevention
  - The role of every optometrist
- Management
  - The role of any medical oriented optometrist or Optometric Physician
- Rehabilitation
  - The expanding role of “Low Vision”

Prevention

- Family History
  - Diabetes
  - Hypertension
- Social Habits
  - Smoking
  - Alcohol Use
- Vital Signs
  - Height, Weight, Blood Pressure, Pulse
  - Body Mass Index

Prevention

- Physical Examination
  - Transt films
  - Corneal Arcus
  - Ruberosis
  - Cataracts
  - Retinal changes
**Doctoring**

- Risk Assessment
- Patient Education
- Counseling
- Referral

**Risk Assessment**

- Review of History and Exam
- Discussion of risk factors
  - relationship of overall health
  - Modifiable and Non Modifiable
- Discussion of Overall Health and relationship to eyes and vision over a lifetime

**Counseling**

- Certified Diabetes Educator
  - Requires special education and certification
  - Well documented as highly effective diabetes management tool
  - Payment above the Eye Examination
- Smoking cessation
- Diet and Nutrition
  - Supplements
- Exercise

**Referral**

- Primary Care Physician
- Ophthalmologist
- Professional Counselor
- Physical Trainer
Ongoing Care

- Annual comprehensive eye examination
- Mode
  - The role of chronic systemic disease in eye health
  - Vital signs and special testing

Ongoing Management

- Diabetes Type 1
  - Insulin dependent
    - Time since diagnosis
    - Complications

Medical Management

- Insulin (NovoLog, Humulin R, Lantus)
- Replace the role of the pancreas
  - Side effects
  - Infection
  - Retinal vascular disorder
  - Cataract

Medical Management

- Amylinomimetic (Pramlintide - SymlinPen 120, SymlinPen 60) (Stomach)
- Used with insulin
  - Side effects
    - Headache
    - Decreased appetite
    - Nausea
Ongoing Management

- Diabetes Type 2
- Non-insulin dependent
- Insulin Resistant
- Time since diagnosis
- Complications

Medical Management

- Biguanides (Liver also cellular)
  - metformin (Glucophage, Riomet, Fortamet)
- Combinations
  - metformin-glipizide (Metaglip)
  - metformin-canagliflozin (Invokamet)
  - metformin-rosiglitazone (Avandamet)
- Side Effects
  - lactic acidosis
  - Gas
  - Dizziness
  - Headache

Medical Management

- Sulfonylureas (Pancreas)
  - Stimulates beta cells in the pancreas
  - glimepiride (Amaryl), chlorproPAMIDE (Diabinese), TOLBUTamide (Orinase, Tol-Tab)
- Side effects
  - Dizziness
  - Headache
  - Nausea

Medical Management

- Thiazolidinediones (Liver)
  - Act to reduce fatty acids in circulation
  - rosiglitazone (Avandia)
  - pioglitazone (Actos)
- Side effects
  - Macular Edema
  - Headaches
  - Cold like symptoms
Medical Management

- SGLT2 Inhibitors (sodium-glucose co-transporter 2 inhibitors) Kidneys
  - Works in Kidney to excrete glucose (2013)
  - canagliflozin (Invokana)
  - empagliflozin (Jardiance)
  - Side effects
    - Urinary tract infections
    - Thirst
    - Nausea

Medical Management

- Meglitinides (Pancreas)
  - Increase the release of insulin
  - repaglinide (Prandin)
  - nateglinide (Starlix)
  - Side effects
    - Cold like symptoms
    - Blurred vision
    - Headaches

Medical Management

- DPP-4 Inhibitors (Pancreas)
  - sitagliptin (Januvia)
  - linagliptin (Tradjenta)
  - saxagliptin (Onglyza)
  - Side effects
    - Stomach distress
    - Cold like symptoms
    - Headaches

Medical Management

- Dopamine Agonist (Brain)
  - Re-set circadian rhythms
  - bromocriptine (Parlodel)
  - Side effects
    - Changes in vision
    - Confusion
    - Hallucination
Medical Management

- Alpha-Glucosidase Inhibitors (Stomach)
  - Block digestion of carbohydrates
  - miglitol (Glyset)
  - acarbose (Precose)
  - Side effects
    - Gas
    - Rash
    - Weakness

Ongoing Management

- Hypertension
  - In office measurement
  - Self Monitoring
  - Logs and charts
Diuretics
- Loop (furosemide - Frusol, Lasix)
- Work in the Loops of Henle of Kidney
- Relatively short acting
  - Side effects
    - Dizziness
    - Confusion
    - Upset stomach

Beta Blockers
- Work on the Heart (rate, volume)
  - atenolol (Tenormin)
  - metoprolol tartrate (Lopressor)
- Side effects
  - Depression
  - Headache/Dizziness
  - Sexual Dysfunction

Angiotensin Converting Enzyme (ACE) Inhibitors
- Blocks angiotensin in blood vessels
  - enalapril maleate (Vasotec)
  - lisinopril (Prinivil, Zestril)
- Side effects
  - Dry cough
  - Rash
  - Swelling of face, neck, tongue

Angiotensin II Receptor (ARB) Blockers
- Blocks angiotensin in blood vessels by blocking receptors
  - losartan potassium (Cozaar)
  - valsartan (Diovan)
- Side effects
  - Dry cough
  - Dizziness
  - Swelling of face, neck, tongue
Calcium Channel Blockers
- Work on heart and blood vessels
  - Increase heart function and dilate vessels
  - Diltiazem hydrochloride (Cardizem, Dilacor XR, Tiazac)
  - Amlodipine besylate (Norvasc, Lotrel)
- Side effects
  - Lightheadedness
  - Acid Reflux
  - Sexual Dysfunction

Alpha Blockers
- Block Alpha receptors in blood vessels
  - Doxazosin mesylate (Cardura)
  - Prazosin hydrochloride (Minipress)
- Side effects
  - Dizziness
  - Headache
  - Fatigue

Alpha-2 Receptor Agonists
- Block Alpha-2 receptors in blood vessels
  - Methyldopa (Aldomet)
- Side effects
  - Headache
  - Weakness/dizziness
  - Dry mouth

Central Agonists
- Work on the brain to block sympathetic nervous system
  - Clonidine hydrochloride (Catapres)
- Side Effects
  - Dry month/Eyes
  - Blurred vision
  - Headaches
  - Sexual Dysfunction
Medical Management

- Peripheral Adrenergic Inhibitors
  - Work in the brain to block vasoconstriction of smooth muscles
  - guanadrel (Hylorel)
    - Side effects
      - Dizziness
      - Blurred vision
      - Headache

- Vasodilators
  - Work to widen small blood vessels to
  - hydralazine hydrochloride (Apresoline)
  - minoxidil (Loniten)
    - Side effects
      - Weight gain
      - Flushing
      - Increase hair growth

Communication

- Co-Management ➔ Collaboration
- Electronic Health Records
- Creating the Certified Clinical Documentation Architecture (C-CDA)
- Exchanging the C-CDA

Rehabilitation

- Optical Management
  - Trial Frame
  - 0.50 or higher steps
  - +/- Cross Cylinder testing
  - Prism
- Lighting
  - The key for AntiVEGF patients

Wills Eye Hospital

Collaboration
Rehabilitation

- Therapy
  - Eccentric Retinal reading
  - Field Loss Rehabilitation
  - Spatial Vision Neuro Rehab
    - Vergence Eye Movements
    - Saccadic Eye Movements
    - Smooth Movement Pursuits
    - Accommodation

Coordinated Care

- Physical Findings
  - Eye Findings
  - Vital Signs
- Functional Vision
  - Reading
  - Occupational Needs
  - Driving
  - Independent living

Communication with Health Care Team

- Medical Team
- Primary Care Physician
- Diabetologists
- Ophthalmologists
- Neurologists
- Others
- Therapy Team
- Psychiatrists
- Occupational Therapists
- Physical Therapists
- Mental Health
- Case Managers

The Future of Optometry

- Expanded Role in Preventive Care
- Expanded Role in Systemic Medical Care
- Expanded Role in Rehabilitation

Will require education, re-direction and commitment!