Forecasting ARMD Through 2050
- Early AMD 9.1mil in 2010 to 17.8mil in 2050
- CNV & GA 1.7mil in 2010 to 3.8mil in 2050
- Visual Impairment from AMD is 620,000 in 2010 to 1.6mil in 2050

Importance of Multivitamins in AMD
- Christen et al
  - Folic Acid, Pyridoxine and Cobalamin Combination Treatment & ARMD in Women: The Women’s Antioxidant & Folic Acid Cardiovascular Study
  - Trial data from large cohort (N =5442) of Women at High risk of cardiovascular disease
  - Homocystein concentration in blood increases risk AMD
  - Daily supplements reduce homocystein in blood and risk of AMD

Omega-3s Beneficial in AMD
- Arch Ophthalmol 2008 Chong et al
  - Australian meta-analysis of many studies (N=88,000)
  - High O-3s associated with 38% reduction in risk late AMD
- IOVS 2008 Nguyen et al
  - Australians fed rats O-3s, tested with ERG
  - Conclude beneficial across all retina layers, especially GC

Fat Consumption & Its Association with Age Related Macular Degeneration
- Chong EWT Arch Ophth 2009;127(5):674
- 6,734 patients aged 58-69 followed for 4 years
- Diet low in trans-unsaturated fat and rich in omega-3 fatty acids and olive oil may reduce the risk of AMD
Macular Pigment Studies

- Optom 2008; 79:266-272 Lueng
  - Optometrist play key role in assessment & monitoring risk of AMD
- LAST Study (Lutein Antioxidant Supplement Trial)
  - 12 month study
  - 90 male VA patients
    - Lutein 10mg vs Lutein 10mg & MV vs Placebo
  - Lutein only or combination increases MPOD by >50%, Glare recovery, contrast sensitivity and visual acuity

Macular Pigment Studies

- OptomVisScience 2008; Stringham & Hammond
  - Six months of L/Zx increased MPOD
  - Decreased glare disability 58%
  - Decreased photostress recovery time 14%
- Ophthal 2008 Feb 115(2):334-341 Blue Mountain Eye
  - Higher intake of L/Zx reduced risk of AMD
  - Confirmed protective benefit of zinc
  - Higher beta carotene increased risk AMD

Macular Pigment Studies in Cataracts

- ArchOphthal 2008; Mueller et al
  - CAREDS/WHI
  - N=1802 women with highest levels of L/Zx had 32% lower incidence of NSC
- Ophthal 2008 115(8) Sperduto et al
  - NEI Trial of Centrum Silver
  - N=1020 18% less lens events
- AmJClinNut 2008; Tan et al Blue Mountain Group
  - N=2464 Vit C and dietary antioxidants decreased NSC 50%

Macular Pigment Studies in Diabetes

- IOVS 2008; Gierhardt et al
  - Proved Zx mechanism of protection in early DR
  - Anti-inflammatory & VEGF regulation
- CAREDS 2007 Diabetic women have 30% lower MPOD
- Graetes 2008 Spanish Group
  - Fed diabetic rats lutein and found it to be as effective as insulin at preventing cataract

Non-Pharmacologic Management CNVMs

- Br J Ophthalmol 2006; 0:1-3
  - Regular exercise reduced the risk of developing ARM by as much as 70%
  - Independent of BMI and other confounders, study provides evidence that regular physical activity such as walking might protect against AMD
  - Physical activity known to reduce systemic inflammation and endothelial dysfunction

Activated VEGF Receptor Shed into Vitreous in Wet AMD: New Class of Biomarkers in Vitreous

- Davuluri G Arch Ophthal 2009, 127(5) 613
- Activated forms of VEGF & PDGF receptors previously not known in vitreous may constitute a new class of biomarkers for disease evolution as well as response to treatments
  - May also lead to new therapeutic targets
  - May help improve treatment timing
Rosiglitazone & Delayed Onset Proliferative Diabetic Retinopathy

- Shen LQ ArchOphth 2008;126(6)793-799
- Rosiglitazone is an oral peroxisome-proliferating activated receptor y agonist & oral insulin sensitizing agent with potential antiangiogenic activity
- Longitudinal study at Joslin Diabetes Center found 59% reduction in progression of severe nonproliferative DR in treatment group

Effect of Intravitreal Bevacizumab in DME After Cataract Surgery

- Takamura Ophthal 2009;116:1151-1157
- Results suggest IVB prevents increase in retinal thickness & reduces retinal thickness in eyes with DME after cataract surgery

Intravitreal Bevacizumab vs Macular Photocoag in DME

- Soheilian Ophthal 2009;116:1142-1150
- Results suggest IVB in patients with DME yielded better visual outcomes at 24 weeks compared to macular photocoagulation
- No adjunctive effect to intravitreal triamcinolone

Association Between C-Reactive Protein and ARMD

- Seddon JM JAMA Feb1,2004 Vol291,No 6
- CRP is a systemic inflammatory marker associated with risk for CVD
- CRP levels are significantly higher in advanced AMD
- Suggests CRP levels are an independent risk factor for AMD and may implicate the role of inflammation in pathogenesis of AMD

FDT Perimetry Abnormalities as Predictors of Glaucomatous VF Loss

  - 105 eyes of 105 glaucoma suspects
  - IOP 23mm+ or disc damage on photos
  - SAP VF normal
- Baseline FDT obtained
- Mean follow-up 41 months

Glaucoma
FDT as Predictor of VF Loss

- 16% (17 pats.) converted on SAP VF
- In patients with abnormal FDT at baseline:
  - Probability of developing abnormal SAP was 30%
- Patients with normal FDT at baseline:
  - Probability of developing abnormal SAP was 4%

Other Important VF Studies

- Paczka (2001) - found FDT better overall performance in detecting damage than RNFL photographs
- Kondo (1998), Wu (2001) - In patients with SAP VFDs restricted to 1 hemifield, FDT has shown to be able to detect functional losses in the other hemifield

Other Important VF Studies

- Kim (2007/AAO) – when SAP is normal, some patients with VFD detected by FDT showed decreased NFL thickness (OCT)
  - Provide evidence that coincident FDT & OCT abnormalities may be an early sign of glaucoma

First POAG Endpoint (n=125)*

- 35% Optic-disc defect first
- 10% Visual-field defect first
- 55% Concurrent visual-field and optic-disc defects

* Includes all subjects in both medication and observation groups.

Vitrectomy Causes Cataract & Glaucoma

- Chang, S AJO 2006
- Vitrectomy well known to result in cataract within 2 years
  - O2 now discovered to be responsible
  - After cataract and vitrectomy angle oxygen changed from 12mmHg to 32mmHg
- Study found increased IOP in operated eye compared to fellow eyes
  - 68% of OAG developed in operated eye
  - Presence of natural lens at time of vitrectomy associated with 28 month delay in OAG

Neuroprotection in Glaucoma

- Tsai Curr Eye Res 2005
- EPO (erythropoetin) found to have protective effect on RGCs
  - Currently approved and well understood for anemias, post chemo-therapy, and renal diseases
- Others under study include brimonidine, memantine, BDNF
- Future will be neuroprotection to improve environment and neuroregeneration with stem cells
### Efficacy & Safety of Once Daily vs Once Weekly Latanoprost Treatment

- Kurtz, S J OcPharmTher Vol20 No4 2004
- 20 patients with ocular hypertension and early glaucoma were treated with once daily vs once weekly latanoprost
- IOP tested after 2nd, 4th, 6th, 9th day and for 3 months on same schedule
  - Mean baseline IOP same for both groups (24)
  - Average IOP for both groups was 17mmHg
  - Difference between groups post treatment was insignificant
- Once weekly latanoprost treatment was as effective and bore fewer minor side effects

### Characteristics of Glaucoma in Japanese Americans

- Pekmeezi M ArchOphthal 2009;127(2):167
- 1732 patients in Japanese-American clinic over a ten year period
  - 112 with glaucoma, 17%HTG, 70%NTG
- Proportion of patients with NTG was 4-fold higher than those with HTG

### OculoSystemic Diseases

- OCT and Multiple Sclerosis
  - Fisher, JB Ophthal 2006
  - MS eyes have lower NFL thickness
    - With or without history of optic neuritis
    - Eyes with significant ON had thinner NFLs and more optic atrophy
    - Structure matching function
  - OCT now recognized as a new biomarker for Alzheimer’s

### Fall Injuries

- Stevens JA, J Amer Geriatr Soc 2009
- 50,000 older adults are treated for injuries related to falls involving a cane or walker each year according to CDC
  - 90% related to walkers
- Incidence of Hip Fractures is increasing in US
  - 340,000 occurring in 2000
  - Hip fractures in osteoporotic older women is associated with significant mortality over 7 years
    - One year mortality ranges from 14-36%
    - Need for improved devices and training
  - Early surgery was not associated with improved function or mortality but was associated with reduced pain and LOS

### College Binge Drinking on Rise

- Hingson, RW J StudAlcohol Drugs Suppl 2009;16:12-20
- College students aged 18-24 who engaged in binge drinking (5 or more drinks on an occasion in past 30 days) increased from 41% in 1998 to 45% in 2005
- Number of unintended alcohol related injury increased from 1140 in 1998 to 1825 in 2005 (3% increase)
- Reports of driving under influence of alcohol increased from 26% to 29% in past year
### Nonmelanoma Skin Cancers on Hands After UV Nail Light Exposure

- MacFarlane DF Arch Derm 2009;145(4)
- Exposure to UV-A nail lights is a new risk factor for development of skin cancer
- Exposure is similar to that of tanning beds and also causes photoaging

### Black Box Warning on Labels for Botulinum Toxin

- JAMA June 10, 2009
- FDA requires manufacturers to label products with warnings about risk of botulism-like symptoms associated with systemic spread of the toxin
- Requires Allergan (Botox A), SolsticeNeuroscience (Myobloc B), and Ipsen Biopharm (Dysport abobotulinum A)
- Distant spread from injection site cause muscle weakness, difficult speech, loss bladder control, difficult breathing, blurry/double vision, drooping eyelids

### Sildenafil Treatment of Women with Antidepressant-Associated Sexual Dysfunction

- SSRI and NSSRI most freq prescribed meds for outpt aged 18-65 years
- Sexual dysfunction occurs in 30-70% of men & women under treatment
  - Results in 70% increased risk of nonadherence
  - 80% of women do not discuss sexual side effects with physicians
- Significant decrease in adverse sexual effects demonstrated

### Association Between Tamsulosin & Serious Adverse Events After Cataract Surgery

- Bell, C JAMA May 20, 2009
- BPH affect 3 of 4 men by age 70
- IFIS increases risk of complications during cataract surgery
- 96,128 men studied over 5 year period
- 2.3 times risk of serious adverse events following cataract surgery
- Discontinuing drug does not change risk
- Women also exposed for treatment of urinary calculi

### Memantine Treatment in Patients with Moderate to Severe AD

- Tariot PN JAMA Jan 21, 2004 Vol 291 No 3
- Reisberg B ArchNeur 2006;63:49-54
- AD affects 4.5 million in US
- Most are treated with donepezil for mild-moderate disease
- Combination of memantine-donepezil resulted in significantly better outcomes by measures of cognition, activities of daily living, behavior and global outcomes

### Adherence to Mediterranean Diet, Cognitive Decline & Risk of Dementia

- Feart C JAMA Aug 12, 2009 Vol 302, No 6 638
- Diet characterized by high consumption of plant foods, olive oil, low intake of saturated fat, moderate intake of fish, low-mod intake of dairy, low consumption of meat & poultry, wine in low-mod amounts with food
- Associated in study with slower cognitive decline and reduced risk for AD
Physical Activity, Diet & Risk of AD

- Scarmeas N JAMA Aug 12, 2009 Vol302 No6
- 1880 community dwelling elders in NY studied for 14 years
- BOTH higher Mediterranean type diet adherence & physical activity were independently associated with reduced risk for AD

CSF Biomarkers & Incipient AD

- Mattison N JAMA July 22/29, 2009 Vol302 No4
- Multicenter study found good accuracy of CSF b-amyloid42, total tau protein (T-tau) for predicting incipient AD in patients with mild cognitive impairment (MCI)
- Possibility that disease-modifying treatment with y & B secretase inhibitors or vaccination regimens raise a need for methods enabling early diagnosis
  - Allow treatment to begin very early before neurogenerative process is too severe

Like Parent, Like Child: Food & Beverage Choices During Role Playing

- Sutherland LA ArchPedAdoleMed 2008;162
- 120 Children aged 2 to 6 selected food & beverages from a miniature grocery during role play scenario
  - Most children (70%) purchased less healthy but all purchased combinations
  - Healthfulness of children's purchases were significantly predicted by their parents purchasing categorization
    - Assimilate and mimic parent food choices at young age, even before ability to appreciate implications of these choices

Comparison of Anthroscopy vs Physical/Medical therapy in Knee OA

- Arthroscopy provide NO MORE benefit to patients eith knee OA than physical and medical therapy
- What works is reduction of weight by 5%, low impact aerobic exercise, quadricepts strengthening, APAP or NSAID, intra-articular corticosteroids for short term pain relief, arthroscopy option for those with OA and meniscus tear and/or loose bodies, patellar taping

Comparison of Anthroscopy vs Physical/Medical therapy in Knee OA

- What does not work is needle levage, glucosamine and/or chondroitin, custom foot orthotics, arthroscopy with debridement or lavage in patients without loose bodies or meniscal tears
- Insufficient data to assess intra-articular hyaluronic acid, bracing, acupuncture

Aggressively Treating HTN Remains Strategy of Uncertain Benefit

- Sleigh P J Hypertension 2009 27(7):1360
- Arguedas J Cochrane Database Syst Rev2009
- Latest arguments that lower-is-better finds that reducing blood pressure to targets lower than 140/90 does not reduce all-cause mortality, rates of MI, stroke, congestive heart failure, major cardiovascular events, and end-stage renal disease
Meibomian Gland Dysfunction in Contact Lens Intolerance
- Wallis, DM Refractive Eyecare July 2009
- MGD results in symptoms and drop-out
- With treatment 75% return to FT CL wear and 90% PT wear
  - Hot compresses, lid scrubs
  - Topical azithromycin for one week results in improvements lasting up to 4 additional weeks

Comparison of 15%Azelaic acid Gel & 0.75%Metronidazole gel in Treatment of Acne Rosacea
- Elewski,B ArchDerm 2003;139:1444-1450
- Compared efficacy of topical treatments for papulopustular facial acne rosacea
- Use of 15%Azelaic acid twice daily for 15 weeks demonstrated significant superiority over using 0.75% metronidazole gel in improving principal signs of rosacea (inflammatory lesions and erythema)

Phase III Efficacy & Safety Study of Besifloxacin in Treatment of Bacterial Conjunctivitis
- Besifloxacin 0.6% ophthalmic suspension is a new fluoroquinolone antibiotic with Durasite vehicle
  - TID dosage for 5 days was effective for conjunctivitis in age 1 and older
  - Found effective vs MRSA, MRSE, LRSP, PRSP, and BLPHI
- Exclusively developed for ocular use without systemic exposure to reduce potential for resistance

Thank you
Missouri Eye Associates
McGreal Educational Institute