Diabetes Nation

Where Are We & Where Do We Go From Here?

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Disclosures

We are or have been a consultant for, been on advisory boards of, or spoken on behalf of:
Bausch & Lomb, Freedom Meditech, GlaxoSmithKline, Kestrel, Kowa, LifeMed Media, Prodigy Diabetes Care, Risk Medical Solutions, Vision Service Plan, ZeaVision
None of these affiliations have affected the content of this presentation

29.1 million Americans have diabetes
8 million Americans with diabetes haven’t yet been diagnosed
86 million more are at high risk

Further Increases in the Prevalence of Diabetes Are Expected

Diagnosed Diabetes

Projected Number of Persons With Diagnosed Diabetes

Based on diabetes prevalence rates predicted from 1980-1998 trends from the National Health Interview Survey and predicted US Census Bureau’s population projections.


Diabetes – A “Growth Industry”

86 million Americans have pre-diabetes

Diabetes & pre-diabetes affect 1/3 of the US population

Prevalent Comorbidities Among Older Patients With Type 2 Diabetes

**46% had at least 5 comorbidities, and only 4% had T2DM alone

2014 ADA Diabetes Fact Sheet

**Diabetes & Dementia**

- 4x the risk of Alzheimer’s and non-Alzheimer’s dementia
- AD referred to as “type 3 diabetes”
  - Reduced hippocampal insulin production
  - Brain insulin resistance
  - "brain iron overload" (BIO) linked to insulin resistance & cognitive decline

_Diabetes. 2014 Jul;63(7):2253-61_  
_Diabetes Care. August 14, 2014; epub ahead of print_

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**US Healthcare Costs Attributable to Diabetes, 2012**

*For Patients of All Ages: Total = $245 Billion*

- Hospital inpatient days $65 billion
- Outpatient care* $76 billion
- Drugs $50 billion
- Nursing home days $36 billion
- Estimated that by 2020 1/3 of US healthcare dollars will be spent on diabetes


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**Estimated lifetime risk of developing diabetes for individuals born in the United States in 2000**

- Total
- Non-Hispanic Black
- Non-Hispanic White
- Hispanic

_Naeyan et al. JAMA. 2003_

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**CDC 2014 Statement**

- **40% of current US adults will develop diabetes within their lifetimes**

_U.S. Centers for Disease Control and Prevention  
Aug. 13, 2014  
The Lancet Diabetes & Endocrinology_

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**DR – some real numbers**

- Pooled analysis from almost 23k with DM
  - 34.6% prevalence for any DR
  - 6.96% for PDR
  - 6.81% for DME
  - **10.2% for Vision Threatening DR (PDR and/or DME)**
  - All DR end points increased with DM duration, A1c & BP
    - Higher in people with T1DM compared w T2DM
  - **Worldwide: 93M w DR, 17M PDR, 21M DME, 28M VTDR**


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**What This Means for the US**

- **9.65 million with any DR**
- **2.85 million Americans with Sight-threatening diabetic retinopathy**
How is The World Doing?

Source: Organisation for Economic Cooperation and Development (OECD) 2011

USA

500,000,000 People Will Have Diabetes

By 2030

CRISIS WHAT CRISIS

500,000,000 People Will Have Diabetes

Percent Change in Diabetes Prevalence Amongst Adults from 1995 to 2010

Source: IDF 2013

Update on Strategies For Diabetes Prevention
What Drives The Diabetes Epidemic?

- Rising rates of obesity, insulin resistance, NAFLD
  - Non-alcoholic fatty liver disease increases T2DM risk nearly 300%
  - Int J Endocrinol. 2013
- Poor nutrition & malnutrition
- Declining rates of physical activity

Other Environmental Risk Factors for T2DM

- Essential Hypertension
- Sleep Deprivation (< 6 hrs/night)
- Gestational diabetes
- Smog & particulate air pollution
- Corticosteroid usage
- Thiazide diuretic usage
- Lipophilic Statins (esp Lipitor/Crestor)

Be Careful Who You Marry!

- If one spouse has T2DM, the other spouse’s odds for developing T2DM are elevated 26%
  - Analysis of 75,000+ couples
  - BMC Medicine, January 2014
- If a parent has T2DM, the risk is 50% per offspring

Diabetes Among Youth

- By 2050, cases of both type 1 and type 2 diabetes in Americans < 20 may rise dramatically
  - T1DM to triple (179K to 587K)
  - T2DM to quadruple (22.8K to 82.1K)
  - Majority of increased rates to be seen in Hispanic, Asian and African American youth
  - Diabetes Care. 2012;35:2515-2520
T2DM in Kids

Insulin resistance progresses faster in kids with T2DM aged 10-17

4x faster decline in pancreatic beta cell mass compared with adults (20-35% decline v. 7-11% decline per year)

Triple the rate of early kidney disease

Diabetes Care. May 2013

T2DM in Young People is WORSE than T1DM

- T2DM diagnosed between 15-30 years of age is TWICE as likely to result in death
  - After controlling for age at diagnosis, duration of disease and HbA1c (n = 824; mean A1c = 8.1% in both groups)
  - 20+ year follow-up
  - 5X the rate of ischemic heart disease & 6X the rate of stroke
  - 30% worse nerve function but equivalent DR rates (37% vs 41%)

Diabetes Care. 2013 Dec;36(12):3863-9

Some Good News & Some Bad News

- Obesity rates amongst 3-5 year-olds have dropped 43% of the last decade
- Obesity amongst women > 60 years has increased 25% in the same period
- Overall, rates of obesity remained level in every state except Arkansas from 2012 to 2013

JAMA. 2014;311(8):806-814

Strategies to Prevent Diabetes

The Diabetes Prevention Program (DPP) conducted at 13 US centers showed that “lifestyle modification” (walking 30 minutes each day, five days each week) lowered the risk of developing T2DM in those with prediabetes (IGT or IFG) by 58% over a four year period

Twice as effective as metformin (Glucophage™)

Exercise...a DIRTY word!!
What About Metformin + Exercise?

- Several studies show that add-on metformin lessens the insulin sensitizing effects of exercise in prediabetes.
  - Obesity (Silver Spring). 2013 January; 21(1).

- Pioglitazone reduced conversion to T2DM by 72% (weight gain & edema common).

Act Now Study

**Primary Prevention of T2DM**

- Unpublished data
  - Average Serum Level
    - NHANES: 22 ng/ml
    - US D*action: 53 ng/ml
  - Equivalent Mean BMI
    - NO adjustments for Age
    - Fam Hx
    - HTN
  - Incidence of Diabetes
    - NHANES: 8.5/1,000 person-years
    - US D*action: 0.9/1,000 person-years
  - 80% risk reduction
  - Over 5 yrs after all adjustments

**VITAMIN D STATUS AND DIABETES**

- Reasonably good evidence for benefit
- Evidence shows inverse relationship between DR severity & serum vit D.
- Associations, positive or negative, do not establish causality
- Most experts agree that 2000 IU vitamin D3/day is safe and that serum 25-OH D ≥ 50 ng/ml is preferable.
  - 2009 Vitamin D Consensus Panel
  - Univ of Toronto School of Medicine

**Vitamin D Summary**

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What Diet Is Best to Prevent DM?

- Multiple observational studies link high meat intake to more diabetes
- FFQ of 41,387 patients showed lowest risk for vegans, especially in African-Americans – hazard ratios:
  - Vegan: 0.43 Non-Black Race
  - Lacto-ovo Vegetarian: 0.68
  - Vegan: 0.30 Black Race
  - Lacto-ovo Vegetarian: 0.47

*Nutrition, Metabolism & Cardiovascular Diseases. 2013;23:292-299*

Too Many Calories, but.....

Not All Calories Are The Same

Are All Calories Equal?

- **NO!!**
  - Fructose forms intra-hepatic fat and AGEs at a higher (7X) rate than does glucose
  - Fructose and HFCS raise uric acid & are causally linked to diabetes and Met Synd


*Int J Mol Sci. 2013 Nov 5;14(11):21873-86*

Myth or Fact: High Sugar Intake Causes Diabetes?

Econometric analysis of 175 countries

Every 150kcal/person/day sugar consumption increases population diabetes prevalence 1.1%

Equivalent to 1 can of soda per day


- "Differences in sugar availability statistically explain variations in diabetes prevalence rates at a population level that are not explained by physical activity, overweight or obesity"
National obesity rates are NOT totally synchronous with rates of diabetes

Sugar Availability and Increased Diabetes

Total Sugar Intake 1700 to 2000

Consumption of Sugared Soda and Fruit Juice 1977-2006

WHO 2014 Recommendations for Sugar Consumption
- Added sugars, sugar from fruit juices & honey should be less than 5% of total calories
- ≤ 25 grams/day

Smoking Gun
- 2014 Surgeon General Report concludes that cigarette smoking is causally linked to T2DM based on meta-analysis

WHO Guideline: Sugar intake for adults and children, March 5, 2014

Independent Of all other Diabetogenic Factors

Surgeon General’s 50th Annual Report on Smoking
US Department of Health & Human Services, Jan 20, 2014
Other Steps to Avoid Diabetes

- Significant Risk Reductions Associated With:
  - Mediterranean-type Diet
  - Avoidance of beta-cell toxicity from nitrate/nitrate preservatives
  - Higher variety of vegetables (> 14/wk)
  - Drinking coffee or tea
  - Moderate use of cannabis

Diagnosis of DM

- FPG > 126mg/dl on two occasions
- RPG > 200mg/dl with polyuria, polydipsia & weight loss
- OGTT > 200mg/dl at 2 hours
- HbA1c > 6.5% (2009)

Pre-diabetes (IFG and/or IGT) now defined as FPG > 100mg/dl or OGTT > 140mg/dl or HbA1c > 5.8%

Significance of AGEs?

- Long-term biomarkers of glucose toxicity
- Implicated in virtually ALL diabetes complications, Alz Dis, as well as AMD
- Inhibit the SIRT1 gene -> shorten lifespan
- Found in foods cooked at high temperatures and low humidity
  - Methylglyoxal found in grilled meats worsens human cognition and insulin sensitivity

Update on Diabetes Diagnosis in the ECP's Office

- Measurement of fluorescence (AGES) in the lens is a biomarker of long-term glycemic stress

The ClearPath DS-120 is designed for early detection of DM by patient comparison with age-matched norms

Update on Trends in Diabetes Treatment
Metabolic Control in US Diabetes Patients

- 50% have A1c > 7% & 33% have A1c > 8%
  

- Per AACE guidelines, half of patients with T2DM are on inappropriate meds
  

- Up to 70% of patients with diabetes have blood pressure levels above target
  
  J Gen Intern Med. 2008 May;23(5):588-94

Treatment Trends

- Most patients with T2DM are put on metformin, followed by a sulfonylurea

- Data shows a shift toward combination therapy and incretin drugs (-gliptins & -tides)

- Up to 70% of patients with diabetes have blood pressure levels above target

Benefits of Incretins

- Victoza & Byetta/Bydureon (Injected)
- Januvia, Tradjenta, Onglyza (oral)

- Weight loss with the former (10-20 lbs)
- Better preservation of beta cells with both
- Early data shows improved cardiovascular outcomes with GLP-1 analogs

The Future - Triple Therapy

Victoza/Byetta + metformin + Actos

Early triple therapy results in better everything:
- A1c, fasting glucose, post-prandial glucose
- Beta cell mass & function
- Weight, BP, Lipids

Need longer RCTs

For more information, please see:
- Farxiga® (dapagliflozin)
- Invokana® (canagliflozin)
- Surprising Metformin Fact
- The Future - Triple Therapy

9/21/2014
**Diabetes Meds Are Expensive**

- 40+% increase in filled diabetes Rxs from 2003-2012
- Amongst non-specialty medications, diabetes meds are the most expensive
- Patient costs rose 14% in 2013, while lipid and BP med costs declined modestly
- Out of pocket costs may easily exceed $500/month [Express Scripts Survey, April 2014]

**Surgery is Effective...**

- STAMPEDE 3-year study shows far superior A1c results than intensive medical therapy (IMT) - mean BMI = 36.7
  - 38% of gastric by-pass pts had A1c < 6% and 94% were off insulin at year 3
  - 25% and 92% of gastric sleeve pts
  - 5% and 45% with IMT

**Bariatric Surgery & Progression of Retinopathy (n = 148)**

- 56% of mild NPDR regressed and 45% was stable (none progressed)
- 1 pt with moderate NPDR and 2 with severe NPDR progressed
- Those with progression had higher pre-surgical A1c and larger A1c drop post-surgery
- “Euglycemic re-entry phenomena”
- Pts with moderate or worse NPDR prior to undergoing bariatric surgery need close F/U

**Latest Research on Tight Metabolic Control in Higher Risk Patients**

- **Is Lower Always Better?**

**How Low Should You Go?**

- **Kids** – fear that hypoglycemia impairs cognitive development & increases risk of death [Pediatr Endocrinol Rev. 2004 Aug;1 Suppl 3:530-6.]
- **Adults with CVD** – some studies show risk of CV events may increase with tight control

Diabetes Care. 2008 May;31(5):952-7

HbA1c Take Home Messages

- Lower A1c lowers risk of microvascular complications (DR)
- Lower A1c improves CV outcomes if
  - Dx < 15 years
  - A1c target achieved readily
- If pts with CVD have had T2DM > 20 years and/or don’t readily achieve A1c levels < 7%, back off!!

Continuous Glucose Monitoring

- Only used for patients on insulin
- SC sensor implanted Q7 days
- Alarms for hypo- and hyperglycemic thresholds (e.g. < 70 and > 170)

Emerging Therapies for T1DM

- Immune therapy
  - Anti-CD3 monoclonal antibody vaccines
  - GAD65 auto-antigen therapy
  - TB vaccine (T cell death x 1 wk)
- Micro-encapsulated beta cells
  - ViaCyte Encaptra system

What’s Wrong With Insulin Delivery?

Pancreatic insulin is secreted directly into the hepatic portal vein

- “Rapid Acting” insulins (Novolog™, Humalog™) do not exert significant activity for 30-60 minutes given S/C
  - Guarantees significant post-meal hyperglycemia

Solutions?

- Inhaled insulin
  - Exubera™ pulled from the market
  - Afreza™ now has FDA approval
- Glucose responsive Insulin (GRI)
  - pH sensitive polymer or membrane releases insulin only when glucose elevated (JDRF GRI Prize)

Insulin Pros & Cons

**The Good**

- Early use preserves beta cell function
- Early use may promote protective metabolic memory
- Allows correction of mild to profound hyperglycemia

**The Bad**

- Weight gain
- Hypoglycemia
- Poorer survival in pts with cancer

*Diabetologia. 2014 May;57(5):927-34.*
A Few Trends in Managing Diabetic Retinopathy

Out, damned spot! out, I say! - Macbeth

Lipid Agents & Retinopathy

Simvastatin + Fenofibrate therapy lowers the risk of DR progression by 35% (and need for laser by 31%) compared to simvastatin alone in pts with T2DM and high cardiovascular risk (n = 2856) ACCORD Eye Study, N Engl J Med. 2010 Jul 15;363(3):233-44

Consistent with FIELD Study showing reduced progression of DR and need for laser Tx Lancet 2007 370(9600):687-97

Add-on Fenofibrate lowers risk of DR progression in T2DM

Fenofibrate

- Approved first-line therapy for NPDR in Australian adults with T2DM
- Reduces CV events 30% in women and 13% in men Diabetologia 2014

ACC/AHA 2013 Guidelines for Statin Therapy

- Eliminate target LDL (insufficient evidence)
- Focus on Intensity of statin therapy
- Groups that Should be considered
  - Known CVD
  - LDL-C > 190 mg/dl High Intensity
  - DM patients 40-75 yo with LDL>70
  - Any pt 40-75 yo with LDL > 70 & 10-year CV Event Risk > 7.5% Moderate or High Intensity

ACEIs/ARBs

Vasotec® (enalapril) and Cozaar® (losartan) reduce the risk of DR progression by 65% and 70% in T1DM NEJM 2009;361: 40-51

Captopril reduces DR progression 40% and DME 30% by OCT in T2DM Chin Med J (Engl) 2012 Jan;125(2):287-92

Should these agents become standard treatment of DR?

- prils and –sartans lower DR Risk of Progression

Does This Patient Have CSME?

- Hard exudate within 1 DD of the fovea is highly sensitive (75- 94%) and specific (84%) for CSME in diabetes (n = 103) OVS March 2014
Is Telescreening Valuable?

**PROS**
- Good reliability with expert interpretation (JVN)
- Cheaper, mass access for underserved populations
- Improved public health

**CONS**
- Does not ID all ocular complications of diabetes
- Does not emphasize education or prevention
- Human interaction results in better outcomes
- Possible misuse

Evolution of Clinical Imaging

RESTORE & READ

- Lucentis versus Laser for Vision loss from CSME (20/40 to 20/200 BCVA)
- Percent achieving ≥ 20/40 ETDRS acuity at 12 months:
  - Lucentis – 53%
  - Lucentis + Laser – 44.9%
  - Laser alone – 26.3%
- Benefit of Lucentis maintained at 3 years
- No increased MI or CVA with Lucentis

Eylea™ in Diabetes (Regeneron)

- Aflibercept vs. laser for CSME
- Blocks all VEGF-A isoforms, IgG1 & placental growth factors (PIGF)
  - Long half-life = fewer injections

- Better reductions in macular thickness and improvements in VA versus laser
  - +8.4 to +11.5 letters vs. +2.5 letters

Take Home for DME:

- anti-VEGF treatments are superior to macular laser for VA and OCT

- BUT...need repeat injections & costs more money
- Bevacizumab (Avastin™) + Laser most cost-effective comparing laser, steroid, Lucentis, Avastin or any combination
Is It Safe???

- Meta-analysis of 2500 patients shows no significantly increased risk of CVA, MI, vascular death or mortality with Lucentis for DME (but 95% CIs = 0.37 to 4.73)
- There is a dose-dependent increased risk of mortality ($p = 0.04$) that dissipates when Lucentis is used pro en reta (as needed) to $p = 0.133$

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What anti-VEGF is Best for DME?

- Avastin, Lucentis & Eylea have not been studied head-to-head (a la CATT)
- Outcomes appear comparable by 15 RCTs and 8 observational studies, but evidence for superiority is insufficient
- Cost-effectiveness is best with Avastin
- Adverse events with Avastin are under-reported


Does Good Blood Glucose Control Even Matter Once We Start Using anti-VEGF Agents for DR/DME?

Retina. 2014 Apr;34(4):829-35

Patients with Closer to Optimal Glucose Control Achieved Better Visual Outcomes on Anti-VEGF Therapy

- Note: Retrospective case series of patients treated with bevacizumab
- CMT=central macular thickness

A1c Variability Matters!

- 5 year cumulative incidence of laser Tx for DR in 1459 T1DM pts with highest (19%) vs lowest (10%) A1c variability controlling for mean A1c, duration, BP, kidney status, gender
- 70% increase risk of PDR in hi SD group

Diabetologia. 2013 Jan 13
Obstructive Sleep Apnea Syndrome

- OSAS is independently associated with risk of DR and its progression

Br J Ophthalmol. 2012 Dec;96(12):1535-20
Retina. 2012 Oct;32(9):1591-2
Clin Med. 2010 Nov;17(11):913-6

SNPs Increase Risk

- Like AMD, gene single nucleotide polymorphisms (SNPS) may confer significantly increased risk for severe DR

No commercially available test........Yet


Keys to Risk

- Diabetes duration
- HbA1c
- Blood Pressure
- Diabetes sub-type
- Gender
- Retinal Status at baseline

80% of All Risk is determined By these 6 factors

www.RetinaRisk.com

- Algorithm recently validated in a multi-cultural UK cohort (> 15,000)
- Launched at AOA Convention, San Diego, 2013
- Free 30 day trial – check it out

Clinical Data

Risk of developing sight-threatening retinopathy

- 1 year risk
- 5 year risk
- 10 year risk

- Diabetes duration
- HbA1c
- Blood Pressure
- Diabetes sub-type
- Gender
- Retinal Status at baseline
**Current Algorithm For Preventing Diabetic Retinopathy**

- Keep blood glucose, blood pressure and blood lipids as close to normal as possible
- Get annual dilated retinal examinations
- Get treatment if/when you develop STR

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**AMD Supplementation as a Working Model**

- Numerous studies show beneficial effects of micro-nutrient supplementation in Age-related Macular Degeneration
- Reduced risk of progression to advanced AMD
  - e.g. AREDS, AREDS2
- Improvements in Visual Function with xanthophyll supplementation
  - e.g. LAST, LUNA, CARMIS, ZVF Study

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**Macular Pigment in Diabetes**

- Significantly lower in DM subjects than age matched normals
- Inversely associated with A1c & DR severity
- Early evidence that MPOD is lower in POAG

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**Diabetes & DR Affect Visual Function**

- Snellen visual acuity is a 150+ yr old test that does not always reflect real world visual function
- DM/DR also impair: color perception, contrast sensitivity, visual field sensitivity

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"It may be time to develop, test and educate ECPs & the public about an AREDS type multi-component supplement for patients with diabetes and diabetic retinopathy"

Beyond AREDS: Is there a place for antioxidant therapy in the prevention/treatment of eye disease?
Kowaluk RA, Zhong Q. 
Invest Ophthalmol Vis Sci. 2011 Nov 7;52(12):8665-71
**Diabetes Visual Function Supplement Study (DiVFuSS)**

- 6 month placebo-controlled RCCT of adults with T1DM or T2DM ≥ 5 years
- No DR (2:1) and mild-moderate NPDR (1:1)
- Daily use of a multi-component nutritional supplement (non-provit. A carotenoids, D, C, E, curcumin, benfotiamine, Pycnogenol, lipoic acid, NAC, resveratrol, green tea, O-3 FAs, CoQ10)
- Pre-and post-analysis of CSF, MPOD, color vis., macular perimetry, OCT, A1c, lipids, 25(OH) vit. D, TNF-a, hsCRP

ClinicalTrials.gov Identifier: NCT01646047

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**Animal Model of DR**

- DiVFuSS formula blocked early mitochondrial damage in rats
- DiVFuSS formula blocked retinal capillary apoptosis underlying DR
- DiVFuSS formula improved β-wave ERG (retinal function)

*Nutr Metab (Lond). 2014 Jan 30;11(1):8*

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**DiVFuSS Unmasked**

Initial Analysis of 65 subjects to complete the trial

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**Subject Characteristics (n = 65)**

- 28-79 yo (mean = 58 yrs)
- 32 with NPDR & 33 with no DR
- 29 T1DM & 36 T2DM
- HbA1c range 5.8 to 10.3% (mean 7.4%)
- Mean A1c in those with DR = 7.8%
- Mean A1c in those with no DR = 7.1%
- Diabetes duration 5-52 years (mean 21.2 yrs)
- Mean 23.4 years in those with DR
- Mean 14.7 years in those with no DR

No statistically significant differences at baseline between S and P groups

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**DiVFuSS Unmasked Data**

<table>
<thead>
<tr>
<th>Δ from baseline</th>
<th>Supplement versus Placebo</th>
</tr>
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<tbody>
<tr>
<td>Contrast</td>
<td>+28%</td>
</tr>
<tr>
<td>Color Error Score</td>
<td>-42%</td>
</tr>
<tr>
<td>5-2 MD</td>
<td>+1.3 dB</td>
</tr>
<tr>
<td>hsCRP</td>
<td>-62%</td>
</tr>
<tr>
<td>HbA1c</td>
<td>-4%</td>
</tr>
<tr>
<td>OCT mean NFL</td>
<td>unchanged in both groups</td>
</tr>
</tbody>
</table>

For contrast, color, visual field, hsCRP, p < 0.04
**Summary of Initial Findings in Human Subjects**

- **DiVFuSS** formula significantly improved visual function, including contrast sensitivity, visual field sensitivity and color perception.
- **DiVFuSS** formula significantly reduced hsCRP and DPN scores.
  - Mean reduction of 0.9/4 on DPNSS Scale.

**SO……..Where Are We?**

- In big trouble
- Diabetes and co-morbidities will bankrupt the US health care system
- Research suggests provider reimbursement for “Optimal Care” of DM patients must increase 19% for providers to break even!!!
- Boutique health care is on the rise.

**Slipping through the cracks**

- 44 yo male with T1DM 16 years
  - A1c = 11%
- Dx with high-risk PDR 8/2013 with stat referral to retinology
  - BCVA 20/25 and 20/20
- Received Avastin OD and asked to return x 1 week
  - Upset about co-pay
  - **Never returned for more Tx**
  - **Came to see me last week**
We Must……

- Incentivize good self-management
- Incentivize good medical management
- Prioritize early tight control and regular follow-up in high-risk patients
- Effectively educate pts about their risk
- Prevent diabetes
- Work together & Communicate

What the Endocrinologist/PCP should be communicating:

- What is this patient’s individualized A1c goal?
- What are the reasons of concern (if any) with the specific A1c goal?
- What is the treatment and follow-up plan?

What the Optometrists should be communicating:

- What are the retinal findings? (No abbreviations)
- Comparison of current findings to previous exam.
- What is the surveillance recommendation?
- Is the patient being referred to a Retinal Specialist, if so why?
- What education points were touched on at the visit?

Some Good News

After 30 years, < 1% of patients in the DCCT on intensive management have suffered amputation, ESRD, or legal blindness


Rates of acute MI and stroke in patients with T2DM have dropped by 60% over the last 20 years

Where Do We Go From Here?

- We need to develop high quality, efficient, collaborative health care teams to manage diabetes
- We need to incentivize good self-care and prevention of diabetes
- Optometrists can play a vital role by being proactive & collaborative

Thank You!

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