Public (Population) Health Approach to Vision Care

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Flaum Eye Institute

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Health Care Innovations Conference, Rochester, NY

November 13, 2019
Disclosures

• None
Prevent Blindness America
Implementing Population Eye Health Strategy

Led By: Heather Whitson, MD,
• Geriatrician at Duke University
• Associate Professor of Medicine & Ophthalmology
• Deputy Director of the Duke Center for the Study of Aging and Human Development

Access and equity = the right resource, for the right person, at the right time, in the right way

RIGHT RESOURCE
- Holistic admissions for health professions
- Expand paraprofessional role in eye health
- Optimizing payment streams
- Evidence-based guidelines

RIGHT PERSON
- 0-3 year old assessment
- Preschool and school-age sustainable programs
- Adult coverage for eye services
- Addressing multiple vision need for elders

RIGHT TIME
- Periodicity and evidence-based guidelines
- Timely access
- Responsive and resourceful care

RIGHT WAY
- Accountability
- Culturally and linguistically appropriate services
- Improved scheduling and care options
- Family- and community-centered
Summary of Some Data Sources for Population Health

1. Examination Based Population Studies
3. Administrative Claims Data – limited to insured patients
4. EMR Registries – eye care patients
5. Local Eye Care Surveillance Data – Screenings/Telemedicine/Public Health Outreach
Institute of Health Care Innovation Triple Aim Population Health Management

- Productivity
- Sustainability
- Cost effective
- Comparatively effective

- Patient satisfaction
- Outcomes
- Quality
- Safety

- Risk management through pooling
- Preventive care
- Socio-economically impactful

Source: Bernard DM et al. Health Affairs. Milbank 2008; 576-749

David Kindig of the University of Wisconsin (left) and Greg Stoddart of McMaster University

“The health outcomes of a group of individuals, including the distribution of such outcomes within the group.”

–Kindig & Stoddart 2003

Fits Biopsychosocial Model of Health - WHO definition of health of population in 1946 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

Emphasize both defining the measurement of health outcomes of interest and understanding the pattern of determinants that influence these outcomes.

CDC & RWJF National Surveillance & Local Health Data

https://www.cdc.gov/500cities/index.htm

The 500 Cities project is a collaboration between CDC, the Robert Wood Johnson Foundation, and the CDC Foundation. The purpose of the 500 Cities Project is to provide local-level surveillance data and to inform the public about health disparities and the importance of making healthy choices. The project provides information on the health of Americans in 500 cities across the United States and their surrounding areas.

- Health Insurance
- Primary Care
- Cancer Screening
- Dental Care
- Smoking

• No Tracking of Vision/Eye Health Metrics
https://communitycommons.org

56% of Rochester’s Children are Poor – 3rd in the Nation
FEI has Screened nearly 1000 Students in RCSD & Greece

• 20% Do not Pass Vison Screening
• Many Not Complete Vision Screening

2017 – Flaum Technicians Partnered with School Nurses to help with school screenings

2017-18: RCSD Schools: 300 students
2018-19: Greece School:
   Arcadia Middle School: 7th grd, 75 students
   Autumn Lane: Pre K-1, 180 students
   Holmes Road: Pre K, K, 200 students

Projected by the end of the school year:
   Renaissance: 1st, 3rd, 5th, 200 students
   Long Ridge: 3rd & 5th, 275 students
2018-19: RCSD 22: 150 students, all ages
Pediatric Auto refractor based Vision Screening Data in 2018-19 by NYS Lions

48,966 Screened and 15% (7233) referred to Eye Care
Population Health – Matching Demand and Supply (Diabetes)

In 2015 approximately 5,000 URMC Patients with Diabetes Needed HEDIS Specified Eye Exams
2019: Creating Dashboards to Track Patients Needing Eye Care

Tele-I-Care Program

<table>
<thead>
<tr>
<th>Clinic</th>
<th># of patients in the gap</th>
<th># of patients who have been notified they need a diabetic eye exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manhattan Sq</td>
<td>111</td>
<td>80</td>
</tr>
<tr>
<td>SIM</td>
<td>564</td>
<td>437</td>
</tr>
<tr>
<td>Culver Medical</td>
<td>146</td>
<td>123</td>
</tr>
<tr>
<td>Clinic Total</td>
<td>821</td>
<td>640</td>
</tr>
</tbody>
</table>

Annual DM Eye Exam Rate Medical Home dashboards in eRecord (% of Patients with Diabetes Having an Eye Exam per HEDIS Metric)

Before Tele-I-Care implementation July 16, 2018

<table>
<thead>
<tr>
<th></th>
<th>May 2019</th>
<th>68% is the 90th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manhattan Sq</td>
<td>61%</td>
<td></td>
</tr>
<tr>
<td>SIM</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Culver Medical</td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>Clinic Total</td>
<td>68%</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>42%</td>
<td>67%</td>
</tr>
</tbody>
</table>
Retinopathy Detected in 28%
65% Documented Follow-up to Eye Care

<table>
<thead>
<tr>
<th>Level of Retinopathy</th>
<th>Detected (%)</th>
<th>Following-up to Eye Care (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Retinopathy</td>
<td>69%</td>
<td>61%</td>
</tr>
<tr>
<td>Mild NPDR</td>
<td>15%</td>
<td>70%</td>
</tr>
<tr>
<td>Moderate NDPR</td>
<td>10%</td>
<td>80%</td>
</tr>
<tr>
<td>Severe NDPR</td>
<td>2%</td>
<td>80%</td>
</tr>
<tr>
<td>Proliferative DR</td>
<td>1%</td>
<td>100%</td>
</tr>
<tr>
<td>Diabetic Macular Edema</td>
<td>8%</td>
<td>88%</td>
</tr>
<tr>
<td>Inadequate Photos</td>
<td>3%</td>
<td>46%</td>
</tr>
</tbody>
</table>

80% of those following-up did so per recommended time interval. Worse pathology & shorter follow-up time were associated with increased follow-up rate. (p<0.001)
## Screening Results

<table>
<thead>
<tr>
<th>Non DR Pathology Detected</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12%</strong></td>
<td><em>Cataract</em></td>
</tr>
<tr>
<td><strong>3%</strong></td>
<td><em>Glaucoma Suspect</em></td>
</tr>
<tr>
<td><strong>3%</strong></td>
<td><em>Drusen</em></td>
</tr>
<tr>
<td><strong>9%</strong></td>
<td><em>Other</em></td>
</tr>
</tbody>
</table>

### Binocular Vision

<table>
<thead>
<tr>
<th>Vision</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥20/20 - 20/40</td>
<td>72%</td>
</tr>
<tr>
<td>&lt;20/40 - &gt;20/70</td>
<td>15%</td>
</tr>
<tr>
<td>≤20/70</td>
<td>9%</td>
</tr>
</tbody>
</table>
National Academy of Sciences, Engineering, Medicine
Population Eye and Vision Health Report

1. HHS - National Call to Action & Public Awareness Campaign on Importance of Vision Health tailored to Stakeholders

2. CDC – Develop a Coordinated Surveillance System

3. HHS – Develop a Common Research Agenda

4. Common Set of Standard Clinical Practice Guidelines for Eye Providers

5. Increase Access to Eye Care, including in Traditionally Non Eye Care Settings, & Workforce Training


7. Develop Community Networks and Collaborative that Encourage Eye- and Vision-Healthy Environments
National Vision Eye Health Surveillance System

- Examination-based population studies
- 5 Nat’l Surveys
  - Self-Reported Vision Data, Except 2008 NHANES
- Administrative Claims Records
- EMR Registries
  - AAO IRIS, AOA MORE

https://www.cdc.gov/visionhealth/vehss/index.html
US Academic - Examination Based Population Studies

- Baltimore Eye Study
- Beaver Dam Eye Study
- Salisbury Eye Evaluation
- Proyecto Ver Study
- Los Angeles Latino Eye Study
- Chinese American Eye Study

16 Nationally Sampled Studies

1. American Community Survey
2. Behavioral Risk Factors Surveillance System
3. Health and Retirement Study
4. Longitudinal Supplement on Aging
5. Medicare Current Beneficiary Survey
6. Medical Expenditure Panel Survey
7. National Ambulatory Medical Care Survey
8. National Health Interview Survey
10. National Hospital Ambulatory Medical Care Survey
11. National Nursing Home Survey
12. National Social Life, Health, and Aging Project
15. National Survey of Children with Special Health Care Needs
16. Survey on Income and Program Participation

### Table of Nationally Sampled Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>ACS</th>
<th>BRFSS</th>
<th>HRS</th>
<th>LS&amp;A</th>
<th>MCBS</th>
<th>MEPS</th>
<th>NHAMCS</th>
<th>NHIS</th>
<th>NHANES</th>
<th>NHAMCS</th>
<th>NHIS</th>
<th>HSHAP</th>
<th>NHCAW</th>
<th>NSCH</th>
<th>NHCAW</th>
<th>NSCH</th>
<th>NHCCH</th>
<th>NSCH</th>
<th>NSCH</th>
<th>NSCH</th>
<th>NSCH</th>
<th>NSCH</th>
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</thead>
<tbody>
<tr>
<td><strong>Nationally Representative</strong></td>
<td>-</td>
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</tr>
<tr>
<td><strong>Sample Size</strong></td>
<td>Over 3 million</td>
<td>25,490 (state)</td>
<td>99</td>
<td>85</td>
<td>84</td>
<td>89</td>
<td>90</td>
<td>90</td>
<td>90</td>
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<td>90</td>
</tr>
<tr>
<td><strong>Response Rate</strong></td>
<td>97%</td>
<td>25-49% (state)</td>
<td>99</td>
<td>85</td>
<td>84</td>
<td>89</td>
<td>90</td>
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</tr>
</tbody>
</table>

*Legend: Module data is only available for a subsample of participants age 40 or older. More detailed health examination data is only available for respondents age 40 or older.*
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<th>MEPS</th>
<th>NHAMCS</th>
<th>NHANES</th>
<th>NHIS</th>
<th>NHEHS</th>
<th>NHANES</th>
<th>NHAP</th>
<th>NHCAP</th>
<th>NCVS</th>
<th>NECH</th>
<th>SCIC</th>
<th>SHAD</th>
<th>SIPP</th>
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</tr>
</tbody>
</table>

**National Health and Nutrition Examination Survey**

- Sample Size: Over 5 million
- Response Rate: 97%

**Visual Functioning**
- Visual Acuity
- Color Vision
- Contrast Sensitivity

**Cost and Utilization**
- Insurance
- Utilization
- Costs
- Income
Self Reported Vision Issues

American Community Survey
Is this person blind or does he/she have serious difficulty seeing even when wearing glasses?

Behavioral Risk Factors Surveillance System
Are you blind or do you have serious difficulty seeing, even when wearing glasses? (Census Tract/State Level info)

National Health Interview Survey
1. Blind or unable to see at all?
2. Wear glasses?
3. Have any trouble seeing, even when wearing glasses or contact lenses?

National Survey of Children’s Health
Has a doctor or other health care provider ever told you that [CHILD] had vision problems that cannot be corrected with glasses or contact lenses?
<table>
<thead>
<tr>
<th>VEHSS Indicator Category</th>
<th>NHANES Variable Name</th>
<th>Years Available (Analyzed)</th>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual Function</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Service Utilization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cataract Surgery</td>
<td>VIQ071</td>
<td>1999–2008 (2005–2008)</td>
<td>Have you/Has survey participant ever had a cataract operation?</td>
<td>1 Yes  2 No</td>
</tr>
<tr>
<td><strong>Eye Health Conditions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-report glaucoma</td>
<td>VIQ090</td>
<td>2005-2008 (2005–2008)</td>
<td>Have you/Has survey participant ever been told by an eye doctor that (you have/s/he has) glaucoma (glau-co-ma), sometimes called high pressure in (your/His/Her) eyes?</td>
<td>1 Yes  2 No</td>
</tr>
<tr>
<td>Self-report age-related macular degeneration</td>
<td>VIQ310</td>
<td>2005–2008 (2005–2008)</td>
<td>Have you/Has survey participant ever been told by an eye doctor that (you have/s/he has) age-related macular (mac-u-lar) degeneration?</td>
<td>1 Yes  2 No</td>
</tr>
<tr>
<td>Self-report diabetic retinopathy</td>
<td>DIQ080</td>
<td>2005–2008 (2005–2008)</td>
<td>Has a doctor ever told you/survey participant that diabetes has affected (your/His/Her) eyes or that (you/s/he) had retinopathy (ret-in-op-ath-e)?</td>
<td>1 Yes  2 No</td>
</tr>
</tbody>
</table>

**NHANES Variables Used:**
- OPASCST2 – Exam status
- OPXDGLAU – Glaucoma, right eye
- OPXSGLAU – Glaucoma, left eye
- OPDUARMA – Any retinopathy, worse eye
- DIQ010 – Doctor told you have diabetes
- LBXGH – Glycohemoglobin (%)
- OPDURET – Retinopathy level, worse eye
- VIDRVA – Right visual acuity, presenting
- VIDLVA – Left visual acuity, presenting
- VIDROVA – Right visual acuity, w/ obj. refraction
- VIDLOVA – Left visual acuity, w/ obj. refraction

**Years Available (Analyzed):**
<table>
<thead>
<tr>
<th>National Representation</th>
<th>Medicare</th>
<th>Medicaid</th>
<th>MarketScan</th>
<th>VSP</th>
<th>Military Health System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Partial</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Geographic Representation**

<table>
<thead>
<tr>
<th>State Representation</th>
<th>Yes</th>
<th>Yes</th>
<th>Partial</th>
<th>Yes</th>
<th>Partial</th>
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</thead>
<tbody>
<tr>
<td>County Representation</td>
<td>Yes</td>
<td>Yes</td>
<td>Partial</td>
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</tbody>
</table>

**Patient Groups**

<table>
<thead>
<tr>
<th>Age 0-65</th>
<th>Partial</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
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</thead>
<tbody>
<tr>
<td>Age 65+</td>
<td>Yes</td>
<td>Partial</td>
<td>Partial</td>
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<td>Partial</td>
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<tr>
<td>Undiagnosed Patients</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Uninsured Patients</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Partial</td>
<td>No</td>
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</tbody>
</table>

**Care Type and Setting**

<table>
<thead>
<tr>
<th>Vision Services</th>
<th>No</th>
<th>Partial</th>
<th>No</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Care</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Partial</td>
<td>Yes</td>
</tr>
<tr>
<td>Other Medical</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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</tbody>
</table>

**Conditions**

<table>
<thead>
<tr>
<th>All Medical Diagnoses</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
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</thead>
<tbody>
<tr>
<td>Risk Factors</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Partial</td>
<td>Yes</td>
</tr>
<tr>
<td>Uncorrected Acuity</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Partial</td>
</tr>
<tr>
<td>Corrected Acuity</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Partial</td>
<td>Partial</td>
</tr>
</tbody>
</table>

Claims Based Data Already Eye Care Patients

Limited to what and who insurance covers
<table>
<thead>
<tr>
<th>Demographics</th>
<th>IRIS®-AAO</th>
<th>MORE-AOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age/Sex/Race</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Geographic Representation</td>
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<td></td>
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<tr>
<td>State Representation</td>
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<td>Partial</td>
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<tr>
<td>County Representation</td>
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<td>Partial</td>
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<tr>
<td>Patient Groups</td>
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<td></td>
</tr>
<tr>
<td>All Ages</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Undiagnosed</td>
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<td>No</td>
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<tr>
<td>Payer Type</td>
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<tr>
<td>Private Medical</td>
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<td>Yes</td>
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<tr>
<td>Private Vision</td>
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<td>Yes</td>
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<tr>
<td>Medicare</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Medicaid</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Other Government Payers</td>
<td>Partial</td>
<td>Partial</td>
</tr>
<tr>
<td>Uninsured</td>
<td>Partial</td>
<td>Partial</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Care Type and Setting</th>
<th>IRIS®-AAO</th>
<th>MORE-AOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision Services</td>
<td>Partial</td>
<td>Yes</td>
</tr>
<tr>
<td>Medical Eye Care</td>
<td>Yes</td>
<td>Partial</td>
</tr>
<tr>
<td>Other Medical</td>
<td>Partial</td>
<td>Partial</td>
</tr>
</tbody>
</table>

| Conditions | | |
| All Medical Diagnoses | No | No |
| Risk Factors | Partial | Partial |
| Uncorrected Acuity | Yes | Yes |
| Corrected Acuity | Yes | Yes |

EMR Registry Based Data – Only IRIS® is being currently used by NVEHSS
Already Eye Care Patients
Intelligent Research in Sight IRIS®

NVEHSS: State Based Prevalence

Glaucoma EMR Data – IRIS Registry 18.74%

AMD (Treated) Medicare Claims – 7.7% Claims

https://www.cdc.gov/visionhealth/vehss/index.html
NVEHSS: State Based Prevalence

Refractive Error – IRIS Registry 19.39%

Refractive Error – Medicare Claims 6.89%

https://www.cdc.gov/visionhealth/vehss/index.html
NVEHSS: State Based Prevalence

Refractive Error – IRIS Registry 19.39%

Refractive Error – VSP Claims 78.17%

https://www.cdc.gov/visionhealth/vehss/index.html
NVEHSS: State Based Prevalence

Vision Difficulty – BRFSS 4.91%

Vision Difficulty – ACS 2.4%

https://www.cdc.gov/visionhealth/vehss/index.html
Summary of Some Data Sources for Population Health

1. Examination Based Population Studies
3. Administrative Claims Data – limited to insured patients
4. EMR Registries – eye care patients
5. Local Eye Care Surveillance Data – Screenings/Telemedicine/Public Health Outreach
Meeting with U.S. Surgeon General – June 13, 2019


• Call to Action: Science-based summary document to stimulate action:
  Increase Public Awareness
  Clarify Disability & Financial Cost
  Improve Surveillance
  Standardize Public Health & Practice

Follow @VISION2020USA to stay up to date on the #V2020CallToAction to the @Surgeon_General to improve vision and eye health by 2020

Like @VISION2020USA on Facebook to stay up to date on the #CallToAction for the U.S. Surgeon General to improve vision and eye health #V2020CallToAction
Just had a great meeting w/@Vision2020USA to discuss the importance of quality eye health & vision care for everyone. #DYK vision disability is one of the top 10 disabilities among adults 18 years & older? Its also one of the most disabling conditions among children #VisionHealth

https://twitter.com/PBA_savingsight/status/1139212993085022209
Focus On Eye Health
National Summit

Date: July 15, 2020
Location: National Press Club, Washington, D.C.
SAVE THE DATE!
On Wednesday, July 15th, 2020, Prevent Blindness will host the 9th Annual
Focus on Eye Health National Summit at the National Press Club in Washington, DC.

July 17, 2019 –
National Press Club,
Washington, DC