SEASON 5: 2023 Jenny Pomeroy Award for Excellence in Vision and Public Health

Moderator: Jim McGann
Board Chair
Prevent Blindness

Dean A. VanNasdale, OD, PhD, FAAO
Associate Professor
The Ohio State University
College of Optometry
Prevent Blindness
Focus on Eye Health Summit

WHY
THE EYE?

JULY 12-13, 2023

A Virtual Interactive Event
Using Population Health Data to Promote Eye Health

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A Team Approach to Addressing Vision Health

• Ohio State University
  • Erica Shelton, OD, MS, FAAO
  • Megan Hurley, OD, MS
  • Lisa Jones-Jordan, PhD, FAAO
  • Matt Robich, MPH
  • Andrew Wapner, DO, MPH
  • Keith Ramsey
  • Kerri McTigue
  • Karla Zadnik, OD, PhD, FAAO
  • John Crews DPA

• Prevent Blindness Ohio
  • Sherry Williams
  • David Monder

• Ohio Department of Aging
  • Marc Molea (retired)

• Indiana University
  • Chris Clark, OD, PhD, FAAO

• National Association of Chronic Disease Directors
  • Carol McPhillips Tangum

• Centers for Disease Control and Prevention
  • Jinan Saaddine, MD, MPH
Outline

• Background
• Where the Data Reside
• What the Data Are Telling Us
• Identifying Upstream Influences
• Future Work
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John E Crews, DPA
My First Clinical Experiences With Public Health and Vision

https://www.youtube.com/watch?v=sQ-0RkPu35o

Mark Swan, OD, MEd, FAAO

Prevent Blindness
Focus on Eye Health Summit

Why the Eye? | 12th Annual Focus on Eye Health Summit 2023
Vision Health’s Representation in Public Health Priorities

• Healthy People 2030
  • Healthy People provides science-based, 10-year national objectives for improving the health of all Americans

• Vision Workgroup Objectives
  • Reduce vision loss from diabetic retinopathy in adults age 18 years and over with diabetes (V-04)
    • Baseline: 33.0 per 1,000
    • Target: 16.5 per 1,000
Our Current Trajectory

Table for Projections for Vision Impairment (2010-2030-2050)
A GROWING ISSUE

Diabetic retinopathy is the leading cause of blindness in working-age adults ages 20–74.

TODAY
7.7 MILLION

2030
11 MILLION

2050
14.5 MILLION

REDUCED RISK OF VISION LOSS

95%

Early detection, timely treatment, and appropriate follow-up care can reduce the risk of severe vision loss by 95 percent.
Our Path to Achieve Our Vision Objectives is Not Entirely Clear

“Sound decisions about public policy and the prioritization of resources depend on having relevant and timely surveillance data. Surveillance of vision impairment and eye health is limited, however, and the lack of adequate surveillance has a substantial impact on public health efforts to address vision problems.”

-National Academies of Sciences, Engineering and Medicine
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• Identifying Upstream Influences
• Future Work
The Public Health Framework

The three core functions and ten essential public health services
You need to consider the tools you have and decide which of them can most effectively solve your problem.
Monitoring Health

• Sources of population-based vision impairment data
  
  • American Community Survey (ACS)
    • Administered by the U.S. Census
    • Responses by mail, in person interview, internet, or telephone
  
  • Behavioral Risk Factor Surveillance System (BRFSS)
    • Administered by the U.S. Centers for Disease Control and Prevention
    • Telephone survey

  “Are you blind or do you have serious difficulty seeing, even when wearing glasses?”

  Case definition frequently used to measure vision impairment in vision research (Crews, 2012)
Monitoring Health

• Components of the BRFSS
  • Core Module
    • Standard set of questions asked to all respondents without modification
  • Optional Modules
    • Standardized set of questions that states can elect to include
  • State-added Questions
    • Questions that can be introduced by a state to address unique issues
### Public Health Implications for Vision Impairment (VI)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Total (Prevalence %)</th>
<th>VI (95% CI)</th>
<th>No VI (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis, lupus,</td>
<td>25.85</td>
<td>39.20</td>
<td>30.08</td>
</tr>
<tr>
<td>fibromyalgia</td>
<td>(26.72-34.00)</td>
<td>(35.30-45.60)</td>
<td>(28.82-31.37)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>10.36</td>
<td>24.06</td>
<td>9.68</td>
</tr>
<tr>
<td></td>
<td>(9.40-11.11)</td>
<td>(19.24-29.52)</td>
<td>(8.96-10.42)</td>
</tr>
<tr>
<td>Difficulty</td>
<td>15.30</td>
<td>48.78</td>
<td>13.34</td>
</tr>
<tr>
<td>walking/visiting</td>
<td>(14.22-16.39)</td>
<td>(42.52-55.07)</td>
<td>(12.43-14.23)</td>
</tr>
</tbody>
</table>

[https://www.cdc.gov/visionhealth/visionhealthindex.html](https://www.cdc.gov/visionhealth/visionhealthindex.html)

### Diagram of the Retina, Optic Nerve, and Blood Vessels

### High Resolution Images of Photoreceptors and Blood Vessels

### Cross Section of Retinal Layers

### Visual/Retinal Function

### National Institutes of Health
National Eye Institute

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**The Centers for Disease Control and Prevention**
Vision Health Initiative

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**Why the Eye? | 12th Annual Focus on Eye Health Summit 2023**
The Public Health Framework

The three core functions and ten essential public health services
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Chronic Conditions and Comorbidities

CDC’s National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)

**CHRONIC DISEASES IN AMERICA**

6 IN 10
Adults in the US have a chronic disease

4 IN 10
Adults in the US have two or more

THE LEADING CAUSES OF DEATH AND DISABILITY
and Leading Drivers of the Nation’s $3.3 Trillion in Annual Health Care Costs
“Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good”
Non-visually impaired number of physically unhealthy days
  • 2.89 (North Dakota and Nebraska)
  • 4.97 (West Virginia)

Visually impaired number of physically unhealthy days
  • 8.34 days (Utah)
  • 13.41 days (Tennessee)
Vision Impairment and Physical Health

• We can quantify how individuals with visual impairment have poorer physical health than those who are not visually impaired.
  • The next logical questions are…
    • What are some of the conditions that are contributing to poor physical health in the visually impaired population?
    • What is the magnitude of the problem?
These conditions are not mutually exclusive.
What the Data Are Telling Us

**Diabetes**

<table>
<thead>
<tr>
<th>With Severe Vision Impairment</th>
<th>17%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without Severe Vision Impairment</td>
<td>8%</td>
</tr>
</tbody>
</table>
What the Data Are Telling Us

Mobility Issues

With Severe Vision Impairment: 37%
Without Severe Vision Impairment: 11%
Why Do These Combinations Matter?

52% of individuals 65 years and older with severe vision impairment reported having a fall in the previous year.

What the Data Are Telling Us
The Public Health Framework

The three core functions and ten essential public health services
Combining Data to Promote Population Health

Ohio

The Impact of Vision Impairment

Prevalence

More than 260,000 people reported blindness or severe difficulty seeing even with glasses.

Severe vision impairment was higher in those reporting poor health 10% vs good health 3%.

Low education 7% vs HS education 2.5%.
Stephen Burns, PhD

Interesting picture. Now you have to figure out what it means and whether we can do anything about it.
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The Multidimensional Complexity of the Challenge

IMPROVE POPULATION EYE AND VISION HEALTH

ACHIEVE HEALTH EQUITY

Social Determinants of Health (SDoH)

The conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. SDOH can be grouped into 5 domains.
“During the past 12 months, was there a time when you needed vision care or eye glasses, but could not get it at that time?”

Vision Impairment Prevalence
American Community Survey

Lack of Vision Care Access
Ohio Medicaid Assessment Survey
The Public Health Framework

The three core functions and ten essential public health services
Using Existing Infrastructure to Evaluate Vision Care Access and Utilization

• Using the BRFSS for state-specific policy assessments
  • Vision Module and state-added questions
  • Assessing vision care utilization and the impact of Medicaid expansion in Ohio
    • The primary reason individuals don’t seek vision care services is that they do not perceive a need
    • Insurance coverage for vision care services has increased in between 2005-2011 and 2018-2019
    • Despite increases in vision care coverage, utilization of vision care services has remained stagnant
The Public Health Framework

The three core functions and ten essential public health services
Mobilizing Partnerships to Improve Care Coordination

Healthy People 2030

V-08 Increase the use of vision rehab services by people with vision loss
   Baseline: 4.3%
   Target: 6.2%

V-09 Increase the use of assistive and adaptive devices by people with vision loss
   Baseline: 12.4%
   Target: 15.9%
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Vision Impairment and Mental Health

“Now thinking about your mental health, which includes stress, depression, and problems with emotions, how many days during the past 30 days was your mental health not good?”
Non-visually impaired number of mentally unhealthy days (out of 30)
- No VI and no depression: 2.49 days
- No VI and depression: 11.29 days

Visually impaired number of mentally unhealthy days (out of 30)
- VI and no depression: 4.35 days
- VI and depression: 15.62 days
Vision Impairment and Mathematical Modeling

Christopher Clark, OD, PhD
Indiana University School of Optometry
There is Still a Lot of Work to Do

“The reason for collecting, analyzing, and disseminating information on a disease is to control that disease. Collection and analysis should not be allowed to consume resources if action does not follow.”

—William Foege, 1976
Former CDC Director
Significant role in smallpox eradication

Photo: Kay Hinton, Emory University
Resources and Useful Links

• The Vision Health Initiative
  • https://www.cdc.gov/visionhealth/index.htm

• CDC’s Vision and Eye Health Toolkit

• State Profiles in Vision Health
  • https://www.cdc.gov/visionhealth/data/state-profiles/index.htm

• Vision Impairment and Physical Healthy Days
  • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8505137/

• Vision Care Utilization and Insurance Coverage Assessment in Ohio
  • https://www.prognosisohio.com/episodes/vision
Thank You

Questions?
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