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FOCUS ON EYE HEALTH NATIONAL SUMMIT
VISION TO ACTION: Collaborating Around a National Strategy

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National Vision & Eye Health Surveillance System

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Overview

- Who we are and what we do
- Surveillance and the changing landscape
- National vision and eye health surveillance system project
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Vision Health Initiative
National Center for Chronic Disease Prevention and Health Promotion

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Vision and Eye Health
VHI
Mission

VHI’s mission is to enhance public health surveillance and research that provides the basis for effective public health policy decisions to reduce the burden of vision loss.
A Public Health Approach

Problem Response

Surveillance
How big is the problem?

Risk Factors
Who is most Affected?

Intervention Evaluation
What works?

Implementation
How do you do it?
Public Health Surveillance

is the ongoing, systematic collection, analysis, interpretation, and dissemination of data …for use in public health action

CDC, MMWR, July 27, 2001/50(RR13);1-35.
Why
Public Health Surveillance

- Measure the burden and identify high risk groups
- Identify vision/eye health disparity
- Prioritize programs
- Evaluate progress
The Changing Landscape of Surveillance
National to Local

Individual level characteristics

State specific estimates

County estimates

Contextual Factors

Figure 6: The percentage of older Americans with vision or hearing problems who could benefit from using new glasses or a hearing aid.

SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey

Map showing prevalence of vision and hearing problems across states and counties, with different color codes indicating severity.

Map showing contextual factors with counties in the top quartile for both severe vision loss and poverty.
The growing field of Electronic Health Records

How Big Data Informs Us About Cataract Surgery: The LXXII Edward Jackson Memorial Lecture
ANNE LOUISE COLEMAN

Electronic Health Records and Ophthalmology
A Work in Progress
Michael V. Boland, MD, PhD

Major review
Big data and ophthalmic research
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Integration and consolidation

- Amount of available data has increased exponentially
  - Electronic health records
  - Health insurance claims
  - Smart phone health application

- Advances in computing power and analytical methodologies

- Data can be accessed in timely and cost-efficient manner

The Foundational Stages

- Strategic Planning Meeting
- Need for vision and eye health surveillance
- Maximized impact of data

Surveillance meeting consensus

Strengthen US vision surveillance

Measure performance and self-reported vision

Attend to access to eye care

Identify disparities

Institute of Medicine Report
Establish Vision and Eye Health Surveillance System (Cooperative Agreement)

Cooperative agreements require substantive agency involvement in the project, which means the program staff will
- assist,
- guide,
- coordinate, or
- participate in project activities.
Project objectives

- Identify, evaluate, and compile existing data sources on vision and eye health
- Create case definitions and analytic algorithms to apply these definitions in a consistent and uniform manner across data sources
- Develop appropriate methodologies to analyze data and provide estimates
- Develop a dissemination plan
Who will use the data

- Researchers and scientists
- Public health departments
- Community and local public health administrators
- Vision community
- Change agents
Thanks

http://www.cdc.gov/visionhealth/

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ESTABLISHING A VISION AND EYE HEALTH SURVEILLANCE SYSTEM FOR THE NATION
Project Partners

- NORC at the University of Chicago
- University of Wisconsin
- VSP
- Prevent Blindness
- HIV Counts

In process

- American Academy of Ophthalmology
1. Create new visual health epidemiological and service utilization estimates for the nation and specific subpopulations.
   1. Diagnosed prevalence of low vision, blindness, and selected eye disorders
   2. Utilization of selected health services by condition and subpopulation
   3. Model-based estimates of overall (diagnosed and undiagnosed) prevalence of low vision, blindness, and selected eye disorders
1. Create new visual health epidemiological and service utilization estimates for the nation and specific subpopulations.

2. To support and enhance future vision research
   1. Creation and testing of visual health indicators for application across sources of information.
   2. Creation of public-domain resources for use by other research teams.
1. Create new visual health epidemiological and service utilization estimates for the nation and specific subpopulations.
2. To support and enhance future vision research
3. To disseminate estimates and methods to the public
   1. Publications, presentations, and reports
   2. Public use data and/or interactive web-based analysis
   3. Public outreach
• Build a sustainable system
  – What can we do with available resources
• Leverage and support existing data sources
  – What can we measure in existing and new data sources
• Build the system over time
  – Increase measures and complexity over time
• Define initial system scope and objectives
• Identify potential data sources
• Identify and define measurement indicators
• Acquire data sources for acquisition and public sources for analysis
• Apply common measurement indicators across data sources to generate single source estimates

• Disseminate information
  – Web-based tables, maps, and figures
  – Conference presentations
  – Publications

• Summarize estimates across sources
  – Meta-analysis
  – Model-based regional estimates
DEVELOPING THE VISION AND EYE HEALTH SURVEILLANCE SYSTEM
• Engagement and oversight
• Data selection
• Indicator development
• Analysis
  – Single source estimates
  – Combined estimates
• Dissemination and outreach
Engagement and Oversight

- Establishment of an advisory panel
  - Paul Lee (chair)
  - David Friedman
  - Mary Frances Cotch
  - Charlotte Joslin
  - Abraham Flaxman

- Stakeholder engagement
Data Selection

• Review multiple data sources in 4 categories
  – National surveys
  – Administrative claims databases
  – EHR databases and Registries
  – Population-based studies and meta-analyses
National Surveys

• Leverage and support existing vision and eye health content in federal surveys
  – 16 surveys include such information
  – Important differences
    • Measures – questions are not harmonized
    • Methodology – self-report vs examination
    • Sampling frame
Administrative Claims Data

- Diagnosed prevalence and utilization
- Need multiple sources to cover the full market
  - Medicare
    - all medical, limited vision correction, age 65+
  - Medicaid
    - all medical, vision correction by state, low income
  - Private medical insurance
    - all medical, limited vision correction, based on insurer market
  - Vision insurance
    - vision correction, based on insurer market
  - Other government insurance
EHR & Registries

- **IRIS Registry** – American Academy of Ophthalmology’s Intelligent Research in Sight
  - Largest source of vision and eye care data
- **MORE** – American Optometric Association’s Measures and Outcomes Registry for Eyecare
  - In development, important measures to be collected in 2017
- **Commercial EMR databases**
Population-based Studies

- Epidemiological studies of defined populations
- A primary source for prevalence
  - Including undiagnosed and uninsured, underinsured
- Data reporting
  - Individual studies such as Beaver Dam or LALES
  - Meta-analyses such as EDPRG and Vision Problems in the US
• Indicators are the measures that we will capture in each data source
  – Conditions
    • Eye disorders (diagnosis codes)
    • Low vision (acuity, self-reported low vision)
  – Utilization
    • Examinations
    • Treatment
  – Attributable outcomes
Analysis Steps

1. Single-source estimates
   – Estimate primary indicator measures in each individual data set
   – Summary measures and frequency counts

2. Combined estimates
   – After completing single-source estimates
   – Linking and harmonization where possible
   – Statistical integration models
Data Integration

• Harmonization
• Meta-analysis
• Model-based surveillance

Population-based studies

Claims

Surveys

EMR/Registries

Prevent Blindness
Our Vision Is Vision®
Dissemination

• Prevent Blindness
  – Communications
  – Public health website

• Develop a CDC Vision Surveillance website
  – Reports
  – Summary result tables
  – Interactive figures & maps
  – Downloadable tables

• Publications & Presentations
Questions & Comments?

NATIONAL VISION & EYE HEALTH SURVEILLANCE SYSTEM