A strong suite: Project based training, GIS, and chronic disease surveillance

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2011 CSTE
Pittsburgh, PA
GIS and Public Health

- Intensively used in environmental health and infectious diseases

- Strengths:
  - Visualization
  - Data management
  - Analysis

Health Outcome Datasets
- Mortality
- Hospitalization

Geographic Datasets
- Administrative
- Demographic
- Environmental
- Community Resources
Integrate the use of GIS approaches into the daily operations of state health departments, in order to meet existing priorities for prevention of heart disease, stroke and other chronic diseases.
GIS Surveillance for Heart Disease, Stroke and Other Chronic Diseases

BUILD CAPACITY FOR GEOGRAPHIC INFORMATION SYSTEMS (GIS) SURVEILLANCE

CEHI DUKE UNIVERSITY

GIS PROJECTS:
DOCUMENT THE BURDEN
INFORM POLICY AND PROGRAMS
FACILITATE EXTERNAL PARTNERSHIPS
ENHANCE AGENCY COLLABORATION

CDC DHDSP
NACDD
CEHI DUKE UNIVERSITY

HEALTH DEPARTMENTS

IMPROVE HEART DISEASE AND STROKE AND OTHER CHRONIC DISEASE SURVEILLANCE PROGRAMS THROUGH GIS CAPACITY
Phase I: Two (2) states; Teams from Colorado and Michigan received eight (8) GIS training Modules over a period of twenty-four (24) months.

Phase II: Six (6) states; received three (3) GIS training modules over a period of six (6) months. Phase II teams included: Arkansas; Massachusetts; Montana; Minnesota; North Carolina; and Utah.

Phase III: Two (2) local* and five (5) state health departments will receive three (3) GIS training modules over a period of six (6) months. Phase III teams include: Delta-Memenonee, MI; Idaho; Indiana; Louisiana; Maine; New York; and Riverstone, MT.

*Local health-departments eligible for participation must come from a state that has participated in either Phase I, or Phase II.
Connecting GIS Efforts to Program Priorities

- Document the burden of heart disease, stroke and other chronic diseases
- Inform policy and program decisions
- Facilitate partnerships with external agencies
- Enhance collaboration within each agency
Training Approach

• Team based

• Needs assessment informed

• Multiple support strategies used

• Project driven
Chronic Disease Units Represented in the current cohort:

- Asthma Management and Prevention Program
- BRFSS / Chronic Disease
- Bureau of Chronic Disease Epidemiology and Surveillance
- Bureau of Community and Environmental Health
- Bureau of Vital Records and Health Statistics
- Cardiovascular Disease Surveillance and Evaluation
- Diabetes Prevention and Control
- Emergency Medical Services
- Department of Health & Hospitals
- Healthy Communities
- Healthy Heart Program
- Heart Disease & Stroke Program (HDSP)
- Emergency Medical Services
- Primary Care Rural
- Office of Epidemiology Food Protection, and Immunization
Needs Assessment

Hardware
- Systems

Software
- Data
- Methods

People
- Resources

Program priorities
- Context

needs assessment
Training Structure and Content

GIS I

GIS II

GIS III

Data Management

Analysis

Organizing Principles
Technical Support

- Virtual and Live access to GIS analysts at Duke University

- Weekly Office hours for special topics and participant generated issues

- Project portal for document and data sharing
## GIS Projects

### Documenting the Burden: Maps to produce and use prior to the GIS training in July 2011

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<tr>
<th>Mortality Data</th>
<th>Hospitalization Data</th>
<th>Social Environmental Data</th>
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Heart Disease Mortality Among Arkansas Population
Age-Adjusted Rates 2000-2007

ICD 10 Codes: I00-I09, I11, I13, I20-I51

Mortality per 100,000
- 174.86 - 218.11
- 218.12 - 245.89
- 245.90 - 278.65
- 278.66 - 342.56
- 342.57 - 400.50

Source: Arkansas Health Statistics Branch
Source Site: www.healthy.arkansas.gov
Date: June 24, 2010
Author: Brandy Sutphin, CPH, MPH

Arkansas Department of Health
Center for Public Health Practice
Analytical Epidemiology Branch
Heart Disease Mortality, Age 35+
Age Adjusted Rates by County, 1999-2006

Categories remain the same over time
Counties with 10 highest rates outlined in yellow

1999-2000
Minnesota Rate = 354.5
Total Deaths = 18,030

2001-2002
Minnesota Rate = 321.4
Total Deaths = 16,990

2003-2004
Minnesota Rate = 285.2
Total Deaths = 15,688

2005-2006
Minnesota Rate = 265.0
Total Deaths = 15,088

Age Adjusted Rates per 100,000
Yellow Highest
Suppressed (Count < 20)

150 Quartile 1 (< 296.5)
150 Quartile 2 (296.5 - 341.4)
150 Quartile 3 (341.5 - 389.0)
150 Quartile 4 (> 389.1)

Data Source:

Map created by MN Heart Disease & Stroke Prevention Unit, August 2010.
Location of Group Lifestyle Balance Program (GLBP) Sites in Relation to Massachusetts Obesity Prevalence by Town

Purpose:
The Diabetes Prevention and Control Program (DPCP) wishes to support health providers with building their capacity for primary prevention interventions of type 2 diabetes. The Group Lifestyle Balance Program (GLBP) is an evidence-based curriculum that can be implemented by diabetes educators and provided to individuals at high risk for type 2 diabetes (i.e., obese, pre-diabetes). The Massachusetts DPCP has begun to use their resources to train local providers in the GLBP curriculum and plan to continue using their resources to provide this training. In order to prioritize which communities should receive this training, high risk areas should be identified relative to where the GLBP curriculum training has not yet occurred.

Methods:
Behavioral Risk Factor Surveillance System (BRFSS) data was used to create small area estimates (SAE) for obesity prevalence for each town/city. Workplace addresses for each participant trained in the GLBP curriculum were geocoded.

Highlights:
Many cities/towns that have high SAE prevalence for obesity have already received training in GLBP. However, several towns/cities have been identified with similar prevalence estimates that have not received any training. Also, the training has initially focused on more urban/high population centers leaving the rural areas without much capacity to provide primary prevention options for type 2 diabetes.

Source: MDPH, Diabetes Prevention and Control Program; Contact: Paul Oppedisano, paul.opпедisano@state.ma.us
30-, 60-, and 90-minute drive times to current and projected telestroke sites, Montana, September 2010.

Data Source: Data provided courtesy of the Montana Stroke Workgroup.
Map created: September 2010 by the Cardiovascular Health Program.
North Carolina Stroke Discharge Rates by County with Stroke Support Group Locations

Stroke Support Groups
- ▲ Stroke Caregiver Support Group
- ○ Stroke Survivor Support Group

Stroke Discharge Rates
- 121.50 - 216.70
- 216.71 - 305.20
- 305.21 - 337.50
- 337.51 - 397.80
- 397.81 - 578.00

DATA SOURCES:

PURPOSE:
Highlights the locations of a less known stroke resource.
Stroke support groups help survivors, families and caregivers cope with the challenges of stroke recovery.
General Observations:

- The state adult obesity rate has increased 112% from baseline (1989-1995) to 2009.
- There was a statistically significant increase in adult obesity rates in all local health districts (LHD) from baseline (1989-1995) to 2009, except for Summit County LHD.
- Only Summit County LHD (13%) has met the Healthy People 2010 Obesity Rate National Target of 15% or less.
- Since baseline (1989-1995), Summit County LHD is the only local health district with a statistically lower adult obesity rate compared with the state rate for all time points.
- In 2009, Tooele LHD (35%) had an adult obesity rate that was statistically higher than the state rate.

For 2009, only rates that were statistically significantly different from the state rate are noted in the above text. CI = confidence interval.
Acknowledgements

CDC Division of Heart Disease and Stroke Prevention

National Association of Chronic Disease Directors

Participating state and local health departments

Duke University Office of Research Support

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