DHEC Update – Public Health Hot Topics

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Columbia, South Carolina

DISCLOSURE: Neither Dr. Peake, nor any member of her immediate family has a financial relationship or interest with any proprietary entity producing health care goods or services. The content of her material(s)/presentation(s) in this CME activity will not include discussion of unapproved or investigational uses of products or devices.

LEARNING OBJECTIVES:
At the conclusion of this presentation, the participant should be able to:

1. Understand population level health outcome trends in SC
2. Understand the value of population level health assessment
3. Describe what community – clinical linkages are and opportunities for collaborative in SC.
Improving Health in the Twenty-first Century

Lilian Peake, MD, MPH
Director, Health Services
Outline

• Public Health System
  • Success Stories
  • Population Health Outcomes
• 21st Century Challenges
  • International Comparison of Health Outcomes
  • Cost of Healthcare
  • Aging Population
  • Effects of Adversity
  • Chronic Disease
  • Emerging Diseases
• Population Health Trends in South Carolina
• 21st Century Approach
Public Health

The Institute of Medicine

• Ensuring conditions in which people can be healthy

• Organized community efforts aimed at the prevention of disease and the promotion of health

• Science of public health = epidemiology
  • Track population health outcomes
The Public Health System

Assuring the Conditions for Population Health

INSTITUTE OF MEDICINE
Source: http://www.americashealthrankings.org/
Control of Infectious Disease

Outbreak
The deadliest pandemics in human history

- **MEASLES**
  7th century BCE-1963
  200 million

- **SPANISH FLU**
  1918-1919
  50-100 million

- **SMALLPOX**
  10,000 BCE-1979
  300 million

“Shape-shifting diseases that mutate fast are almost impossible to vaccinate against”

BLACK DEATH
1346-1352
50 million

PLAGUE OF JUSTINIEN
542-546
100 million

HIV/AIDS
1981-present
39 million

CHOLERA
1817-present
Tens of millions

Eradication of Smallpox

Rahima Banu – October 1975
Variola Major - Bangladesh

Ali Maow Maalin – October 1977
Variola Minor - Somalia

** Two laboratory acquired cases occurred in UK in 1978

Source: CDC
Control of Polio

• 1952 - 58,000 new cases of polio in the U.S.
• Cost of polio care was predicted to be $100 billion by 2000
• Polio immunization programs changed trajectory

Source: CDC
Decrease in Infant Mortality

FIGURE 1. Infant mortality rate,* by year — United States, 1915–1997

*Per 1000 live births.

Source: CDC
Control of Tobacco Use

Source: https://www.ahrq.gov/professionals/education/curriculum-tools/population-health/abrams.html
Decline in Rate of Lung Cancer

Source: https://www.ahrq.gov/professionals/education/curriculum-tools/population-health/abrams.html
Control of Coronary Heart Disease

Mortality from all causes declined 54% between 1900 and 2010.
FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996†

*Per 100,000 population per year.

Source: CDC
Life Expectancy of the World Population in 1800, 1950 and 2012

Countries are ordered along the x-axis ascending by the life expectancy of the population. Data for almost all countries is shown in this chart, but not all data points are labelled with the country name.

Data source: The data on life expectancy by country and population by country are taken from Gapminder.org.
The interactive data visualisation is available at OurWorldinData.org. There you find the raw data and more visualisations on this topic. Licensed under CC-BY-SA by the author Max Roser.
Gains in Life Expectancy in the Twentieth Century

- Change from high to low fertility
  - Educational achievement of mothers
  - Family planning
- Decrease in infectious and parasitic diseases
  - Safe drinking water
  - Reduction in crowding
  - Education about infection control
  - Vaccination
  - Antibiotics
- Decline in cardiovascular disease deaths
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Life Expectancy - 2015

Source: WHO and CIA World Factbook

Life expectancy (years)

Source: World Health Statistics 2016, WHO
Note: WHO Member States with a population of less than 90,000 in 2015 were not included in the analysis.
• "Americans have a longstanding pattern of poorer health...over the life course."

Source: 2015 National Academy of Sciences
Higher Rates than Average of Peer Countries

- Infant mortality
- Low birth weight
- Adolescent pregnancy
- Sexually transmitted infections
- Injuries
- Heart disease
- Chronic lung disease
- Disability
- Obesity
- Diabetes
- Drug-related deaths

Comparison of Healthcare System Outcomes

Exhibit ES-1. Overall Ranking

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Quality Care

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Safe Care

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Coordinated Care

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Patient-Centered Care

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Cost-Related Problem

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Timeliness of Care

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Efficiency

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Equity

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Long, Healthy, Productive Lives

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<td>UK</td>
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Health Expenditures/Capita, 2007

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<td>$2,454</td>
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<td>$2,992</td>
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<td>$7,290</td>
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Note: * Estimate. Expenditures shown in $US PPP (purchasing power parity).
Source: Calculated by The Commonwealth Fund based on 2007 International Health Policy Survey; 2008 International Health Policy Survey of Sicker Adults; 2009 International Health Policy Survey of Primary Care Physicians; Commonwealth Fund Commission on a High Performance Health System National Scorecard; and Organization for Economic Cooperation and Development, OECD Health Data, 2009 (Paris: OECD, Nov. 2009).

Healthcare Costs by Age
Annual Per Capita Costs

Source: US Department of the Treasury, 2014
An Aging Population

Source: https://www.slideshare.net/kingcobra2012/ib-ess-topic-3-human-population
Adverse Childhood Experiences Study

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Violence Prevention
ACES can have lasting effects on....

- Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)
- Behaviors (smoking, alcoholism, drug use)
- Life Potential (graduation rates, academic achievement, lost time from work)

ACEs have been found to have a graded dose-response relationship with 40+ outcomes to date.

*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.

Prevalence of Diagnosed and Projected Diagnosed Diabetes Cases in the United States, 1960-2050

SOURCE: https://aspe.hhs.gov/report/diabetes-national-plan-action/introduction. Data for 1960–1998 from the National Health Interview Survey, National Center for Health Statistics (NCHS). Centers for Disease Control and Prevention (CDC) projected data for 2000–2050 from the Behavioral Risk Factor Surveillance System, Division of Diabetes Translation, CDC. (Note: The “Diagnosed cases” arrow refers to the section of the figure that includes diagnosed cases of diabetes versus the section that includes projected cases. The line graph and not the line arrow indicate the number of diagnosed cases.)
Emergent Infections

Source: APHA
A Sobering Story
Life expectancy, 1865 to 2011

Life expectancy at birth is the average number of years a child born would live if current mortality patterns were to stay the same.

Data source: Clio Infra (life expectancy, both genders)
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• Population Health Trends in South Carolina

• Public Health Approach
South Carolina: 42\textsuperscript{nd} out of 50

Source: http://www.americashealthrankings.org/
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<td>Unintentional Injuries</td>
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Heart Disease Deaths

Age-adjusted mortality rate per 100,000 population

Year


Heart Disease Deaths

Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Stroke Deaths

Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Cancer Deaths

Age-adjusted mortality rate per 100,000 population

Year


Cancer Deaths

White
Black
All races

Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Diabetes Deaths

Year

Diabetes Deaths

Age-adjusted mortality rate per 100,000 population

Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Alzheimer's Disease Deaths

Age-adjusted mortality rate per 100,000 population

Year


Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Injury Deaths

Age-adjusted mortality rate per 100,000 population

Year

Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Overdose Deaths

Age-adjusted mortality rate per 100,000 population

Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Deaths Due to Falls

Age-adjusted mortality rate per 100,000 population

Year

2005
2007
2009
2011
2013
2015

White
Black
All races

Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Motor Vehicle Accident Deaths

Age-adjusted mortality rate per 100,000 population

Year


Source: Division of Biostatistics, Office of Public Health Statistics and Information Services, SC DHEC
Infant Mortality

Rate per 1,000 Live Births

2011: 7.4
2012: 7.6
2013: 6.9
2014: 6.5
2015: 7.0

All Races
NH White
NH Black/Afr Am
Hispanic

SC Vital Records data
Leading Causes of Infant Mortality, 2015

• Total infant deaths = 405
  • Preterm birth and low birth weight (79)
  • Birth defects (72)
  • Accidents (38)
    • Majority (36/38) were sleep related
  • SIDS (28)
  • Fetus and newborn affected by maternal complications of pregnancy (24)
Note: Due to changes in methodology, estimates are not comparable from 2005-2010 to 2011-2015
Source: SC Behavioral Risk Factor Surveillance System. Division of Surveillance, Office of Public Health Statistics and Information Services, SC DHEC
Youth Smoking (High School)

Note: Survey conducted every odd year
Source: SC Youth Risk Behaviors Survey. SC Department of Education.
Notes: Due to changes in methodology, estimates are not comparable from 2005-2010 to 2011-2015
Source: SC Behavioral Risk Factor Surveillance System. Division of Surveillance, Office of Public Health Statistics and Information Services, SC DHEC
Exposure to ACEs is not mutually exclusive; SC Behavioral Risk Factor Surveillance System data
Percent of South Carolina Infants Breastfed at Birth, at 6 Months, and at 1 Year, 2009-2015

*SC Vital Records data; **National Immunization Survey – SC data
## Childhood Vaccinations

(Percent Vaccinated)

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<th>DTaP (≥4 doses)</th>
<th>Hep B (birth dose)</th>
<th>Hep A (≥2 doses)</th>
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National Immunization Survey, United States, 2015
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Relative Contribution of Factors that Impact Health

- Social and Economic Factors: 40%
- Health Behaviors: 30%
- Medical: 20%
- Environment: 10%
Life Course Model

PROTECTIVE FACTORS: [RAISE TRAJECTORY]
- Born Wanted and Well
- Skilled Parents
- Healthy Home
- Early Reading
- Full Preventive Care
- Safe Play Space
- Good Schools
- Social Capital
- Mentors
- Physical Activity

RISK FACTORS: [DEPRESS TRAJECTORY]
- Poverty
- Premature Birth
- Isolated Parent
- Lead Poisoning
- Poor Nutrition
- Violence
- Obesity
- Unaddressed illness
- Depression/Isolation
- School Failure
- Tobacco/EtOH
- Unintended Pregnancy

Figure 1. A Model of Population Health

Effect of Population Level Interventions

Factors that Affect Health

- Smallest Impact
  - Counseling & Education
  - Clinical Interventions
  - Long-lasting Protective Interventions
  - Changing the Context to make individuals' default decisions healthy
  - Socioeconomic Factors

Examples
- Eat healthy, be physically active
- Rx for high blood pressure, high cholesterol, diabetes
- Immunizations, brief intervention, cessation treatment, colonoscopy
- Fluoridation, 0g trans fat, iodization, smoke-free laws, tobacco tax
- Poverty, education, housing, inequality

Develop partnerships to:

- Create policies, systems and environmental changes that support healthy behaviors.
- Fill gaps in needed services.
- Involve patient, family, and community in strategic planning and improvement activities.
Create Accountable Care Communities

• Assess and track health outcomes
  • Population
  • Quality

• Prioritize and focus on key health issues
  • Collective Impact

• Create clinical-community linkages
  • Community health workers
  • Care coordination

• Team-based clinical care
  • Team extends to community partners
Collaborative Community Health Improvement

• Collaborative Health Assessment – SHA/CHA
  • Primary causes of illness, injury and premature death
  • Patterns of health determinants

• Collaborative Health Improvement – SHIP/CHIP
  • Plan
  • Develop interventions and measure progress
  • Quality Improvement approach
Health in All Policies

- Food Access
- Housing
- Transportation
- Education
- Public Safety
- Economic Development
- Criminal Justice
- Community Design
- Water System

Health
Collective Impact

• Common Agenda
• Shared Measurement
• Mutually Reinforcing Activities
• Continuous Communications
• Backbone Support
Isolated Interventions

Aligned Efforts and Resources
Opportunities

- Projected savings by 2023 with modest improvement in prevention and treatment of chronic disease
  - Could avoid 40 million cases
  - Cut treatment costs $220 billion
  - Increase GDP $900 billion

- ROI = $5.60 for every $1.80 invested in proven community-based prevention program

- Challenge – Identify evidence-based programs shown to be cost-effective

Source: Chatterjee et al, Checkup Time: Chronic Disease and Wellness in America, Milken Institute, Jan 29, 2014, Trust for America’s Health, Bending the Obesity Cost Curve, January 2012, http://healthyamericans.org/assets/files/TFAH%202012ObesityBrief06.pdf
What can Be Done About ACES?

These wide-ranging health and social consequences underscore the importance of preventing ACES before they happen. Safe, stable, and nurturing relationships and environments (SSNREs) can have a positive impact on a broad range of health problems and on the development of skills that will help children reach their full potential. Strategies that address the needs of children and their families include:

- Voluntary home visiting programs can help families by strengthening maternal parenting practices, the quality of the child’s home environment, and children’s development. Example: Nurse-Family Partnership

- Home visiting to pregnant women and families with newborns

- Parenting training programs

- Intimate partner violence prevention

- Social support for parents

- Parent support programs for teens and teen pregnancy prevention programs

- Mental illness and substance abuse treatment

- High quality child care

- Sufficient income support for lower income families

Impact of North Carolina’s Motorcycle Helmet Law on Hospital Admissions and Charges for Traumatic Brain Injuries

• Compared North Carolina motorcycle related brain injury cases with three states (Florida, South Carolina, Pennsylvania) that had repealed their motorcycle helmet law

• North Carolina’s law prevented 190-226 hospitalizations for TBI in 2011
  • Averted hospital charges to taxpayer-funded sources of $9.5 million - $11.6 million
  • Total averted hospital charges were $25.3 million - $31.0 million.
Reducing Unintended Pregnancies: Colorado Family Planning Initiative

• Increased access to contraception

• Outcomes 2009-2013
  • Abortion rate fell 42% among women ages 15 to 19; 18% among ages 20 to 24
  • Teen birth rates declined more rapidly than in any other state or U.S. as a whole

• Birth rate for Medicaid-eligible women ages 15 to 24 decreased from 2010 to 2012
  • $49 million-$111 million avoided expenses in Medicaid birth-related costs
Choose Well: South Carolina Initiative

• Goal - Reduce unintended pregnancy among reproductive-age women
  • Contraceptive access initiative (start-up funding for 4 years)
  • Women and men, regardless of payer source or lack of insurance

• Partners
  • New Morning Foundation
  • DHEC
  • FQHCs and Hospitals
  • SC Campaign to Prevent Teen Pregnancy
  • Riggs Partners (communications)

• External Evaluation
Birth Outcomes Initiative

- Active coalition - DHHS, DHEC, March of Dimes, SC Hospital Association and many partners

- Reduced Early Elective Deliveries
- Post-partum LARC Insertion
- Safe Sleep
- Perinatal Regionalization
- Breastfeeding Friendly
  - Milk Bank
SCRIPTS

- CII- CIV prescriptions dispensed in SC
  - Currently share with 30 states (Georgia)
  - NC allows you to sign up
  - User has option of choosing states to search
- Uploaded daily
- Authorized users
  - Practitioner, Pharmacist
  - Delegate
    - Limit of 3 per provider
    - May be licensed or unlicensed
    - Supervisor is responsible for reports that delegate runs
EHR INTEGRATION

- PMP tab within EHR
  - Palmetto Health (CERNER)
  - Lexington Medical Center (EPIC)
  - MUSC (EPIC)
- Patient name works off exact match
  - Might not return all results
  - Use PMP Aware for further research
AAFP Resources


- Poverty and Health: http://www.aafp.org/about/policies/all/policy-povertyhealth.html#Intervention

Thank You!