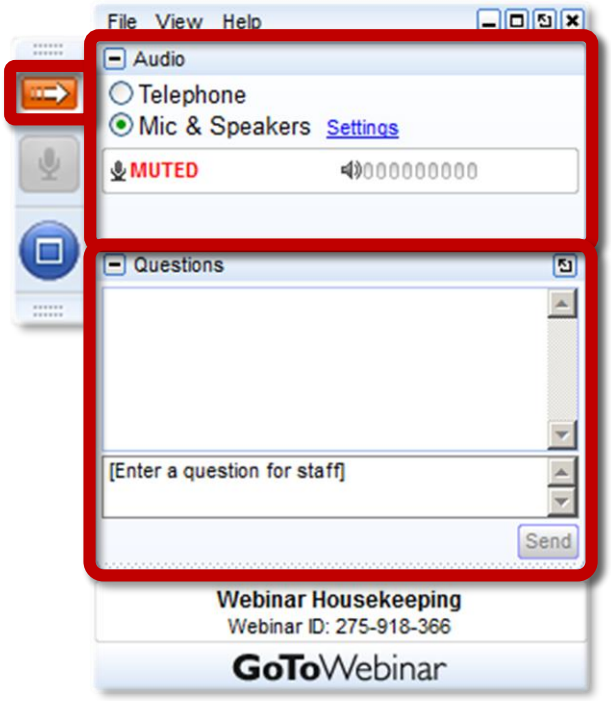
GoToWebinar Housekeeping: Attendee participation



Your Participation

Join audio:

- Choose “Mic & Speakers” to use VoIP
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Questions/Comments:

- Submit questions and comments via the Questions panel.
- Please continue to submit your text questions and comments using the Questions Panel

Note: Today’s presentation is being recorded and will be posted on the Company website.

Welcome!

"First Thursday" Chronic Disease Prevention and Health Promotion

CDC/State/NACDD Call

Chris Stockmyer
CDC | Coordinated State
Support Branch| Acting Branch Chief

Natasha Underwood
CDC | Coordinated State
Support Branch| ORISE Fellow

Time	First Thursday - April 7th Call AGENDA	Presenter
3:00 – 3:05	Welcome	**Natasha Underwood** ORISE Fellow Coordinated State Support Branch Division of Population Health
3:05 – 3:10	CDC Announcements	**Chris Stockmyer** Acting Branch Chief Coordinated State Support Branch Division of Population Health
3:11-3:13	Introduction of Speaker	**Natasha Underwood**
3:14 - 3:45	Return on Investment, Costs & Cost-Effectiveness: Terms & Applications in Chronic Disease	**Rui Li** Senior Health Economist Division of Reproductive Health
3:46-3:50	NACDD Announcements	**Jeanne Alongi** Senior Program Consultant National Association of Chronic Disease Directors
3:51 – 4:00	Final Questions & Adjourn	**Natasha Underwood**

CDC Announcements

- A Customizable Model for Chronic Disease Coordination: Lessons Learned from the Coordinated Chronic Disease Program article released

CDC Announcements

In this Issue

Cross Cutting:

- CDC Learning Connection Redesigned
- CMS Releases Interactive Mapping Disparities Tool
- Public Health Reaching out to the Faith Community (webinar)
- National Public Health Week

Arthritis

- Focus on the Athletic Trainer's Osteoarthritis Consortium

Cancer:

- Cancer Survivorship Care Plans Toolkit for Health Care Professionals
- National Colorectal Cancer Roundtable

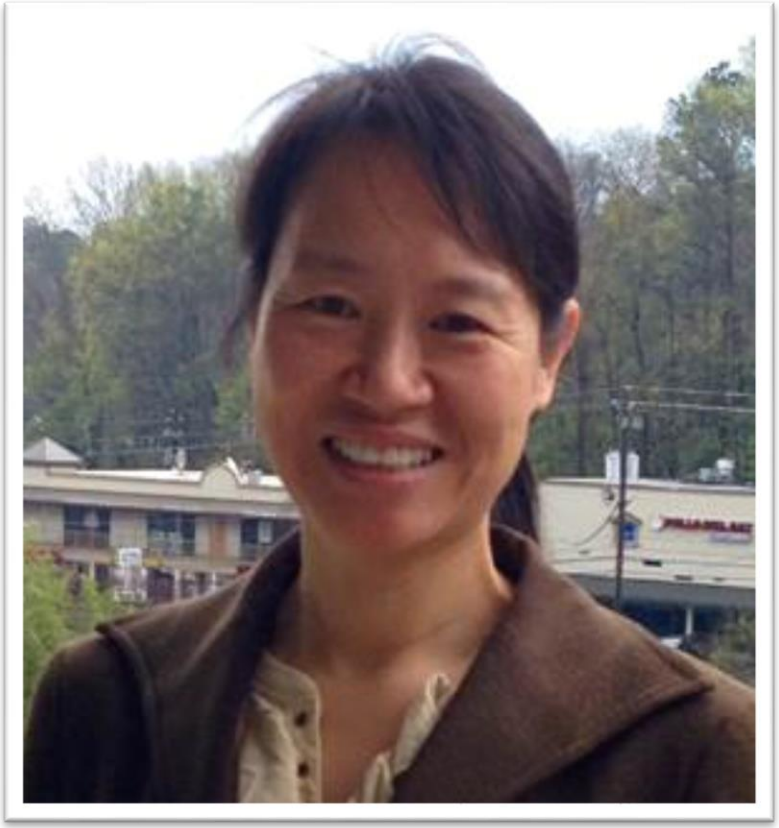
Table of Contents

Cross Cutting

CDC Learning Connection Redesigned
On April 1st, CDC will launch the newly designed **CDC Learning Connection** – your source for information on public health training opportunities developed by CDC, CDC partners, and other federal agencies. Visit the new site, access thousands of free courses, and sign up for monthly email updates.

CMS Releases Interactive Mapping Medicare Disparities Tool
The **Mapping Medicare Disparities (MMD) Tool** identifies disparities in health outcomes, utilization, and spending by race and ethnicity and geographic location. Understanding geographic differences in disparities is important to informing policy decisions and efficiently targeting populations and geographies for interventions.

Rui Li, PhD
Senior Health Economist
Division of Reproductive Health



Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

Return on Investment, Costs& Cost-Effectiveness: Terms & Applications in Chronic Disease

Rui Li, PhD
Senior Economist
Division of Reproductive Health

April 7, 2016

Outline

- Introduce different types of economic evaluation of public health programs/interventions and commonly used terms
- Examples of economic evaluation in chronic disease prevention and control at the state level

Why Does Economics Matter in Public Health?

Real-world Scenarios for State Chronic Disease Directors

- Scenario 1
- Your state legislatures are about to discuss the budget for the State Health Department. You want to show that the state should invest/increase the funding for chronic disease prevention and control.
- What information do you need to provide to the state legislatures to strengthen your argument?

- **Chronic disease burden in the State**
  - Prevalence of the chronic disease and its complications
  - Costs/economic burden of the chronic disease to the State Medicaid programs
  - Payments to the services provided for treating chronic disease and its complications

Scenario 2

- **You believe that lifestyle intervention to prevent type 2 diabetes should be the focus of your next year's priority, how will you convince your state legislatures to allocate funding for this effort?**

Persuasive Data…

- **Burden of diabetes in the State**
  - Prevalence of diabetes
  - Consequences of diabetes complications
  - Medical cost of treating diabetes and its complications
  - Number of people at risk for type 2 diabetes
- **Medical cost savings from preventing type 2 diabetes**
- **Cost of the lifestyle prevention programs**

How To Show Value of Investing in Prevention?

- **Terms often used interchangeably (but shouldn't be)**
- Favorable return on investment (ROI)
- Cost-effective
- Cost-saving
- Cost -beneficial
- **Different terms may correspond to different economic evaluation methods**
- **Use terms appropriate for a given study design, policy question and audience**

Types of Economic Analyses in Public Health

- **Cost of illness (COI) –preventable economic burden associated with a disorder or risk factor**
- **Cost analysis –cost of implementing a preventive service or program**
- **Economic evaluation –balance of costs & health outcomes**
- Cost-effectiveness analysis
- Cost-benefit analysis
- Budget impact or return on investment (ROI) analysis

Key Concept 1: Study Perspective —Value Is In the Eye of the Stakeholder

- Stakeholder types
  - Health care payers
    - Public –Medicare, Medicaid
    - Private –insurers, employers, consumers
  - Health care providers
  - Public health programs
  - Patients and families
- Analytic perspectives
  - Societal –all costs to all payers
  - Health system—all medical costs no matter who pays
  - Payer –just costs incurred by one payer

Key Concept 2: Time Frame Vs. Analytical Horizon

- **Time Frame**
  - Period during which the interventions are implemented
    e.g., if an anti-smoking mass education campaign lasts 6 months, those 6 months are the time frame

- **Analytical Horizon**
  - Period over which the costs and benefits related to the intervention are considered
  - Usually longer than time frame
  - Could even cover clients' lifetime
  - Depending on stake holder types
  - For many chronic disease prevention programs, more benefits accumulated for longer period

Key Concept 3: Different Types of Economic Costs

- **Direct cost**
  - Medical
  - Non-medical
  - Education services
  - Justice system
- **Indirect cost –Lost productivity for affected persons**
  - Mortality
  - Morbidity and disability
  - Parental time cost –direct cost in US
- **Intangible costs**
  - Pain and suffering
  - Loss of well-being

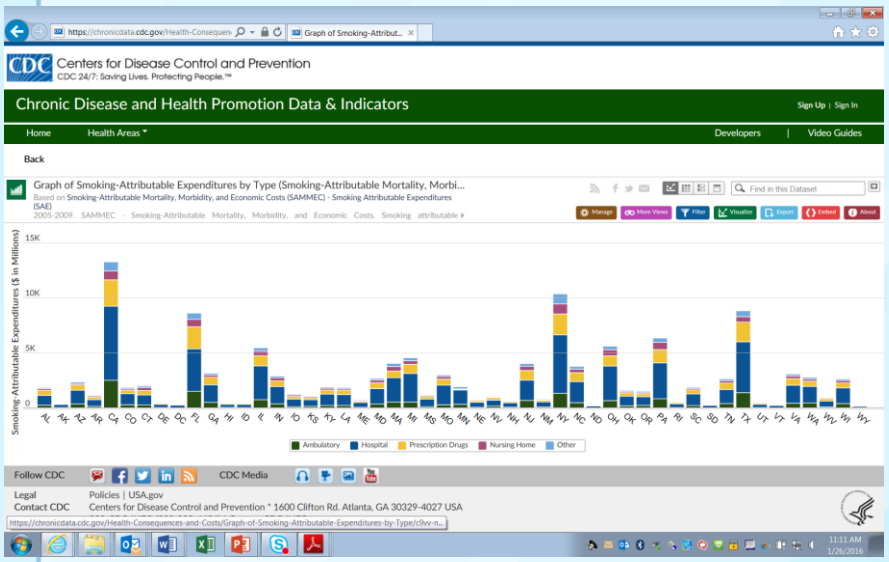
Incremental or Attributable Cost

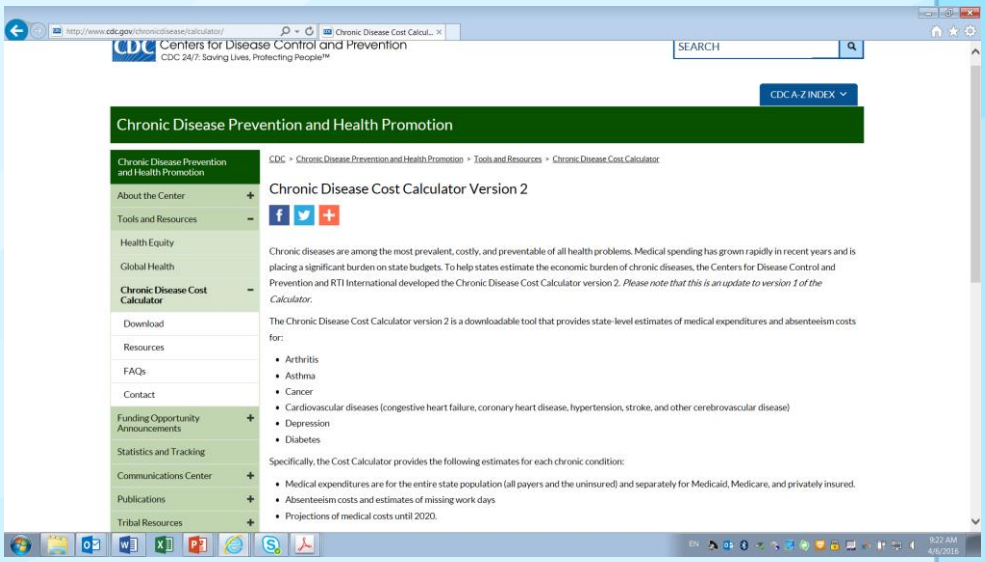
- **Gross cost –average cost of care for an affected individual**
- **Attributable cost –cost due to the disease itself (including disease complications)**
  - Cost associated with specific treatments or services associated with the condition
- **Incremental cost --difference in total cost for affected and unaffected individuals**
  - Adjusted for comorbidity and demographics

Sources of Health Care Cost Data

- National surveys
  - Medical Expenditure Panel Survey (MEPS)
  - Pros: nationally representative
  - Cons: only useful for common conditions
- Administrative data
  - Hospital data
    - Pros: Covers all payers; representative of population
    - Cons: Charges, not costs; excludes inpatient care
  - Insurance claims data
    - Public insurance , e.g., Medicaid/CHIP
    - Private
      - Pros: Longitudinal data, complete course of care, useful for payer perspective
      - Cons: Not representative of whole population

Examples: Smoking, Chronic Diseases



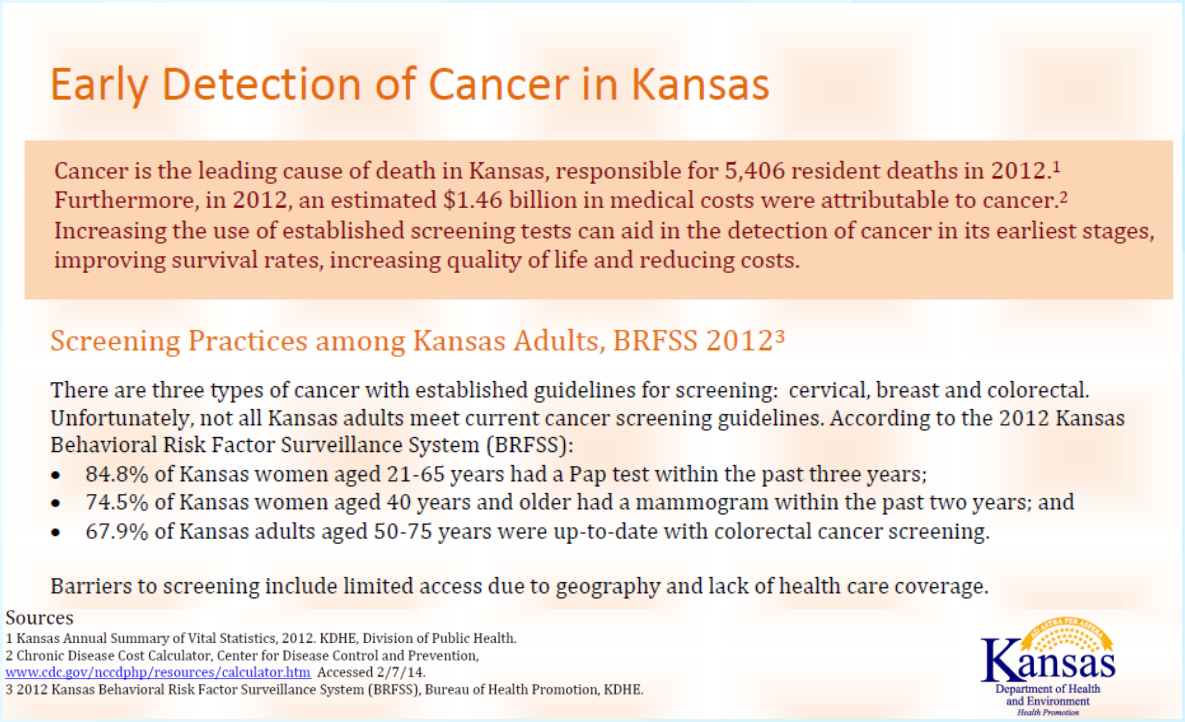


https://chronicdata.cdc.gov/Health-Consequences-and-Costs/Smoking-Attributable-Mortality-Morbidity-and-Econo/ezab-8sq5

http://www.cdc.gov/chronicdisease/calculator/index.html

Example of State Applications

- **Cancer fact sheet in Kansas**



Early Detection of Cancer in Kansas

Cancer is the leading cause of death in Kansas, responsible for 5,406 resident deaths in 2012.[1] Furthermore, in 2012, an estimated $1.46 billion in medical costs were attributable to cancer.[2] Increasing the use of established screening tests can aid in the detection of cancer in its earliest stages, improving survival rates, increasing quality of life and reducing costs.

Screening Practices among Kansas Adults, BRFSS 2012[3]

There are three types of cancer with established guidelines for screening: cervical, breast and colorectal. Unfortunately, not all Kansas adults meet current cancer screening guidelines. According to the 2012 Kansas Behavioral Risk Factor Surveillance System (BRFSS):

- 84.8% of Kansas women aged 21-65 years had a Pap test within the past three years;
- 74.5% of Kansas women aged 40 years and older had a mammogram within the past two years; and
- 67.9% of Kansas adults aged 50-75 years were up-to-date with colorectal cancer screening.

Barriers to screening include limited access due to geography and lack of health care coverage.

Sources

1 Kansas Annual Summary of Vital Statistics, 2012. KDHE, Division of Public Health.
2 Chronic Disease Cost Calculator, Center for Disease Control and Prevention, www.cdc.gov/nccdphp/resources/calculator.htm Accessed 2/7/14.
3 2012 Kansas Behavioral Risk Factor Surveillance System (BRFSS), Bureau of Health Promotion, KDHE.

Kansas Department of Health and Environment
Health Promotion

Key Concept 4: Cost Analysis—Program Cost

- Define program or intervention to evaluate
- Decide which costs to include
- Decide on time frame for cost analysis
- Collect cost data
  - Program budgets
    - Need to be able to disaggregate by activity
    - Activities and budgets may not coincide
  - Micro-costing approach
    - Quantities of inputs (staff time, equipment, consumables, overhead)
    - Values of inputs

Example—Cost of Colorectal Cancer Screening Demonstration Program

Evaluation of the Startup Period

- Cost of starting colorectal cancer screening programs: results from five federally funded demonstration programs. (http://www.cdc.gov/pcd/issues/2008/apr/07_0202.htm)

Evaluation of the Full Program

- Subramanian S, Tangka FK, Hoover S, Beebe MC, Degroff A, Royalty J, Seeff LC. Costs of planning and implementing CDC's Colorectal Cancer Screening Demonstration Program. (http://www.ncbi.nlm.nih.gov/pubmed/23868480) *Cancer* 2013;119 Suppl 15:2855–2862.
- Tangka FK, Subramanian S, Beebe MC, Hoover S, Royalty J, Seeff LC. Clinical costs of colorectal cancer screening in 5 federally funded demonstration programs.

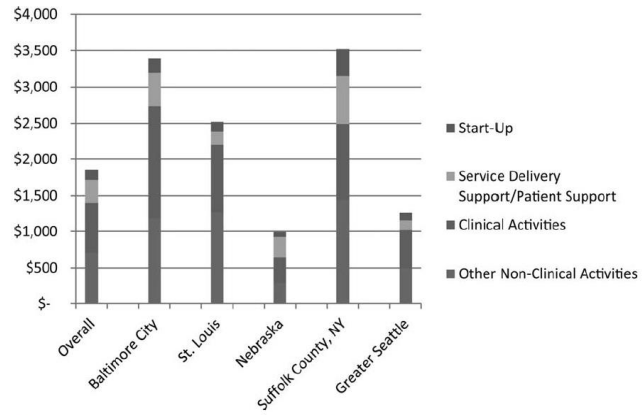


Figure 2. This chart illustrates the cost per person screened overall and by site for the start-up and implementation phases. Costs are adjusted using the regional Consumer Price Index to allow for systematic comparisons across sites. Baltimore City and Suffolk County, New York were colonoscopy programs, and the others provided a mix of fecal occult blood testing and FOBT and colonoscopy.

http://www.cdc.gov/cancer/crccp/supplement.htm

Economic Evaluation Methods

- **Cost-effectiveness analysis (CEA)**
  - Which approach costs less per unit of health gained?
  - CEA using quality-adjusted life years (QALYs) for outcomes is cost-utility analysis (CUA)
- **Cost-benefit analysis (CBA)**
  - Is the monetary value of benefits to society greater than total cost?
- **Financial Return on Investment (ROI) or Budget Impact Analysis (BIA)**
  - Will financial benefits exceed outlays in a given timeframe for a private payer, public program, or state government overall?

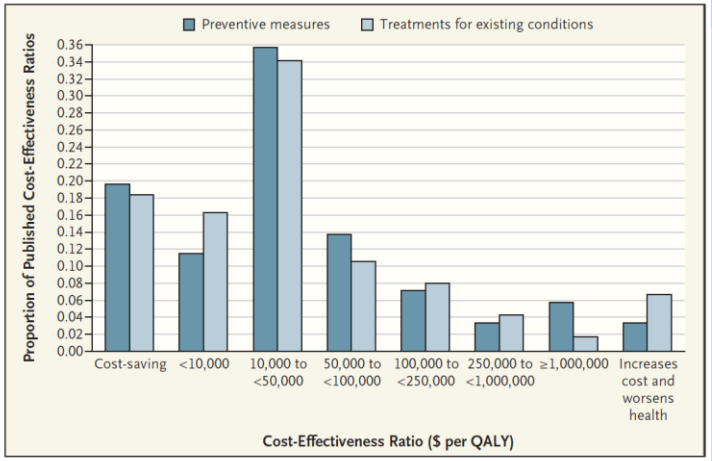
Key Concept 5: Cost-Effectiveness Analysis (CEA)

- Method for comparing net cost per health outcome
- **For each pair of options (e.g., screening vs. no screening for diabetes, two different screening algorithms)**
  - Assess total outcomes and costs
  - Exclude dominated options that cost more and less effective
  - Calculate incremental cost-effectiveness ratio (ICER) for two strategies that are non-dominated
  - E.g.: cost for diabetes identified, cost per QALY gained

- **ICER=** $$\frac{Cost\ A - Cost\ \mathrm{B}}{Outcome\ A - Outcome\ B}$$

Cost-Effectiveness and Cost-Savings

- **If one strategy results in lower total direct costs than another strategy, it is** ***cost-saving***
  - If an intervention is both cost saving and has either comparable or better outcomes than the comparator, it is said to be *dominant*
  - For dominant strategies (better outcomes, lower costs), there is no reason to calculate a cost-effectiveness ratio
- **Among the clinical preventive services recommended by US Preventive Services Task Force, about 1/5 are cost-saving**



Distribution of Cost-Effectiveness Ratios for Preventive Measures and Treatments for Existing Conditions.

Cohen JT, Neumann PJ, Weinstein MC. Does preventive care save money? Health economics and the presidential candidates. N Engl J Med. 2008;358:661-3. available at http://www.nejm.org/doi/pdf/10.1056/NEJMp0708558

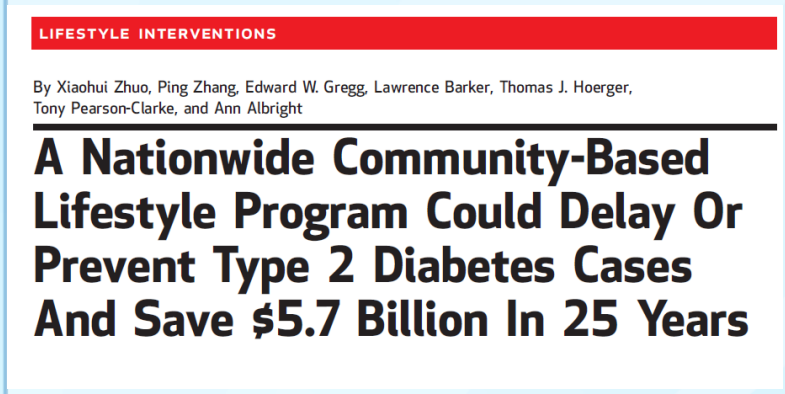
Key Concept 6: Cost-Benefit Analysis

- All costs and benefits are in the same metric (dollars)
  - All health outcomes must be assigned dollar values, controversial
- **Outcome measures: net benefit and benefit-cost ratio**
  - Economists prefer net benefit; benefit-cost ratio is less reliable
  - net benefit of intervention = benefits –costs
  - benefit-cost ratio = benefits / costs

Key Concept 7: Return on Investment (ROI)

- **Standard definition of ROI analysis: calculation of net financial cost to a single stakeholder (e.g., a health plan, a hospital, or a state health department)**
- **The Return on Investment Formula**
  - ROI=(Gain from the investment-Cost of the investment)/Cost of the Investment
  - ROI=Benefit/Cost Ratio-1
- **Only applicable if the intervention is cost-saving**

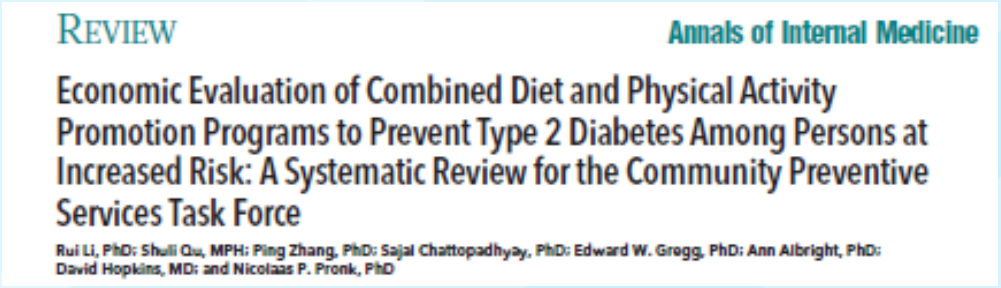
Example—Economic Evaluation of/Planning for the National Diabetes Prevention Program



LIFESTYLE INTERVENTIONS

By Xiaohui Zhuo, Ping Zhang, Edward W. Gregg, Lawrence Barker, Thomas J. Hoerger, Tony Pearson-Clarke, and Ann Albright

A Nationwide Community-Based Lifestyle Program Could Delay Or Prevent Type 2 Diabetes Cases And Save $5.7 Billion In 25 Years



REVIEW

Annals of Internal Medicine

Economic Evaluation of Combined Diet and Physical Activity Promotion Programs to Prevent Type 2 Diabetes Among Persons at Increased Risk: A Systematic Review for the Community Preventive Services Task Force

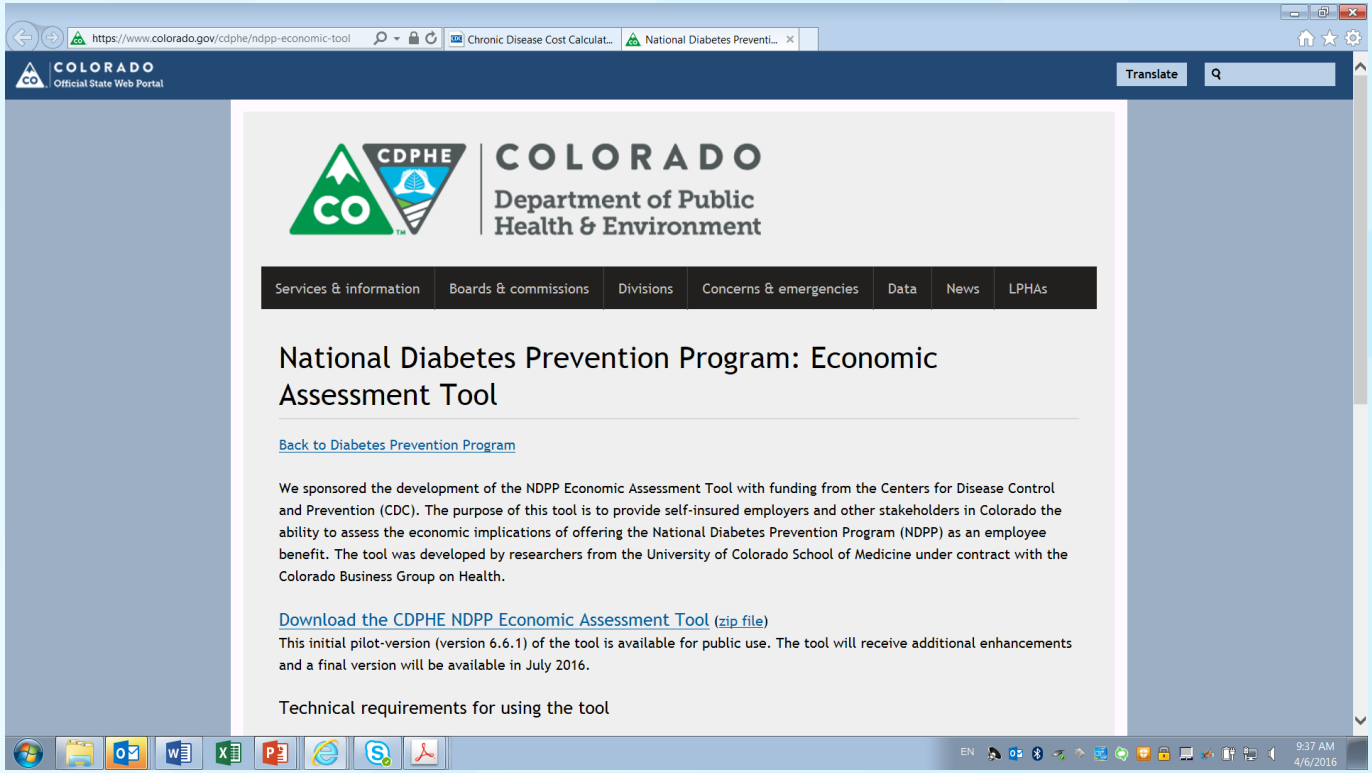
Rui Li, PhD; Shuli Liu, MPH; Ping Zhang, PhD; Sajal Chattopadhyay, PhD; Edward W. Gregg, PhD; Ann Albright, PhD; David Hopkins, MD; and Nicolaas P. Pronk, PhD

Diabetes Impact Toolkit

Provides state public health practitioners, health insurers and employers with a convenient online tool to assess the cost, cost-effectiveness or cost-benefit of applying DPP-like lifestyle change program to their population

Zhuo et al. *Health Affairs*, 31, no.1 (2012):50-60
Li et al. *Ann Intern Med.* 2015;163(6):452-460

Example-Colorado NDPP Economic Assessment Tool



https://www.colorado.gov/cdphe/ndpp-economic-tool

What is the role of ROI or economic evidence in policy making?

- **Economic and financial calculations play a supporting role**
- Usually, neither necessary nor sufficient conditions for a program to be funded
  - Programs with strong constituencies may be funded year after year despite lack of evidence of effectiveness
  - Programs without champions may lose funding despite good quality evidence of effectiveness and cost-effectiveness
- Don't expect an ROI analysis to magically bring support, but if you have strong support already, demonstration of favorable ROI can help

Acknowledgement

- Many thanks to Dr. Scott Grosse, Senior Economist at the National Center for Birth Defects and Developmental Disabilities, Who co-developed the slides

Questions and Discussion

Contact Information

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Phone: 770-488-1070

Want more assistance?

- **Economic Evaluation Office Hours**
  - April 21st 2:30-3:30 pm EDT
  - May 3rd 2-3 pm EDT
  - Additional times are available

- **Contact Natasha Underwood at Nunderwood@cdc.gov to schedule an appointment**

NACDD Updates

Jeanne Alongi
NACDD

Thank You!

- **Next First Thursday Call- May 5th 3:00-4:00 pm EDT**
- **If you have feedback or ideas for First Thursday calls, please contact your Regional Team Coordinator.**