NIH HEAL INITIATIVE

Preventing Opioid Use Disorder in Older Adolescents and Young Adults

The Dollars and Sense of Costing a Substance Use Prevention Program: Learnings from a Research Cooperative

April 19, 2024

Presented by: Brent Gibbons

NIH HEAL Initiative and Helping to End Addiction Long-term are service marks of the U.S. Department of Health and Human Services.

Learning Objectives

- Promote a deeper understanding of costing concepts and approaches for researchers and evaluators
- Impart knowledge on the value of costing, including the resources needed, as a component of studying prevention programs
- Introduce common challenges and solutions, with examples from the HEAL Prevention Cooperative

HPC

10 research projects (RPs)

1 coordinating center

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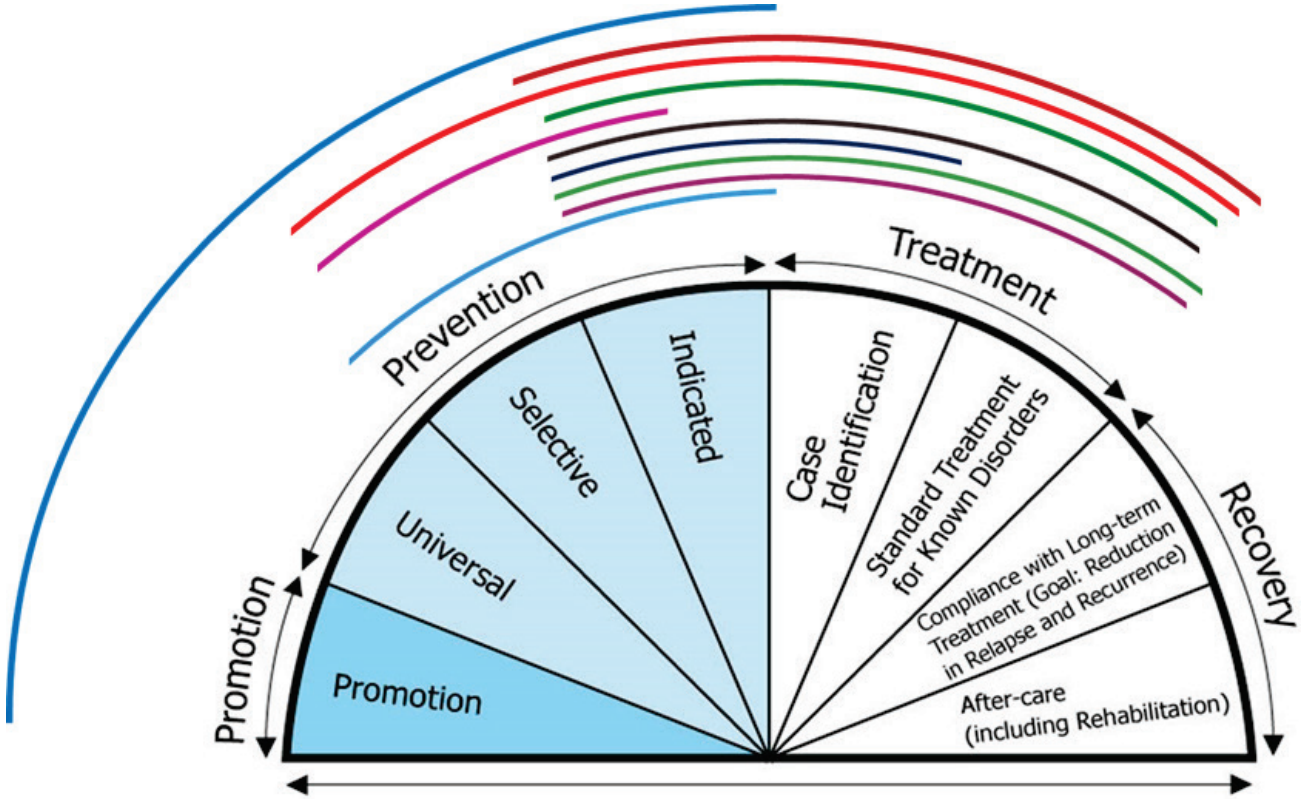
Aim

Develop and test 10 interventions to prevent opioid misuse and OUD among young people ages 15–30

PREVENTION IS ESSENTIAL

Coordinated Continuum

- Public health interventions can reach people at different stages across the continuum of care
- 10 HPC interventions occur across broad range of continuum



https://ohiostate.pressbooks.pub/substancemisusepart1/chapter/ch-2-name-5/

Webinar Structure

1. **Why Costing Is Important** – David Hutton, University of Michigan
2. **Costing Concepts and Approaches** – Diana Bowser, Boston College
3. **Understanding Collection Tools for Cost Data** – Tansel Yilmazer, The Ohio State University
4. **Panel Discussion:** Common Costing Challenges and Solutions

   Moderator: Rosanna Smart, RAND

   Panelists: D. Hutton, D. Bowser, T. Yilmazer

Statement of Support

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Sign up for the HPC electronic mailing list:

https://survey.alchemer.com/s3/6449408/HEAL-Prevention-Network

Visit the HEAL Prevention Initiative website:

https://heal.nih.gov/research/new-strategies/preventing-opioid-use-disorder

For More Information

NIH HEAL INITIATIVE

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Why Costing Is Important

April 19, 2024

David W. Hutton, PhD

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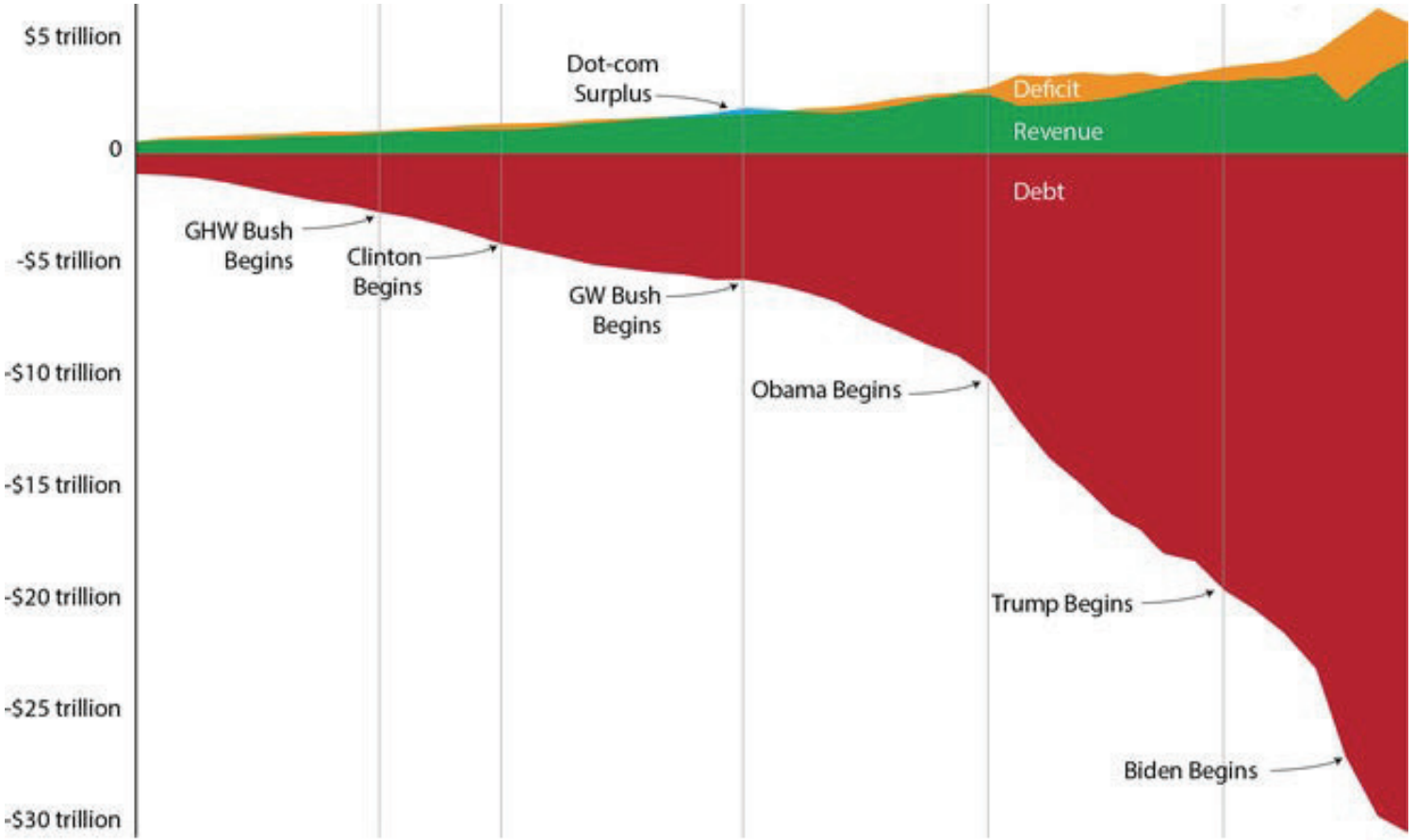
Why care about costs?



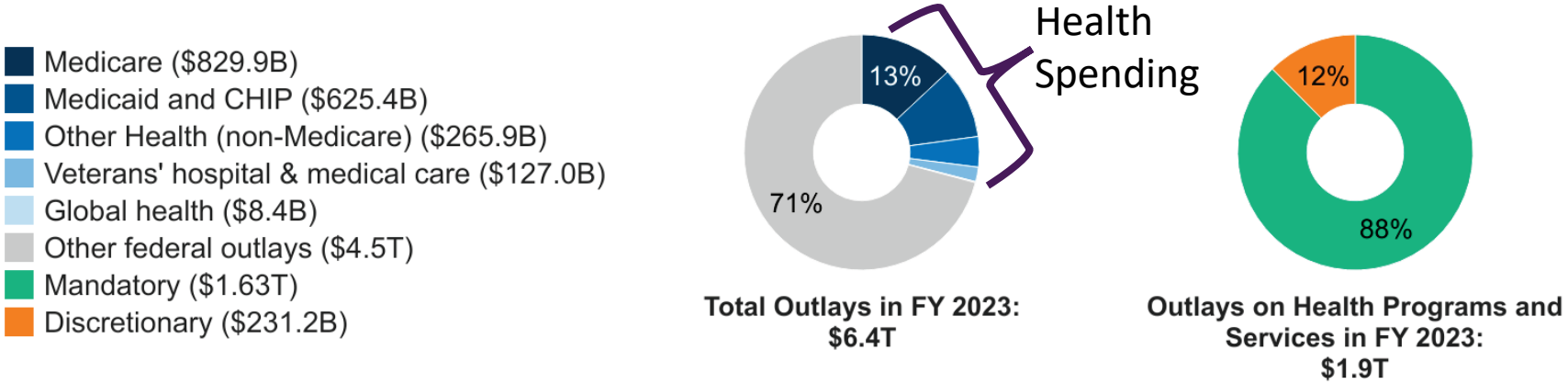
[Debt isn't even a national issue anymore. But it should be (azcentral.com)]

But what does health have to do with this?

Figure 1

Federal Spending on Domestic and Global Health Programs and Services Accounted for 29% of Net Federal Outlays in FY 2023

Mandatory spending accounted for 88% of outlays on health programs and services



NOTE: FY is fiscal year. T is trillion. B is billion. CHIP is Children's Health Insurance Program. All amounts in total outlays include both mandatory and discretionary spending. 'Medicare' includes all spending in budget function 570: Medicare. 'Medicaid and CHIP' and 'Other Health (non-Medicare)' includes all spending in budget function 550: Health (551: Health care services; 552: Health research and training; and 554: Consumer and occupational health and safety). 'Veterans' hospital & medical care' includes all spending in budget function 703. 'Global health' is a category of spending within budget function 151: International development and humanitarian assistance.

SOURCE: KFF analysis of data from Office of Management and Budget, FY 2024 President's Budget, Table 24-1, Budget Authority and Outlays by Function, Category, and Program.

KFF

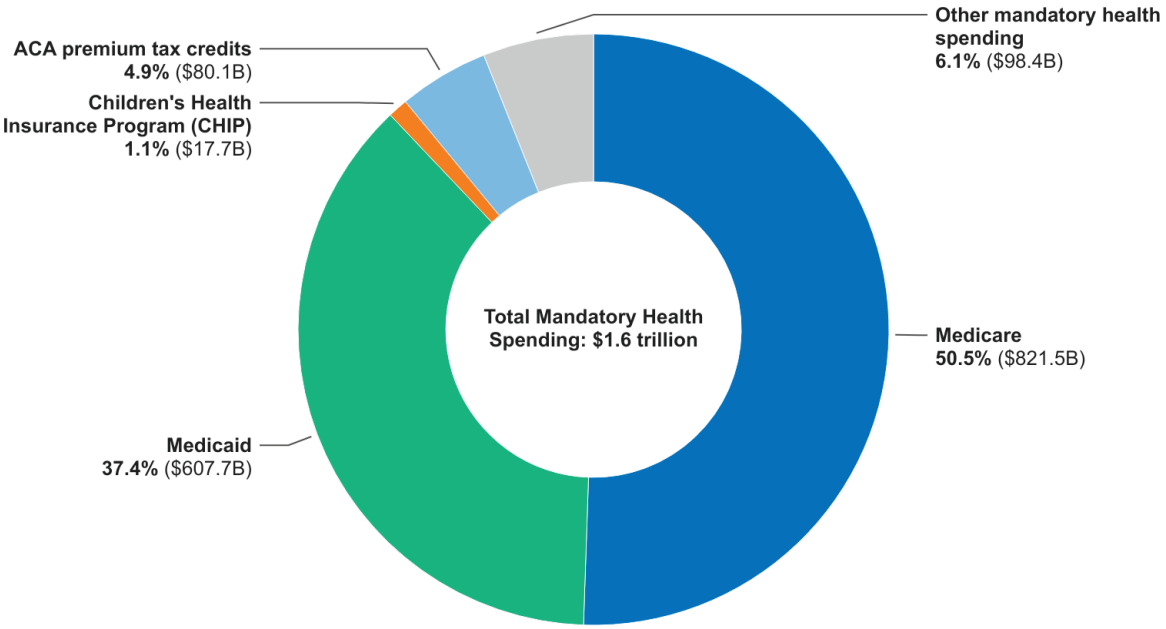
[FAQs on Health Spending, the Federal Budget, and Budget Enforcement Tools | KFF]

What is “mandatory” spending?

Figure 2

Spending on Medicare, Medicaid and CHIP, and ACA Premium Subsidies Accounts for the Vast Majority of Mandatory Spending on Health Programs and Services

Mandatory federal spending in FY 2023



https://www.kff.org/medicare/issue-brief/faqs-on-health-spending-the-federal-budget-and-budget-enforcement-tools/

NOTE: B is billion. ACA is Affordable Care Act. Medicare includes spending on Part A, Part B, and Part D spending, and excludes the value of offsetting receipts, which totaled $160.1 billion in FY 2023 ($5.2 billion for Part A, $134.6 billion for Part B, and $20.2 billion for Part D). See Table 1 for details on the components of other mandatory health spending.
SOURCE: KFF analysis of data from Office of Management and Budget, FY 2024 President's Budget, Table 24-1, Budget Authority and Outlays by Function, Category, and Program.

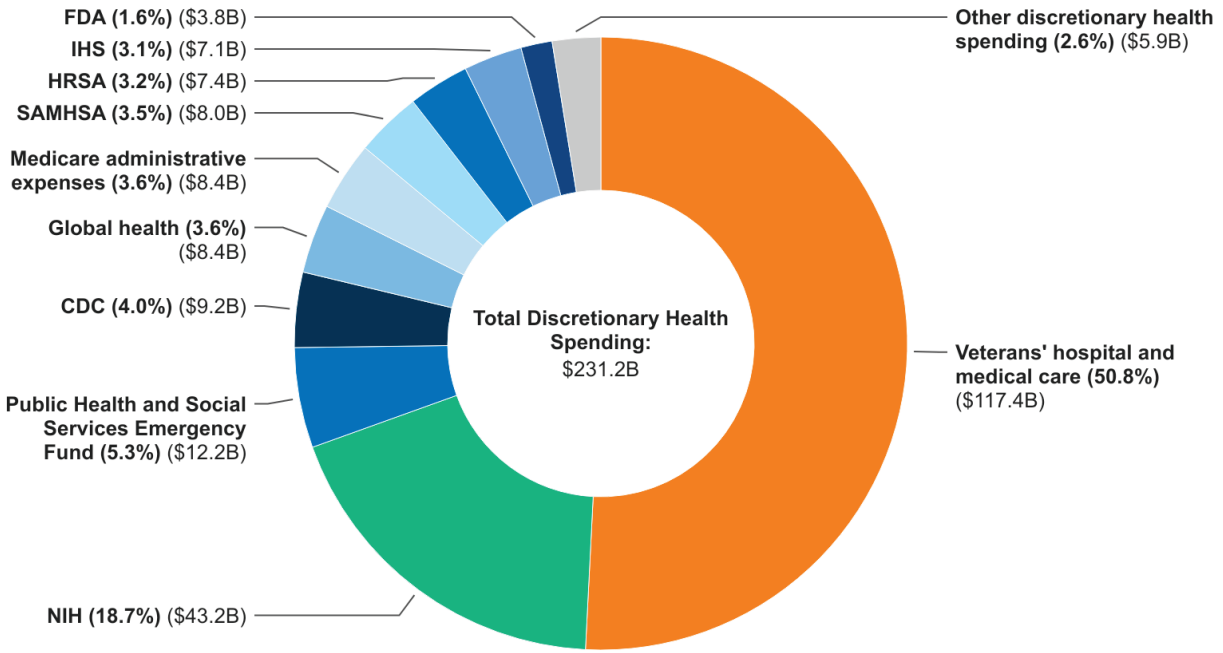
KFF

Maybe we can cut “discretionary” health spending?

Figure 3

Spending on Veterans' Hospital and Medical Care is the Largest Portion of Federal Discretionary Health Spending

Discretionary health spending in FY 2023



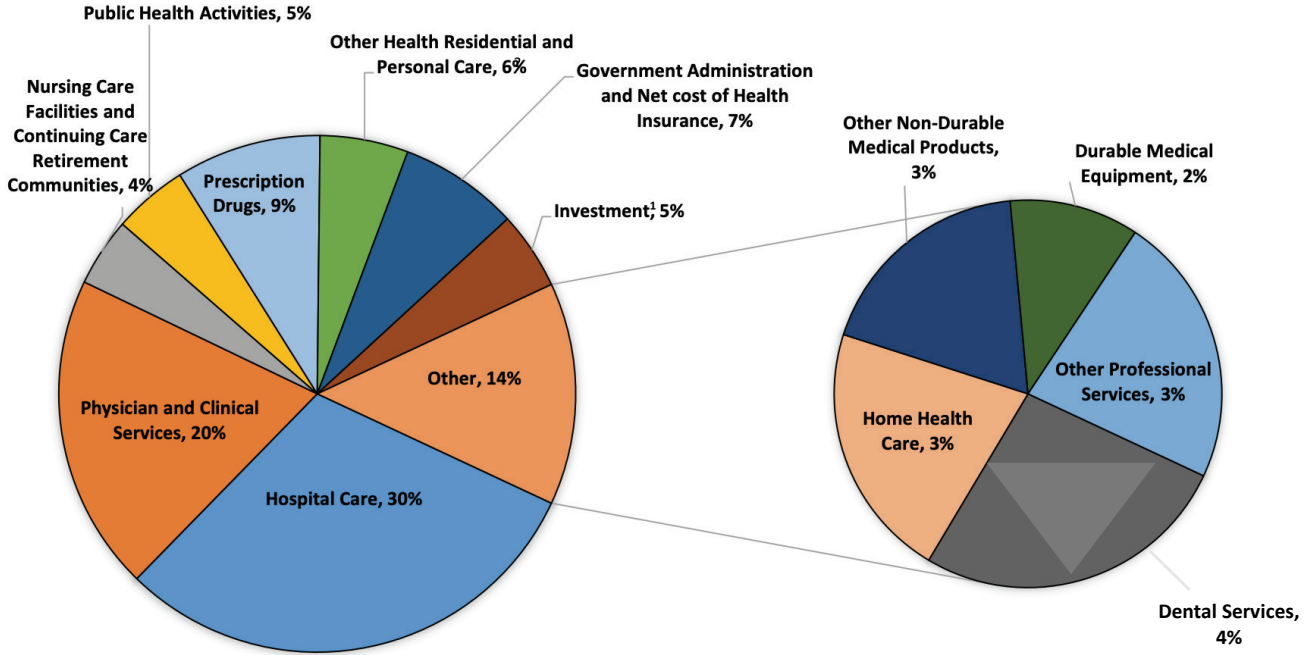
https://www.kff.org/medicare/issue-brief/faqs-on-health-spending-the-federal-budget-and-budget-enforcement-tools/

NOTE: B is billion. CDC is Centers for Disease Control and Prevention. FDA is Food and Drug Administration. HRSA is Health Resources and Services Administration. IHS is Indian Health Service. NIH is National Institutes of Health. SAMHSA is Substance Abuse and Mental Health Services Administration. See Table 2 for details on the components of other discretionary health spending.
SOURCE: KFF analysis of data from Office of Management and Budget, FY 2024 President's Budget, Table 24-1, Budget Authority and Outlays by Function, Category, and Program.

KFF

Health care spending, 2022

Where is substance use prevention?



[1] Includes Noncommercial Research and Structures and Equipment. [2] Includes expenditures for residential care facilities, ambulance providers, medical care delivered in non-traditional settings (such as community centers, senior citizens centers, schools, and military field stations), and expenditures for Home and Community Waiver programs under Medicaid.
Note: Sum of pieces may not equal 100% due to rounding.
SOURCE: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group.
https://www.cms.gov/files/document/nations-health-dollar-where-it-came-where-it-went.pdf

Costs are important

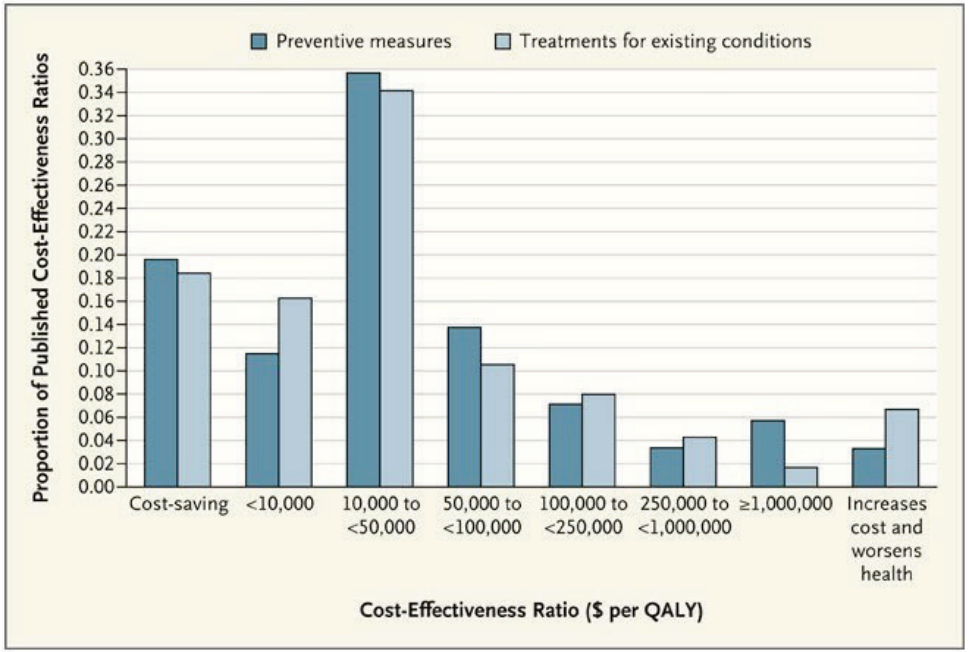
- Organizations need resources to continue doing what they do
- Costing measures resource use
- Organizations may face budget (resource) pressures
  - Federal
  - State
  - Local
  - Nongovernmental

Economic analysis can be helpful

- Can help answer important questions:
  - Should we invest in a new intervention?

    Economic analysis can tell us if a new intervention is worthwhile. Is it worth investing our scarce resources in this?
  - How can we plan for a new intervention?
  - How much will it cost…
    - To start up?
    - To keep running?

It is not a given that prevention saves money…



Cohen, J. T., Neumann, P. J., & Weinstein, M. C. (2008). Does preventive care save money? Health economics and the presidential candidates. *New England Journal of Medicine, 358*(7), 661–663. https://doi.org/10.1056/nejmp0708558

Costing is essential to evaluating your prevention intervention

- We research these interventions to improve population health
- To improve population health, we must implement the good interventions in the “real world”
- You need to evaluate your intervention’s efficacy
- But if your intervention is effective…
  - You also need to evaluate costs to convince decision-makers that this is a good investment
  - Helping with budgeting will improve future implementation efforts

What are we doing in the HEAL Prevention Cooperative?

- Supporting economic analysis of substance use prevention interventions
- Sharing best practices
  - Costing approaches (more from Diana)
    - Cost structuring
    - Cost collection
  - Collecting and sharing common themes
- Costing is challenging:
  - few large claims datasets on substance use prevention
  - we often must calculate costs “from the ground up”

Thank you!

David Hutton

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NIH HEAL INITIATIVE

Preventing Opioid Use Disorder in Older Adolescents and Young Adults

Costing Concepts and Approaches

April 19, 2024

Diana Bowser, ScD, MPH
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Boston College
Connell School of Nursing

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Outline

- Costing questions and approaches
- Cost concepts for data collection
- An example and other costing concepts
  - Cost-effectiveness analysis (CEA)
  - Budget impact analysis (BIA)

Costing Questions and Approaches

Questions asked of economists all the time:

- How much does it cost for me to implement my program?
- Which program should I choose to implement, given my budget constraint?
- What is the return for my investment—bang for the buck?

Costing Study

Cost-Effectiveness Analysis (CEA)

Return on Investment (ROI)

Total Cost/Cost per Unit

Cost per Outcome (DALY)

Dollar Return on Investment

Cost Data Collection

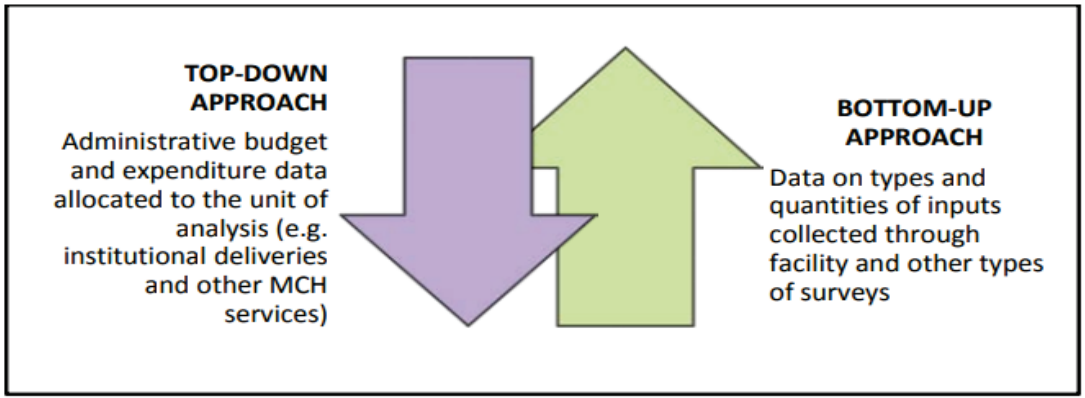
- Cost data collection
  - Precision: depending on top-down or bottom-up methods
  - Perspectives: health care system, societal, state/taxpayer, provider
- Choice of perspective dictates…
  - Which resources to include in the analysis
  - What data to use in the analysis

DALY = Disability-Adjusted Life Years

Activity Based Costing (ABC)

Cost Data Collection Methods (I)

Two Main Types:



MCH: Maternal Child Health

Cost Data Collection Methods (II)

Top-Down Approaches

- Using total budgets, expenditures, and/or administrative data for a larger unit (hospital, facility, community, state) and calculating a cost per unit (patient, staff, service)
- For example, your unit may want to set the cost for a particular service (vaccinations) on the basis of historical cost data or cost data from another hospital or facility

Cost Data Collection Methods (III)

Bottom-Up Approaches

- Process Costing—Considers the processes to produce a product to understand the total cost based on the cost for each process
- Activity-Based Costing (ABC)—Costs are aggregated based on activities defined and resources associated with each activity
- Time-Driven Activity-Based Costing (TD-ABC)—Calculates costs of services for a patient using the care process as the input for the cost analysis

Choice of Perspective

Table 4.1 Cost components included in the two Reference Case perspectives

Cost component	Reference Case perspective	
	Healthcare	Societal
Formal healthcare sector:*		
Paid for by third-party payers	✓	✓
Paid for by patients out-of-pocket	✓	✓
Informal healthcare sector:		
Patient time	–	✓
Unpaid caregiver time	–	✓
Transportation costs	–	✓
Non-healthcare sectors:		
Productivity	–	✓
Consumption	–	✓
Social services	–	✓
Legal or criminal justice	–	✓
Education	–	✓
Housing	–	✓
Environment	–	✓
Other (e.g., friction costs)	–	✓

* Includes current and future costs, related and unrelated to the condition under consideration.

Source: Owens, D. K., Siegel, J. E., Sculpher, M. J., & Salomon, J. A. (2016). Designing a cost-effectiveness analysis. In P. J. Neumann, G. D. Sanders, L. B. Russell, J. E. Siegel, & T. G. Ganiats (Eds.), *Cost-effectiveness in health and medicine* (Table 4.1). Oxford University Press. https://academic.oup.com/book/12265/chapter/161765865

Type of Costs (I)

Direct Costs

- Labor (any labor costs related to implementation of an intervention)
- Recurrent costs
  - Supplies, training, materials, space, travel, etc.
- Capital items (these can be amortized)

Indirect Costs

- Fringe and other administrative costs not included in direct costs

Type of Costs (II)

Opportunity Cost

- The cost of giving something up to get something else
- Often measured for individuals participating in an intervention who do not earn a salary (caregivers, youth); proxy with minimum wage

Marginal/Variable Costs

- Fixed and variable costs
- Variable costs are linked with variable unit (individuals, supplies, etc.)

ABC: Bottom-up Method With Resource Valuation and Price Weights

- For each phase of a project or intervention, the activities, resource quantities, and unit prices are tracked

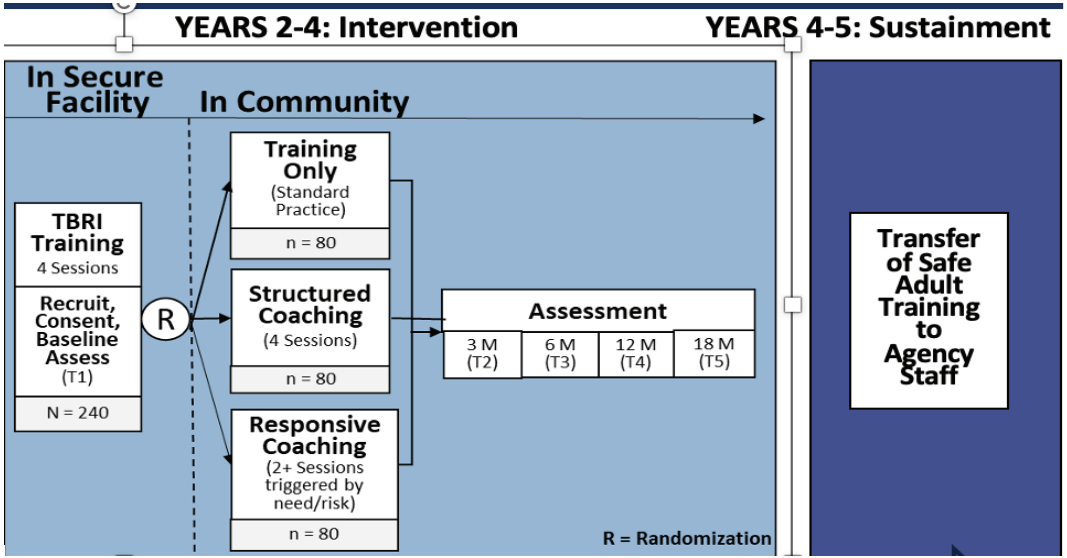
Price Weight per Resource
X Units of Resource

Resource	Price Weight
Staff hours in training	Hourly wage
Intervention manuals	Cost to produce a manual

- Appropriate price weights depend on perspective
  - Health care system: Third-party-payer and patient costs
  - Societal: Opportunity cost to society of resources (patient time, unpaid caregiver time, transport time)

Preventing Opioid Use Among Justice-Involved Youth as They Transition to Adulthood: Leveraging Safe Adults (LeSA; 4UG3DA050250 , 4UH3DA050250)

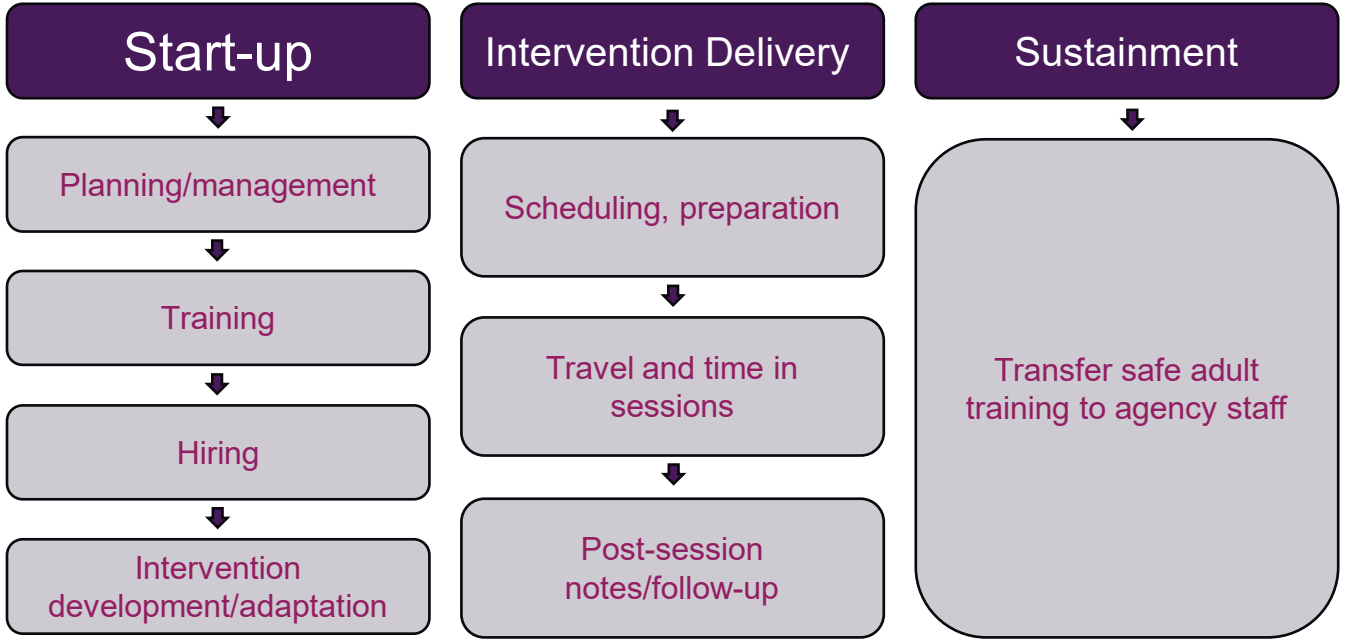
Implemented all **costing concepts and approaches** to estimate the cost of Trust-Based Relational Intervention® (TBRI®)



Principal Investigator: Danica K. Knight, PhD https://link.springer.com/article/10.1186/s12889-021-12127-3

Activity-Based Costing

Resources/Activities Defined
Price Weight for Each Resource



Cost-Effectiveness Analysis

- CEA is used to assess the differential costs and outcomes associated with more than one intervention or arms of an intervention
- Effectiveness
  - Quality-adjusted life year (QALY)
  - Lives saved
  - Other effectiveness outcomes (healthcare utilization, access)
- Incremental cost-effectiveness ratio (ICER)

$$ICER = \frac{Cost_I - Cost_C}{Effectiveness_I - Effectiveness_C}$$

I = intervention; C = control

Budget Impact Analysis

- Framework to assess impact of intervention scale-up assumptions on **costs** (includes intervention costs and costs associated with condition) and **health impacts**
  - Important before implementation because of **tight budget constraints**
  - Helps with **budget and resource planning**, as well as forecasting health and economic impacts
  - Addresses the financial stream of consequences related to the uptake and dissemination of interventions to assess their **affordability**

Thank you!

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NIH HEAL INITIATIVE

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Understanding Collection Tools for Cost Data

April 19, 2024

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Associate Professor, Consumer Sciences
The Ohio State University

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Costing Methods

- Gross Costing

Top down

- Micro-costing

Bottom up

- Involves direct enumeration and costing of each input
- Foundational principle of activity-based costing (ABC)

ABC: resource use for each exclusive activity

Common data collection tools for ABC

- Standardized comprehensive templates
- Targeted questionnaires
- Activity logs
- On-site administrative databases
- Direct observation

Aim: produce good-quality cost estimates to inform resource allocation decisions

Brief description of collection tools for cost data

Tools	Description	Common modes
Standardized comprehensive templates (interview or survey)	Collect cost data for most or all aspects of intervention	Computer based (e.g., Excel) or paper based
Targeted questionnaires (interview or survey)	More limited in scope, study specific, less formal than Standardized comprehensive templates	Computer based (e.g., Excel) or paper based
Activity logs	Logs to track time or materials used for intervention activities	Computer based (e.g., Excel),paper based, smart phones
On-site databases or records	Data systems to collect site-specific information about resource use	Computer based (e.g., Access, accounting system, attendance records)
Direct observation	Trained staff observe intervention processes	In-person observation with paper-based or computer-based forms

PREVENTION OF OUD: THE HOME (HOUSING, OPPORTUNITIES, MOTIVATION AND ENGAGEMENT) RANDOMIZED TRIAL

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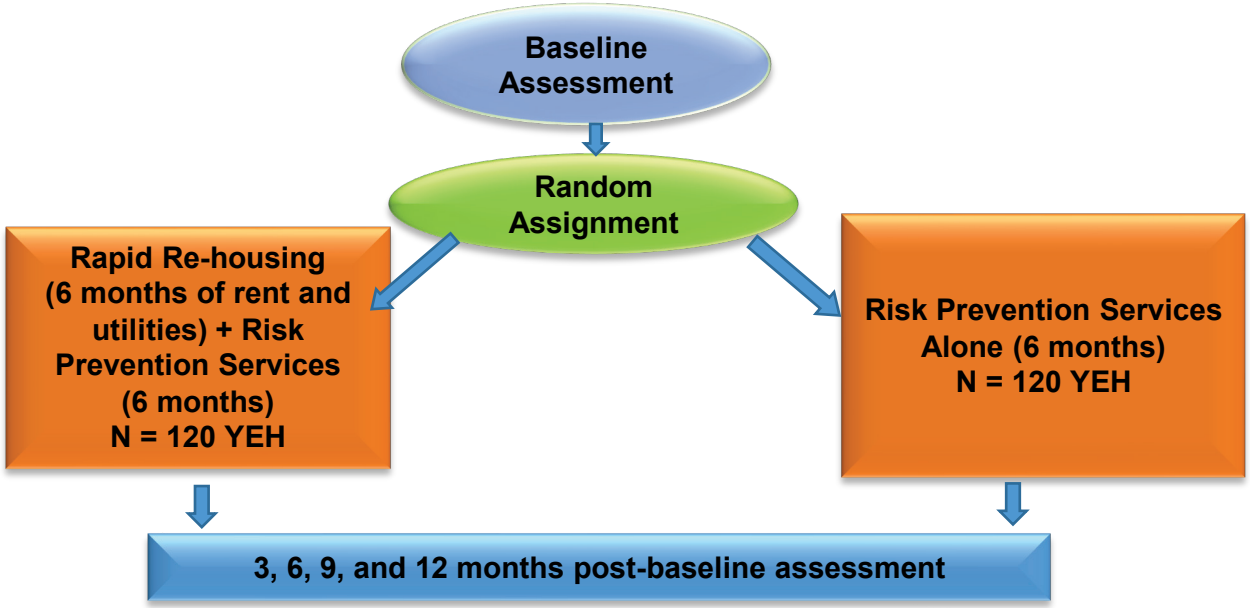
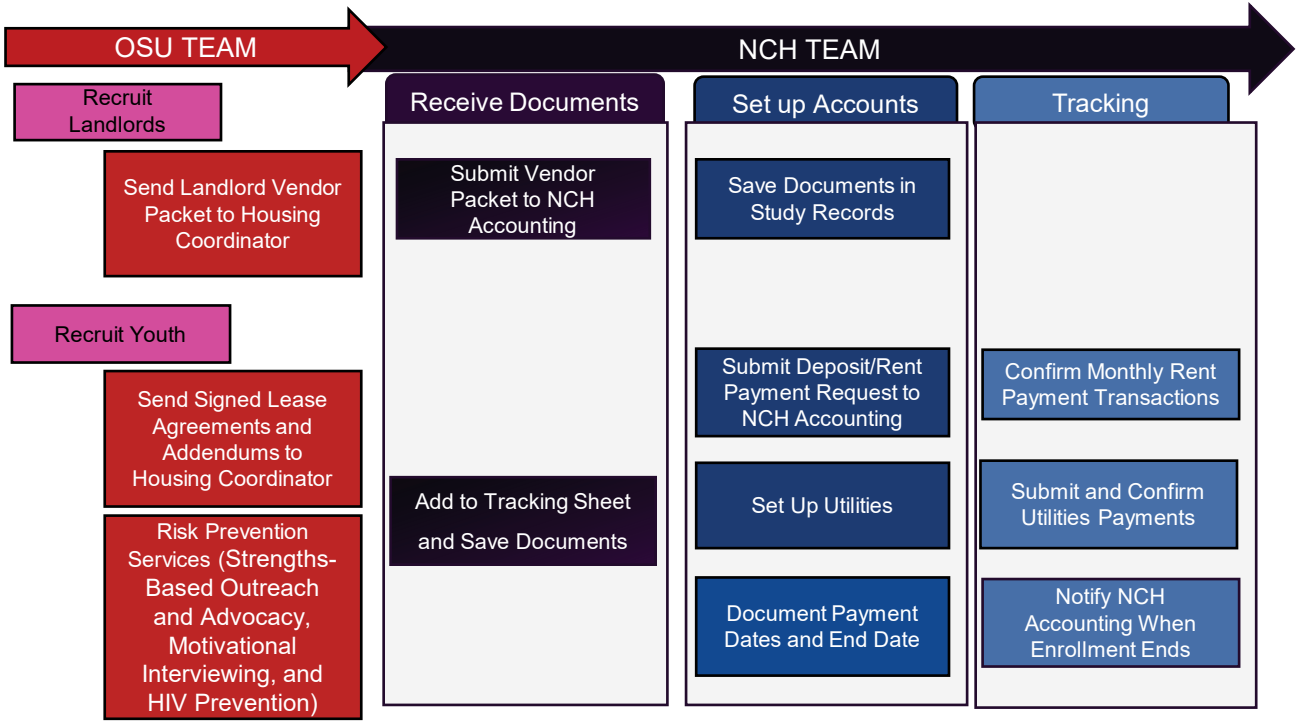
This work has been funded by NIDA grant #UG3/UH3DA050174

HOME Randomized Trial with youth experiencing homelessness (YEH) (June 26, 2020–September 9, 2023)



Workflow


OSU TEAM
NCH TEAM
Recruit Landlords
Send Landlord Vendor Packet to Housing Coordinator
Recruit Youth
Send Signed Lease Agreements and Addendums to Housing Coordinator
Risk Prevention Services (Strengths-Based Outreach and Advocacy, Motivational Interviewing, and HIV Prevention)
Receive Documents
Submit Vendor Packet to NCH Accounting
Add to Tracking Sheet and Save Documents
Set up Accounts
Save Documents in Study Records
Submit Deposit/Rent Payment Request to NCH Accounting
Set Up Utilities
Document Payment Dates and End Date
Tracking
Confirm Monthly Rent Payment Transactions
Submit and Confirm Utilities Payments
Notify NCH Accounting When Enrollment Ends

HOME intervention inputs

- Labor
  - Advocates, supervisory staff, administrative support, program manager
- Capital
  - Rapid Re-housing (rent, utilities, other housing-related costs)
  - Equipment (computers, phones)
- Training
  - Educational supplies, consultant
- Transportation (mileage)
- Materials
  - Office supplies

Cost data collection tools used in the HOME Randomized Trial

Data collection tools used	Description of use	Data collected
On-site databases (NCH financial records)	Cost of housing	Monthly rent and utilities paid per participant (Excel template)
Activity logs (OSU)	Personnel time allocated to intervention activities	Time spent for training, management, acquisition for program manager and coordinator (Excel template)
Targeted questionnaires	Advocates' time allocated to intervention activities	0–12 questions for each interaction with YEH
Activity logs (OSU)	Personnel time allocated to meetings and supervision	Team meetings and supervision (Excel template)

Discussion

- Numerous data collection tools available
  - Considerations for deciding on the tools
    - Size and scale of the intervention
    - Setting
    - Time horizon
    - Purpose of the study

- Valid concerns
  - Precision of the data vs. acceptable level of research burden
  - Project resources needed for cost data collection
  - Identify approaches that best fit the project resources

More on this: Chapel, J. M., & Wang, G. (2019). Understanding cost data collection tools to improve economic evaluations of health interventions. *Stroke and Vascular Neurology, 4*(4), 214–222. https://doi.org/10.1136/svn-2019-000301

Thank you!

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This webinar was produced by the HEAL Prevention Coordinating Center (HPCC) at RTI International. The HEAL Prevention Coordinating Center (HPCC) supports research projects and works to generate shared insights by collecting, analyzing, and reporting data across research projects.

PIs: Phillip W. Graham, DrPH, MPH; Ty Ridenour, PhD

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