Update on Public Health Cost Estimation Studies in Practice Based Research Networks: Using PBRNs To Identify the Components and Costs of Effective Practice

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BACKGROUND

- **Public Health (PH) Practice Based Research Networks (PBRNs)**
  - National program of the Robert Wood Johnson Foundation (RWJF) that supports research-practitioner networks in improving delivery of PH services
  - PBRNs combine multiple PH agencies with research partners to design & implement comparative studies in real-world practice settings

- **PH Delivery and Cost Studies Award (DACS)**
  - *support studies to identify costs of delivering high value PH services & elucidate influence of delivery system characteristics on efficiency, effectiveness, & equity of services.*
WHY FOCUS ON COSTS 1/2

• **Wide variation** in scope & scale of PH activities across communities & their financial & institutional arrangements

• **Gaps in knowledge** on causes & consequences of variation; resources required to deliver PH services for a defined community & group (Carande-Kulis et al., 2008)

• **Lack of empirical evidence** related to the “production function” of PH activities
  - Essential to informing PH funding decisions & sound economic justifications for PH investments (e.g. Neumann et al., 2009)
• Lack of systematic knowledge about costs of delivering PH services → decision-makers to rely more on historical precedent > empirical data in establishing fiscal priorities, financial mechanisms, & operating budgets (Budetti & Lapolla, 2008)

• 2012 Institute of Medicine Recommendations
  ▪ Identified high priority need for studies that explicate components & costs of a minimum package of public health services
    (1) foundational capabilities
    (2) basic programs

General Analytical Framework & Key Empirical Questions

- Costs incurred in delivering PH services shaped by:
  1. Delivery system structure & operation
  2. Pop. Characteristics
  3. Nature & quality of services

- Delivery system is a complex mix of governmental, private, community, non-for-profit, & other contributing organizations
  - Question of how delivery system characteristics influence costs

- Level of resources required to deliver a given bundle of PH activities for a given population
  - How do delivery costs vary across communities & population groups

- DACS policy relevance for efficiency & ROI
  - Where are the opportunities to realize efficiencies in delivery?
  - Do outcomes achieved by PH interventions justify their costs?
  - Where should new investments be directed to achieve greatest impact?
DACS Category 1: Cost Measurement & Comparison Studies

- 12 months: CA, NE, NJ
- **Standard cost-estimation methodology** in measuring costs of delivering service(s) in at least 4 different practice settings in PBRN network over a defined period of time
  - Distinguish fixed and variable costs
  - Break down costs into standard components, incl. personnel, non-personnel, & indirect/overhead costs
  - Define & measure units of service delivered in order to estimate unit costs for each practice setting
- **Comparative analyses:**
  - characterize patterns of variation in costs of service delivery across participating practice settings
  - identify major sources of variation in costs such as those attributable to underlying factors and economies of scale & scope
DACS Category 2: Delivery System Comparison Studies

• 18 months: CO, CT, FL, NY, NH, NC, OH, WA

• Same cost measurement & estimation methods used in Category 1 studies

• More elaborate research designs & analytic strategies to investigate relationship between delivery system characteristics & cost of delivering services.

• Larger number of practice settings in order to test specific hypotheses about system characteristics & their impact on service delivery.

• Alongside cost measures, collect measures of service delivery reach, effectiveness, and/or equity to explore inter-relationships among these factors & examine how they collectively determine value of public health services.
DACS Grantees by PH topical area: STD / HIV

• New York (2) - *Optimizing the Use of HIV/STD Partner Services (PS) Strategies*
  – Practice setting in 4 pilot counties
  – Examine variation between county & state delivered PS programs
  – Model impact of different PS strategies on cost & effectiveness of PS programs
  – Make recommendations related to the conditions under which re-allocating resources will improve efficiency.

• Florida (1) – *Comparative Cost Study of STD Services in Florida & Georgia*
  – All county health departments in FL
  – Identify unit costs of STD prevention & control services & effect on costs of delivery system variations incl:
    • Standardization & centralization of programs & IT & HR systems
    • Economies of scale as it relates to CHD population jurisdiction size
    • Revenue support for services & responsiveness to local community governance
DACS Grantees by PH topical area: Tobacco Control

- **NJ (1)** – *Determining the Public Health Costs of Tobacco Prevention & Control: A Comparison of 5 New Jersey Local Health Departments*
  - 5 representative LHDs selected based on diversity of population characteristics, geographic jurisdiction level, & admin structure
  - Estimate total costs of PH tobacco prevention & control activities
  - Determine cost structure as it relates to the resources involved in providing service & compare costs across practice settings.

- **NH (2)** – *Understanding governmental & non-governmental funding & network structures in different models of PH infrastructure*
  - 4 regional PH networks with representative community partnership structures
  - Identify funding sources & Develop methods to collect data for future research involving financial assessments of other PH activities
  - Determine relationship between service funding & PH local system network connectivity
DACS Grantees by PH topical area: Other Services

• CA (1) – *Public Health Delivery and Cost Studies in the San Joaquin Valley*
  – Estimate costs of 3 PH services: (1) TB Control; (2) Child Immunization; & (3) Community Needs Assessment in 4 rural LHDs in SJV

• CT (2) – *Cost Effectiveness, Efficiency, & Equity of Inspection Services throughout Connecticut’s Local PH System*
  – All CT LHDs and districts
  – Component 1: Examine scope & cost of 4 environmental health services: (1) Food protection services (2) Public water wells; (3) Sub-surface sewage disposal; (4) lead poisoning; prevention; & control
  – Component 2: Economic evaluation of efficiency, effectiveness, & equity of food protection services

• NE (1) – *Measuring QI implementation costs among 4 different LHD settings*
  – QI 1: financial management in credit card charges
  – QI 2: increased individualized breastfeeding education in WIC program
  – QI 3: management in policies & procedures
  – QI 4: chronic disease management in *Living Well* program
• **CO (2)** – *Economic Cost Function of Select Core PH Services*
  
  – All LPHAs in Colorado
  – Examine how LPHA structural differences modify cost of core service delivery; examine variation in cost across LPHA system factors; & generalizability of LPHA cost models outside of CO.
  – Leading candidates for evaluation: (1) Tobacco control; (2) Unplanned pregnancy prevention; (3) Nutrition; (4) Physical Activity; (5) Oral Health

• **NC (2)** – *Influence of Organizational and Community Characteristics on the Cost of Providing Mandated Public Health Services in North Carolina*
  
  – 16 representative LHDs
  – Mandated services include: (1) food, lodging, & institutional sanitation; (2) individual on-site water supply; (3) sanitary sewage collection, treatment & disposal; (4) communicable disease control; (5) vital records registration
DACS Grantees by PH topical area: Multiple Programs (1/2)

• Ohio (2) – *PH DACS Study*
  – Empirical cost model of 5 core PH services from all OH LHDs
    • Per unit costs
    • Organizational & community factors affecting PH service delivery
    • Relationship between equity of resource allocation & PH outcomes
  – Direct observational approach to examine 1 core service: PH nuisance abatement

• WA (2) – *Washington State’s Foundational Public Health Services (FPHS): Determining Costs & Cost Drivers*
  – statewide
  – Part of a larger state FPHS effort
  – Estimate & validate cost per unit of service of selected FPHS
  – Effect of organizational & community factors on delivery cost
  – Relationship between cost variation & equity of resource allocation
Cost measurement, estimation, & analysis

• Cost measurement methods
  ▪ Direct observational methods
  ▪ Time studies, time & motion methods
  ▪ Activity logs
  ▪ Analysis of administrative data; secondary data
  ▪ Surveys of program delivery staff, managers/directors; key informants
  ▪ Others

• Estimation & Analysis
  ▪ Identifying components of costs; cost allocation
  ▪ Determinants of costs; estimate cost(production) functions
  ▪ Examine cost variation, heterogeneity, efficiency
    ▪ Statistical, descriptive comparison of cost
    ▪ Stochastic frontier analysis (e.g. technical efficiency)
    ▪ Data envelopment analysis (e.g. economies of scope)
Ongoing Activities & General Timeline

• July 2013 Kick-off

• Methods & capacity-building workshop in late September

• Peer review of protocol/instruments
  • Consortiums & collaborations between PBRNs in effort to standardize methods, find common set of services (show e.g.)

• In-person meeting @Keeneland in April 2014

• July 2014 – Category 1 projects end

• January 2015 – Category 2 projects end
Overall Picture: How & where does DACS fit 1/2

PH PBRN Research Streams

- Delivery System Organization & Structure
- Practice Variation
- Volume, Intensity, & Quality of Delivery (*)
- Cost of Delivery
- Value & ROI of Public Health

Other ongoing initiatives
- RWJF Foundational Capabilities Initiative
- RWJF Cost-Estimation Workgroup
- HHS/RWJF PH National Chart of Accounts

* MPROVE – Multi-Network Practice & Outcome Variation Examination Study
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