

# Budget Impact Analysis: Methods & Data

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# CyberSeminar Objectives

- To explain the purpose of a budget impact analysis (BIA)
- To introduce the methods, data types, and data sources used in a BIA
- To provide additional resources if you'd like to learn more about BIA

# **Poll: What is your primary role where you work?**

- Clinician
- Operations
- Research
- Other

# **Poll: Have you ever worked on a study that included a budget impact analysis?**

- Yes
- No
- Don't know
- Haven't worked on a research project

# Budget Impact Analysis: Overview

- Analysis of expenditures for a program over a short period (often 1-3 years), including the effect of any offsetting savings
    - Evaluates a scenario rather than a single action
    - Includes comparison to the *status quo*
    - Includes sensitivity analysis
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# Budget Impact Analysis: Overview

- To estimate feasibility/affordability
  - For budgeting/forecasting
  - What are your partners asking?
    - How much will this cost
    - Now – later – much later?

# Budget Impact Analysis: Perspective

- BIA takes the buyer/provider/payer's perspective.
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# Budget Impact Analysis: Time Horizon

- BIA uses a short time horizon – usually a few years at most.
    - Long-term modeling is unnecessary.
    - Costs are not discounted.
    - Savings in far future cannot offset initial/start-up or investment costs.
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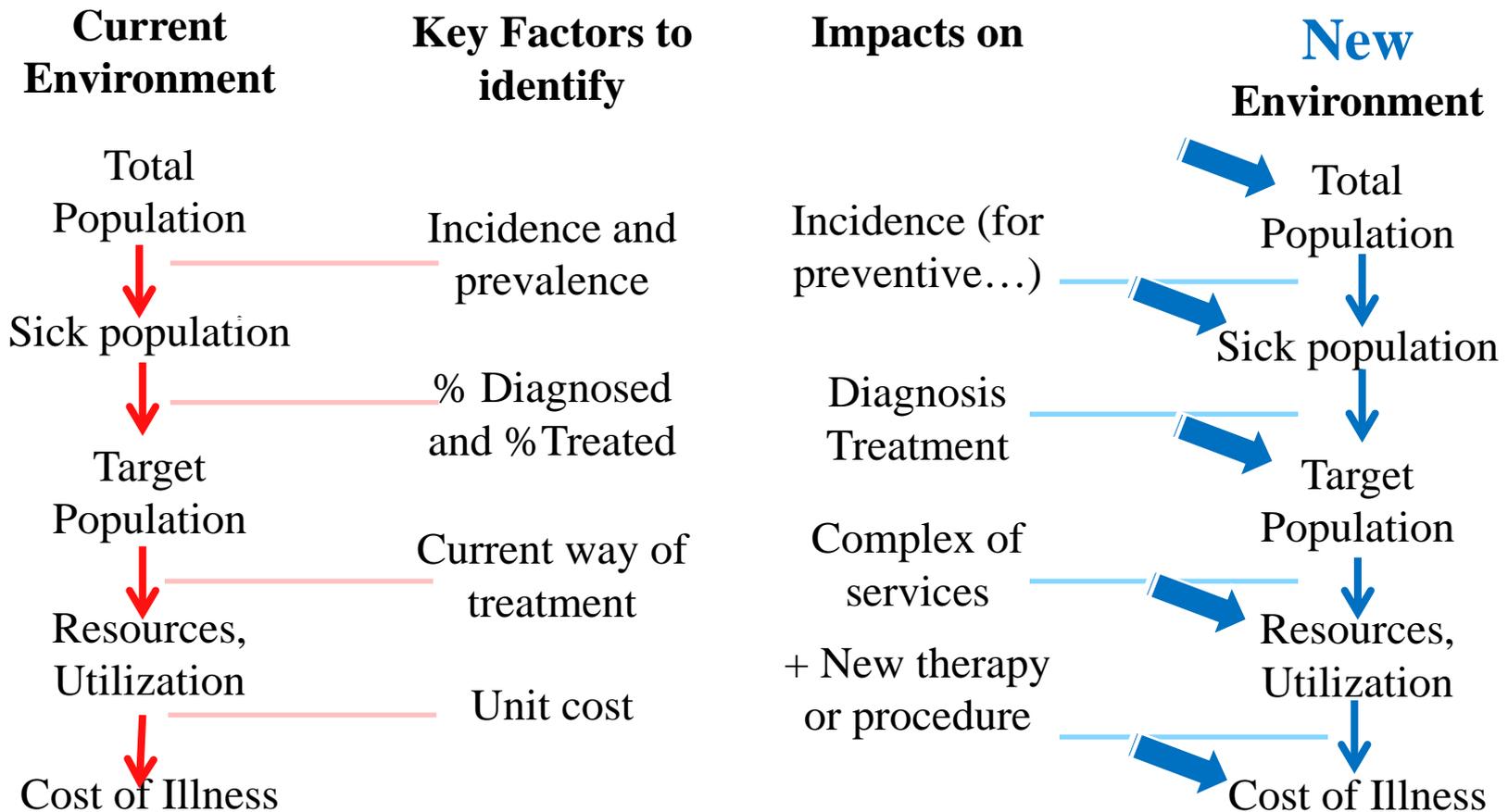
# Budget Impact Analysis: Utility

- BIA does not measure utility.
    - No need to survey patients
    - No calculation of quality-adjusted life-years (QALYs)
    - Outcomes are assumed to be known
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# Budget Impact Analysis: Framework

- Estimating
    - The cost of the intervention
    - Changes in staffing, schedules, and use of technology
    - Changes in patient access/throughput/demand
    - Potential savings
    - Cost to operate
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# Estimation Framework



# Reference Scenario/ Current Environment

- Population
    - How many patients are getting care?
  - Who gets care?
    - essential: clinical characteristics
    - advanced: enrollment priority, VERA category
  - What is the size of the target population?
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# Reference Scenario/ Current Environment

- What treatment(s) are the current population getting?
- What other healthcare resources are the current population getting?

# Reference Scenario – The Intervention(s)

- What is “the intervention”?
    - Where is it provided?
    - How often is it provided?
    - Who provides the care?
  - What do the providers do when they are “providing the care”?
    - What resources, technologies, etc are used?
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# Comparison Scenario

- Relative to reference scenario, how will these change?
    - Demand for care (number of patients seeking care)
      - will new patients be drawn into the system?
      - will new patients become eligible for contract care, home care, anything else outside VA?
      - is the incidence or prevalence changing?
    - Future need for care, within BIA horizon
    - Copayments collected, VERA payments received
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# Comparison Scenario

- Relative to reference scenario, how will these change?
    - Staff mix & consequent costs
      - mix of MDs, NPs, RNs
      - how will staff changes affect costs?
    - Space and other overhead costs
      - clinical space requirements
      - will new space be rented, purchased, or built?
    - Technology purchase/repair costs
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# Costing in the BIA

- Using the perspective of VA:
    - VA's costs: *yes*
    - Patient's costs: *no* (earnings, transportation, time)
    - Society's costs: *no* (other payers, employer, caregivers)
  - Estimate the change in units/type of care
  - Estimate the change in cost per unit of care
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# Cost Data Sources: Encounters

- Decision Support System (DSS) National Data Extracts (NDEs)
    - Inpatient files
      - discharge (one record per stay)
      - bedsection (one record per bedsection segment of the stay)
    - Outpatient files
      - Encounters: one record per person-clinic-day
      - Pharmacy: one record per prescription
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# Cost Data Sources: Encounters

## ■ HERC Average Cost data

### – Inpatient files

- discharge: can be linked to PTF discharge files
- med/surg discharges and non-med/surg discharges: can be linked to PTF bedsection files

### – Outpatient files

- encounters: can be linked to OPC
  - pharmacy: none except when delivered in clinic (use DSS or PBM pharmacy data)
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# Cost Data Sources: Encounters

- HERC Average Cost data vs. DSS
    - Uses Medicare relative value units (RVUs), not DSS RVUs
    - Less granularity = more similarity in costs across encounters
  - For comparison to DSS costs, see HERC publications:
    - Go to HERC intranet web site
    - Choose Publications
    - Choose Technical Reports
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# Cost of the Intervention

- Direct measurement
    - Observe/track activities and assign a cost
  - Pseudo bill
    - Use billing codes/services and assign costs
  - Cost regression
    - When costs of care are known
    - Estimating the marginal costs
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# Direct Measurement

- Identify all elements of the intervention
- Observe or track activities
- Summarize time/materials and supplies
- Use VA labor costs to estimate the value of the time (time x \$)

# Pseudo bill

- Use CPT or other utilization codes to estimate the intervention costs
  - When CPT coding is specified and has face validity (and consistently employed)
  - Use Medicare or other payment schedules

# Micro-costing the Intervention

## ■ Cost regression

- Estimate marginal costs using statistical techniques
- Use to estimate marginal effect of an intervention
- Use when data exists for current practice
- Not for new technology or when accounting cost is not known

# Cost Data Sources: Staff time

- Average hourly staff cost for 70+ occupation categories can be figured using either of two sources:
  - DSS Account Level Budgeter Cost Center (ALBCC)
  - Financial Management System

OR

- Use HERC technical report #12 supplement, which has figured them for FY2001-FY2008.
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# Cost Data Sources: Supplies, Machines

- National Prosthetics Patient Database (NPPD)
    - records purchase price of all items ordered through the VISTA Prosthetics and Sensory Aids package
    - includes nearly all medical items for internal and external use, not just prosthetics or sensory aids (e.g., hearing aids)
    - stored and handled by NPPD data manager at Hines VAMC
  - Your local Acquisition & Material Management Service (A&MMS) purchasing officer
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# Sensitivity Analyses

- Purpose: to test the robustness of your results
  - Method: change assumptions in your model and see how the final outcome changes
  - Univariate: change one at a time
    - Easy, but possibly misleading
    - Not considered state-of-the-art
  - Multivariate: change multiple assumptions at once
    - Probably will require software and/or a formal model
    - High credibility
    - Allows useful graphing
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# Summary

- Budget impact analysis provides information about the expected changes in expenditures for a health care provider or system after implementing a new intervention
  - The VA (and other payors) are increasingly interested in understanding costs of implementing new interventions
  - Guidelines for conducting BIA are well developed
  - VA has lots of useful data sources for conducting BIA
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# Resources

- HERC web site ([www.herc.research.va.gov](http://www.herc.research.va.gov))
    - Guidebooks [most on intranet site only]
    - Technical reports [most on intranet site only]
    - FAQ responses
    - Slides from training courses (cyber-seminars)
  
  - VIREC web site ([www.virec.research.va.gov](http://www.virec.research.va.gov))
    - Research user guides (RUGs) on DSS, PTF, OPC
    - Technical reports (pharmacy)
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# Resources

- Many articles on budget impact analysis and related methods (e.g., decision modeling, discrete event analysis) appear in these journals:
    - *Medical Decision Making*
    - *Health Economics*
    - *Value in Health*
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# Resources

- ISPOR recommendations on BIA:

Sullivan SD, Mauskopf JA, Augustovski F, et al.

Budget Impact Analysis - Principles of Good Practice: Report of the ISPOR 2012 Budget Impact Analysis Good Practice II Task Force.

*Value in Health* 2014;17:5-14.

- VA-funded literature review on budget impact analysis:

Luck J, Parkerton P, Hagigi F.

What is the business case for improving care for patients with complex conditions?

*Journal of General Internal Medicine* 2007;22(Suppl 3):396-402

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# Cost Data Sources: Indirects

- PG Barnett, M Berger. Indirect Costs of Specialized VA Mental Health Treatment. HERC Technical Report #6. (on HERC web site)
  - Rosenheck R, Neale M, Frisman L. Issues in estimating the cost of innovative mental health programs. *Psychiatric Quarterly* 1995;66(1):9-31
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# Next HERC Course

“How can Cost Effectiveness Analysis be  
Made More Relevant to US Health  
Care?”

Paul Barnett, PhD

July 9, 2014