Budget Impact Analysis: Methods & Data

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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

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.

Budget Impact Analysis: Horizon

- BIA uses a short 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.

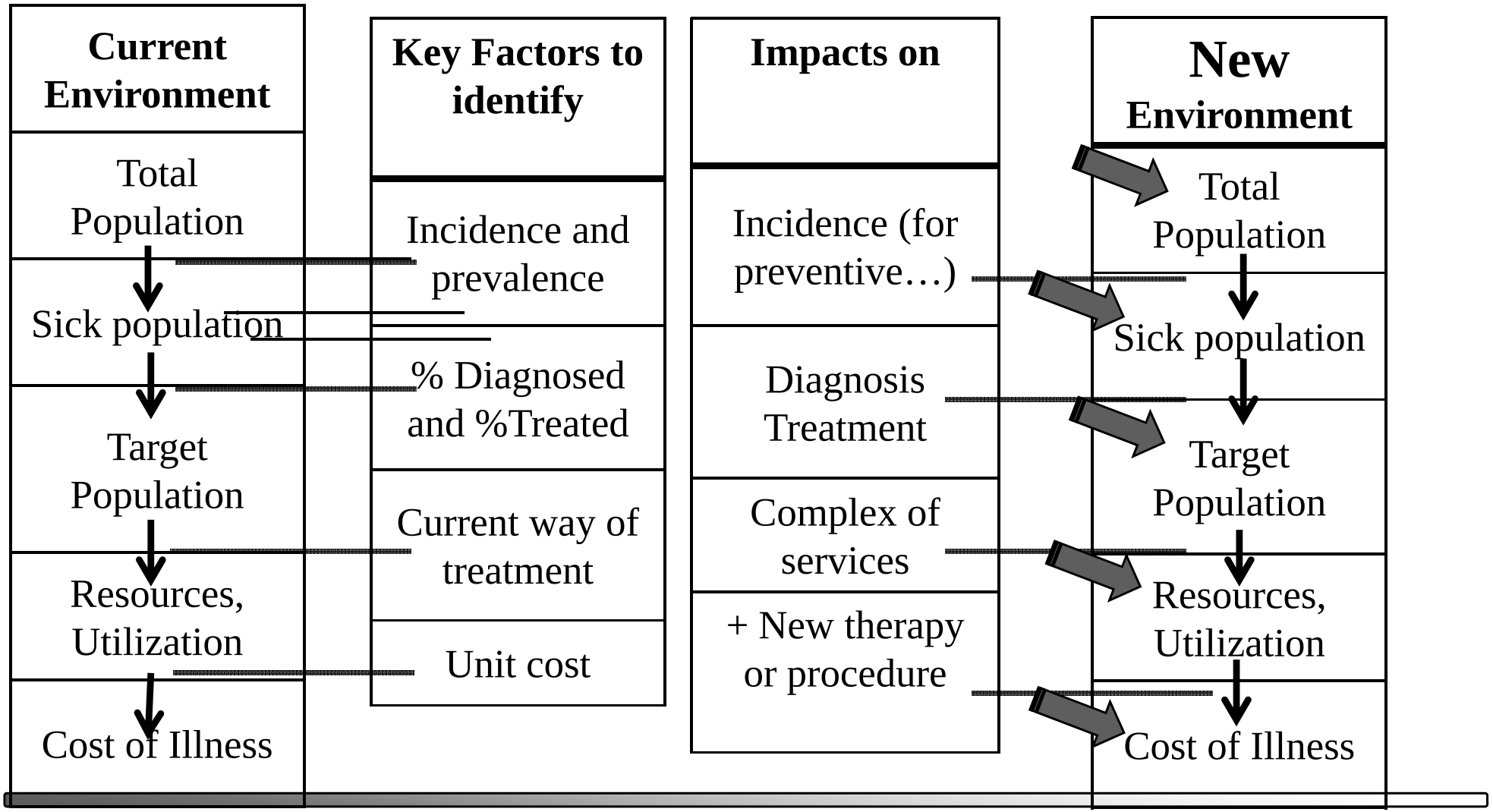
Budget Impact Analysis: Utility

- BIA does not measure utility.
  - No need to survey patients
  - No calculation of QALYs
  - Outcomes are assumed to be known

Budget Impact Analysis: Framework

- Estimating
  - The cost of the intervention
  - Changes in staffing, schedules and use of technology
  - Changes in pt. access/throughput/demand
  - Potential Savings
  - Cost to operate

Estimation Framework



Reference Scenario/ Current Environment

- Population
  - How many patients are getting care?
- Who gets care?
  - essential: clinical characteristics
  - advanced: enrollment priority, VERA category
  - how many need VA-funded transportation?
- What is the size of the target population?

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?

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

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

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

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

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)

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

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

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/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 ALBCC
  - Financial Management System

OR

- Use HERC technical report #12 supplement, which has figured them for FY2001-FY2008.

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 (glasses, hearing aids)
  - stored and handled by NPPD data manager at Hines VAMC
- Your local A&MMS purchasing officer

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

Summary

- BIA requires six items:

1. Size and characteristics of patient population(s)
2. Usual care: current mix of care offered to current population
3. Cost of usual care
4. New care: mix of care under the new intervention
5. Cost of new care/intervention
6. Use and cost of other health care services related to the intervention and the condition under study

Source: Mauskopf et al. (2007)

Resources

- HERC web site (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)
  - Research user guides (RUGs) on DSS, PTF, OPC
  - Technical reports (pharmacy)

Resources

- Many articles on decision modeling and discrete event analysis appear in these journals:
  - *Medical Decision Making*
  - *Health Economics*
  - V*alue in Health*

Resources

- ISPOR recommendations on BIA:

  Mauskopf J, Sullivan SD, Annemans L, et al.
  Principles of Good Practice for Budget Impact Analysis: Report of the ISPOR Task Force on Good Research Practices – Budget Impact Analysis.
  Value in Health 2007;10(5):336-347.

- 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

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

Next HERC Course

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

Paul Barnett, PhD

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