

Budget Impact Analysis: Methods & Data

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Budget Impact Analysis: Overview

- Analysis of provider's 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: Perspective

BIA takes the provider/payer's perspective.

Meaning

BIA excludes patient-incurred costs.

* *but* *

BIA should reflect impacts on enrollment and retention that could result from affecting patients.

Budget Impact Analysis: Perspective

BIA takes the provider/payer's perspective.

Practical Effects

Ignoring patient and societal costs will make many interventions appear less expensive in a BIA than in a CEA.

BIA can usually be done without surveying patients.

Budget Impact Analysis: Horizon

BIA uses a short horizon – usually a few years at most.

Practical Effect

Long-term modeling of costs and clinical outcomes is unnecessary.

Costs are not usually adjusted for inflation or discounting.

Reductions in health costs in far future cannot offset initial costs.

Budget Impact Analysis: Utility

BIA does not measure utility.

Practical Effect

No need to survey patients.

No calculation of QALYs.

Limitation

No way to capture changes in quality of life

Budget Impact Analysis: Drawbacks

- Some benefits cannot easily be monetized, such as reputation.
 - Clinical journals often won't publish them.
 - Costs can vary from site to site
 - > To increase usefulness, create a method for inputting local parameters.
- Complement of CEA, not substitute

Why Both CEA and BIA?

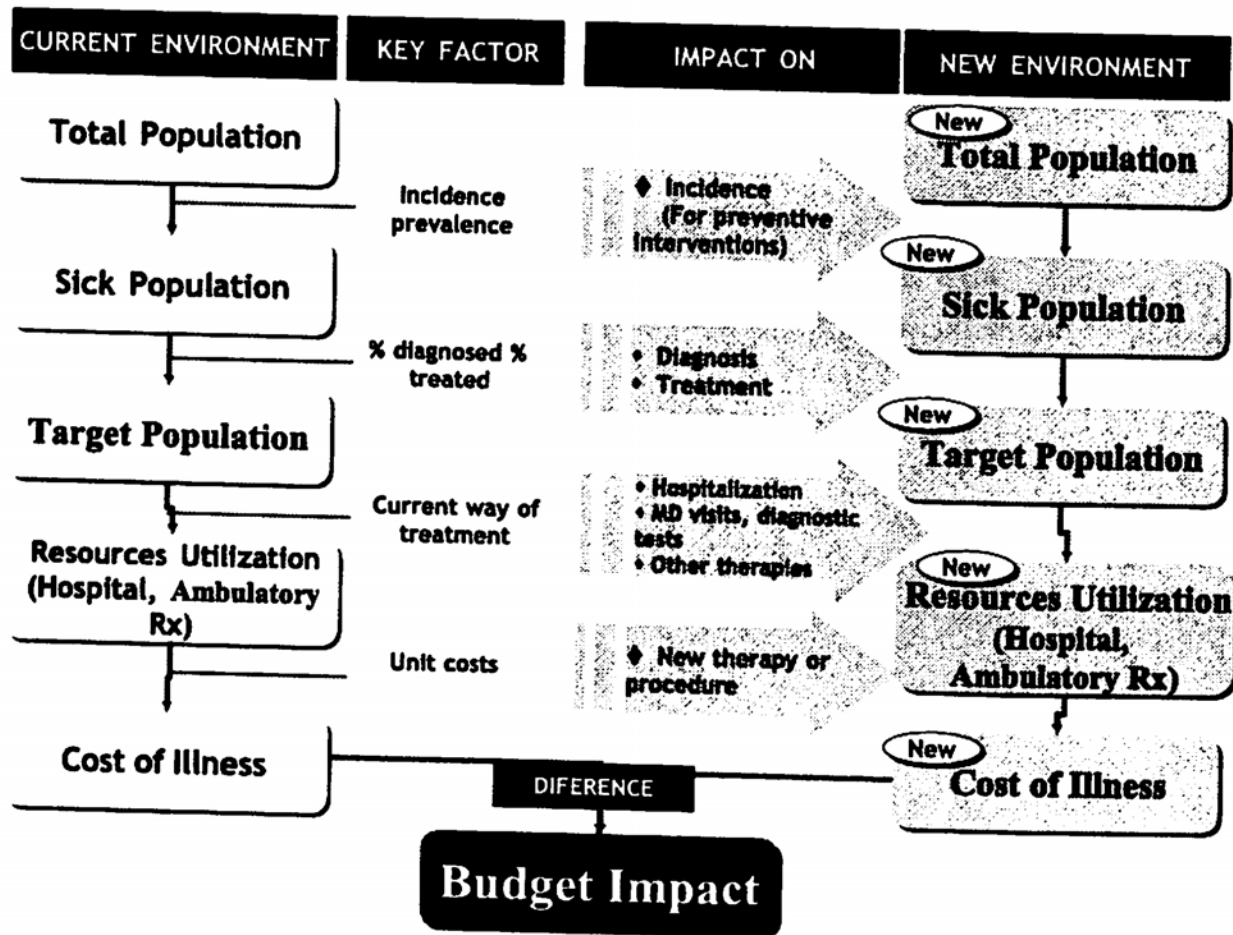
CEA addresses societal perspective

→ implementation won't occur without proof that “best practice” is cost-effective

BIA addresses provider perspective

→ influential in implementation decisions

Conceptual Diagram



Reference scenario

1. Population

How many patients are getting care

Who gets care

- essential:
 - clinical characteristics
- advanced:
 - enrollment priority
 - VERA category
 - how many need VA-funded transportation?

Reference scenario

Care / intervention:

What care they get

- could be one procedure or a mixture
- where they get it – what clinics or bedsections
- how often they get care

Who provides the care

- physician, nurse-practitioner, RN, other
- hospital staff, CBOC staff, contractor

Reference scenario

Care / intervention

Keep in mind:

- contract care: CNH, kidney dialysis, home oxygen, etc.
- care coordination / home telehealth (CCHT)

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?
- 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

Modeling

■ Static models

- Simple calculation of cost impact from changing one or two factors, holding everything else constant
- May be sufficient if the alternative and reference scenarios are quite similar and probabilities are well known

■ Dynamic models

- Decision model, such as a Markov model: captures uncertainty, such as over impact on enrollment or probability of clinical outcomes
- Discrete event analysis

BIA in Implementation Research

Include cost of implementation program

Consider:

- How long will implementation costs last?
- How generalizable is the local implementation approach?

You may need to develop alternative scenarios for other locations.

Costing

Use sing 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 amount of change in units of care

Estimate cost per unit

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 Data Sources: Staff

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

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

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
2. Usual care: current mix of care offered to current pop'n
3. Cost of usual care
4. New care: mix of care under the new intervention
5. Cost of new care
6. Use and cost of other health care services related to the intervention and the condition under study

source: Mauskopf et al. (2007)

White board exercise

Your VA is considering whether to purchase home telehealth machines for people with spinal cord injury. The goal is to reduce the incidence of pressure ulcers.

If you were doing a BIA for this, what factors would you take into account?

Resources

HERC web site (www.hirec.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

Value 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