

AAPHP
Preventive Services Toolkit

Module 4a
An Introduction to
Cost Related Analyses
for Program Planning and Evaluation

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Introductory Notes

- Cost-Related Analyses
 - Cost Benefit Analysis (CBA)
 - Cost Effectiveness Analysis (CEA)
 - Return on Investment (ROI)
- Full coverage would require a semester course
- This module to be limited to what clinicians should know about cost-related analyses – their value, use and abuse

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Teaching Objectives

Understand and discuss eight items:

- Why to do cost-related analyses (CBA,CEA,ROI)
- Interpretation of CBA, etc.
- Stakeholder perceptions, values and limitations
- Jargon and selected basic principles
- Problems and pitfalls
- National Priorities based on CEA
- How to do CBA, CEA, ROI
- Reference literature

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Why do Cost Related Analyses?

- Advocate for new or expanded programming
- Consider alternative approaches to
 - New or expanded programming
 - Budget cuts
- Facilitate adoption of evidence-based interventions
- Sell Disease Management (DM) programs

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Typical DM Vendor Claim

(adapted from Jonathan Fielding slide set)

- "Our new diabetes management program will save \$147 million per year"
- questions to be addressed
 - Costs considered
 - Benefits considered
 - Data definitions
 - Etc etc
- Problem for DM advocates – desired program, but questionable numbers

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Stakeholder Perspectives
 slide 1 of 5 – Federal and Academic

- Perception:
 - question of national health policy
- Values:
 - universal, with primary focus on patient-related health outcomes
- Self-imposed limitations:
 - none; costs and benefits for all stakeholders; some secondary consequences considered

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Stakeholder Perspectives
slide 2 of 5 – On-Site Health Professional

- Perception:
 - question of improving patient health
- Values:
 - patient outcomes
 - local short term costs
 - hassle factor and time commitment
- Self-imposed limitations:
 - limited to issues that must be addressed if sponsor is to adopt proposal.
 - secondary consequences rarely considered.

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Stakeholder Perspectives
slide 3 of 5 – Managed Care Administrator

- Perception:
 - managed care plan cannot be all things to all people
 - will engage in preventive services only if
 - required to do so or if they are
 - financially beneficial to the company
- Values:
 - limited to financial welfare of the managed care plan
- Self-imposed limitations:
 - 1 year dollar costs and offsetting savings

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Stakeholder Perspectives
slide 4 of 5 – DM Vendor

- Perception:
 - financial considerations dominant
- Values:
 - limited to financial welfare of managed care firm
- Self-imposed limitations:
 - cost of program
 - narrowest range of outcome variables
 - vendor control of process and evaluation data

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Stakeholder Perspectives
slide 5 of 5 – Stakeholders Usually Forgotten

- Payer/employer
 - Health outcomes
 - Employee productivity
 - (mental illness, arthritis, back pain)
- Patient
 - Health outcomes
 - Quality of life (and restrictions thereon)
 - Access to care
 - Access to information and consultation
- Community
 - Overall burden of illness
 - Wellness (as opposed to disease prevention)
 - Pride
 - Access to care

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Questions to be Considered
Slide 1 of 4 – the Problem

- How big is the problem?
- How much of the problem can be prevented?
- How much of the problem will this intervention prevent?

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Questions to be Considered
Slide 2 of 4 – Costs and Benefits

- What are the costs (dollar and other)?
- Who bears the costs?
- What are the benefits (dollar and other)?
- Who gets the benefits?
- What costs are most important?
- What benefits are most important?

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Questions to be Considered Slide 3 of 4 – Technical Issues

- Confidence limits around estimates of costs and benefits
- Some dollar values are highly subjective.
- Baselines and comparison groups tend to be non-existent, imaginary, or arbitrary.

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Questions to be Considered Slide 4 of 4 – More Technical Issues

- Many costs hidden
- Secondary outcomes and consequences
- Attributions of outcomes problematic (ie – cause of hospital admission)
- Reaching the right patients with the right service at the right time
 - “opt-in” vs. “opt-out”
 - Tracking is critical
 - This, in turn, requires separate data system

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Cost slide 1 of 2

- Cost = resources used or exchanged to obtain or produce a good or service. Includes
 - Direct (medical & non-medical)
 - Indirect (lost productivity, etc) (*vendors like this, as to employers; insurers don't care*)
- Net cost = (Cost of program) + (Cost of care, etc with program) – (Cost of care, etc without program)

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Cost slide 2 of 2

- Must consider who bears the cost
 - (cost to an insurance carrier is revenue to a hospital)
 - hidden costs borne by patient
 - tangible – time, transportation, etc
 - intangible – restrictions in lifestyle, giving up of pleasures
 - hidden costs borne by physicians and nurses – time away from other activities
- Costs may be expressed in the following terms
 - Dollars
 - Staff time
 - Stakeholder satisfaction
 - Quality of life

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Benefit

- Benefit = a desired outcome
- Direct (and easily measurable)
 - Dollars (reduced cost of other services)
 - Health indices: morbidity, mortality,
 - Staff time
- Indirect (and difficult to measure)
 - Stakeholder satisfaction
 - Marketing value, image of healthcare system
 - Reduced absenteeism/presenteeism (employee productivity)
 - Quality of life (pain, suffering, grief); QALYs, DALYs
- Who gets benefit?

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Efficacy and Effectiveness

- **(Measures of benefit, without mention of cost)**
- Efficacy = how well an intervention can work in optimal settings
 - Some vaccines are almost 100% effective
- Effectiveness = how well an intervention can work in your setting
 - Mammography screening reduces breast cancer mortality about 30%

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CBA, CEA and Efficiency

- Cost-Benefit Analysis = CBA = benefits (in dollars) per dollar expended – used to compare alternative interventions
- Cost-Effectiveness Analysis = CEA = dollars per unit of QALY or other benefit.
- Efficiency = economic criterion to determine the option that generates the greatest net benefit per unit of cost.

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Marginal Costs and Benefits

- Marginal / Incremental analysis
 - What additional benefits do you secure with a 20% increase in budget?
 - What benefits do you lose with a 20% reduction in budget?
- Fixed cost (of program) vs variable cost (per client served)

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Technical Minutia

- Stuff to pull from literature relative to interventions selected
 - YPLL -- Years of Productive Life Lost
 - QALY -- Quality Adjusted Life-Years
 - DALY -- Disability Adjusted Life Years
- Discounting
- Sensitivity Analysis

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Billing Data slide 1 of 2

With regard to date of service:

- Billing data always shows date of service
- Delays between date of service, date billed, and date paid, especially when dealing with contested claims
- Service may be paid at different rates by different insurers
- "IBNR" (Incurred, but not reimbursed)
- Carve-outs and outliers

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Billing Data slide 1 of 2

With regard to encounter data

- Encounter data often sloppy and inaccurate (especially in capitated systems).
- Costs fixed by contract, but volumes of each service often unknown
- DM vendor outcome data may be unverifiable

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Hidden Costs

- Direct
 - doctor and nurse "productivity"
 - costs of management, oversight and data systems
- Indirect
 - adverse patient selection
 - unrealistic expectations vis a vis outcomes

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Secondary Benefits

- Patient satisfaction
- Staff satisfaction
- Better compliance with prescribed regimens of care for other conditions
- Value to image of health plan or medical center

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Adverse Consequences

- Adverse patient selection
- Savings to insurance plan is loss of revenue to hospital and doctor
- Lower physician "productivity"
- Lower physician morale if counseling not compensated
- Side effects of preventive medications
- Increased clinical and emergency room visits
- Health education message might conflict with doctor's instructions to patient

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ROI Slide 1 of 7 Intro

- Return on Investment = ROI
 - 1-year benefit secured in return for 1-year cost
- As commonly used in healthcare settings
 - costs limited to healthcare
 - Benefits limited to cost reductions as borne by managed care firm or other insurer

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ROI Slide 2 of 7 Technical Detail

- Results easily distorted
- Baselines and "controls" unreliable
- Patient selection critical
- Mortality beneficial to results
 - (only partially corrected by time-in-program analyses).
- Delays distort results

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ROI Slide 3 of 7 Program Longevity

- Programs often eliminated when year to year additional cost reductions cease to occur
 - Due to maturation of service
 - Changes in membership of managed care plan
 - Inept management of billing and payment data
- (no quality literature)
- Entire DM Industry based on ROI

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ROI - Slide 4 of 7 - "Buy" vs "Build"

- "Buy" decreases delays
 - Increases the odds of favorable ROI Year 1
 - Eliminates needs for
 - specialized staff
 - specialized data systems
- "Build"
 - Reduces future year costs
 - DM vendor profits
 - Dual oversight
 - Enables provider to learn from DM programs
 - (DM processes similar across all DM programs)

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ROI Slide 5 of 7

Timing of Costs, Process and Benefits

- Delay – conception of proposal to approval
- Delay – approval to implementation
- First 3-6 months – all cost, little or no benefits
 - Delay in getting program up and running
 - Delay in reaching all patients who could benefit from service
 - Delay between provision of service and capture of benefit
- Next 3 to 6 months – Benefits increase as more clients served
- Six months to three or four years – even increasing benefits with relatively stable costs
- After three to five years – program matures, benefits continue, but no more year to year reductions in benefits. (presuming stable enrollment)

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ROI Slide 6 of 7

Advice for Advocates

- Project ROI separately by year for first five years**
- do so at initial presentation
- define baseline for all five years (presume stable enrollment)
- (this will help prevent program being eliminated by fiscal staff when it no longer shows year-to-year cost reductions)**
- Identify (prior to program implementation)
 - Cost, process and outcome parameters to be tracked for program evaluation

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ROI Slide 7 of 7

Final Notes

- Justifications for Preventive Services
 - Health outcomes
 - Short term cost savings
 - HEDIS or other accreditation-related
 - (immunizations, pap smears, breast exams, colonoscopy)
 - Personal preferences
- Not Considered
 - Long term costs
 - Long term outcomes
 - Employer savings
 - Secondary benefits
 - Unintended consequences
 - Community priorities

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National Priorities for Clinical Preventive Services, Slide 1 of 5

- Ranking system first published in 2001 and updated in 2006 (Maciosek 2001, 2006)
- Rankings of 25 effective clinical preventive services (Maciosek 2006)
 - Based on combined scores of 2 (lowest) to 10 (highest) for clinically preventable burden (CPB) and cost effectiveness (CE)
- One of best ways to compare preventive services
- Focused on services with "A" and "B" rankings for effectiveness
- (neither CEA or ROI addressed in clinical or community guides)

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National Priorities, Slide 2 of 5

- Clinically Preventable Burden (CPB) = Total QALYs that could be gained
- Cost Effectiveness = Average net cost per QALY gained
 - Costs include screening, counseling, pharmaceuticals, follow-up diagnostic tests, hospitalizations, and patients' time
 - Savings include avoided and lesser cost medical care
 - Includes discounting at 3% per year and standardizing to year 2000 dollars

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National Priorities, Slide 3 of 5

- Cost Effectiveness score ranges (Discounted \$ per QALY saved)
 - 5 = Cost saving
 - 4 = > 0 < \$14,000
 - 3 = ≥ \$14,000 < \$35,000
 - 2 = ≥ \$35,000 < \$165,000
 - 1 = ≥ \$165,000 < \$450,000
- Comment: Interventions which cost no more than \$75,000 per QALY saved are generally considered cost effective

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National Priorities Slide 4 of 5

- Services with a "5" CE rating
 - Aspirin chemoprophylaxis for at-risk adults
 - Childhood immunization series
 - Tobacco-use screening and brief intervention
 - Older adult vision screening
- (Maciosek 2001, 2006)

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National Priorities Slide 5 of 5

- Services with a "4" CE rating
 - Colorectal cancer screening
 - Influenza immunization
 - Problem drinking screening and brief counseling
 - Chlamydia screening
 - Child vision screening
- (Maciosek 2001, 2006)

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- Q & A

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