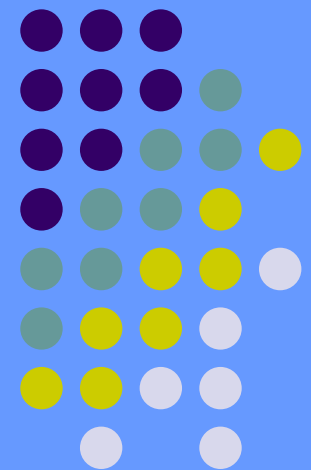


BASIC CONCEPTS OF INFECTION CONTROL

Economic Evaluation in Infection Prevention and Control

International Federation of
Infection Control



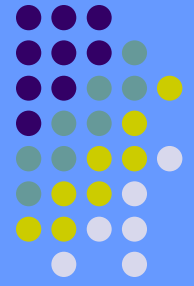
Background

- Decision-makers rely on both clinical effectiveness and economic efficiency when making health care decisions
- Resources are scarce and choices must be made



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Background

- The traditional evaluation of new interventions includes
 - Safety (are the side effects acceptable?)
 - Efficacy (can it work?)
 - Effectiveness (does it work?)
 - Efficiency (whether or not the extra cost of an intervention is worth it)





Background

- Several types of economic analysis can be employed including:
 - Cost minimisation
 - Cost effectiveness
 - Cost benefit
 - Cost utility analysis





Cost Minimisation

- Identifying the least costly alternative that leads to equivalent outcome)
- Rarely used because the clinical consequences of different interventions are rarely equivalent





Cost Benefit Analysis

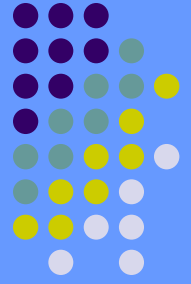
- Placing a monetary value on both the costs and the benefits
- Rarely used because it is difficult to place a monetary value on health



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Cost Utility Analysis



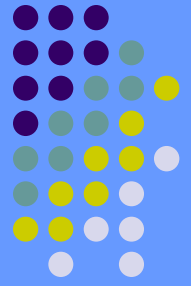
- Useful when there are no expected mortality differences between interventions
- Only differences in physical wellbeing
- Can be expressed as quality adjusted life years (QALY)



Cost-Effectiveness Analysis

- Quantifies trade-off between increased health care expenditure and improved outcome
- Measures the cost of a clinical benefit
- Example
 - Reduce catheter-related bloodstream infections using antiseptic-coated vascular catheters
 - The cost of this catheter is more than a standard catheter
 - Can be compared with the clinical benefits it provides





Cost-Effectiveness Analysis

- Example
 - Generate a cost-effectiveness ratio
 - The total cost of the intervention divided by the number of cases of catheter related bloodstream infection prevented
 - If the antiseptic catheter produced superior benefits but at an increased cost, then an incremental cost-effectiveness ratio - the amount of money needed to produce an additional clinical benefit - could be calculated



Cost-Effectiveness Analysis

Choosing Among Alternative Interventions

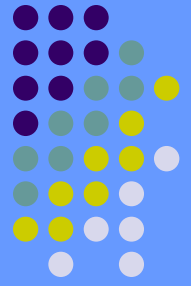


EFFECTS	A < B	A > B
A > B	A is Dominant Cost-effectiveness analysis unnecessary	Incremental Cost-effectiveness analysis useful
A < B	Incremental Cost-effectiveness analysis useful	B is Dominant Cost-effectiveness analysis unnecessary

A = Intervention "A"; B = Intervention "B"



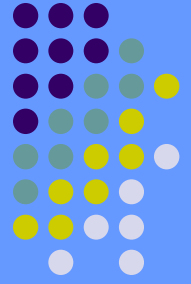
Choosing Among Alternative Interventions



- A more effective and costs less
 - Is the dominant strategy and should be used without further analysis
- When B is more effective and costs less than A, B is dominant and a cost-effectiveness analysis is unnecessary



Choosing Among Alternative Interventions



- When A is more effective than but costs more than B, it is helpful to perform an incremental cost-effectiveness analysis to quantify the clinical and economic consequences of intervention A
- More common



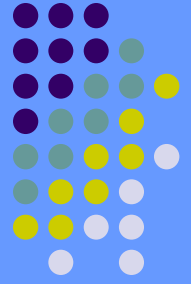
Choosing Among Alternative Interventions - Examples



- Antiseptic-coated vascular catheters to prevent catheter-related bloodstream infection
- Silver alloy urinary catheters to prevent UTI
 - Studies have found the intervention to be worthwhile in certain patient groups

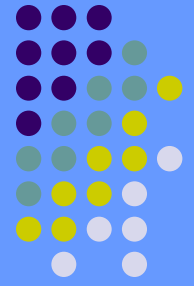


Choosing Among Alternative Interventions - Examples



- An incremental cost-effectiveness ratio is interpretable only when compared with one examining the same health outcome
 - For example, the cost-effectiveness of preventing local vascular catheter-related infection cannot be directly compared to the cost-effectiveness of preventing urinary catheter-related bacteraemia

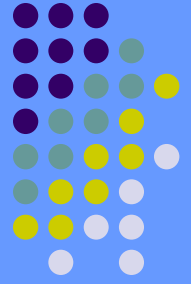




Effectiveness and Cost Estimates

- Estimates derived from large-scale, multi-centre trials are widely considered the "gold standard"
- These data often are not available
- In addition to effectiveness estimates, the analyst must also estimate the cost
- Often cost is poorly defined





Meta-analysis

- A quantitative approach for systematically combining the results of previous research in order to arrive at conclusions about the body of research
- Used to statistically pool the results from individual studies
- Obtain an estimate of the summary effect





Barriers to Economic Evaluation

- Terminology must be used correctly
 - When people say, "cost effective" they imply cost savings
 - Cost effective indicates we are spending an *additional* amount of money for an *additional* clinical benefit
 - Based on the comparison of one strategy with another
 - Cost savings imply that we are getting an equivalent or greater clinical benefit and actually saving money
 - This scenario is rare



Barriers to Economic Evaluation



- The cost-effectiveness of intervention A compared with intervention B can range from cost saving, cost neutral, cost effective to cost ineffective
- Attributable morbidity, mortality, and costs of healthcare-associated infection are difficult to assess



Evaluating Economic Analysis

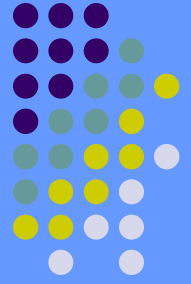


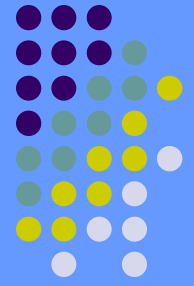
- Was a well-defined research question posed?
- Were all the competing alternatives evaluated?
- Was the effectiveness of the intervention established?
- Were all the important and relevant costs and consequences for each alternative identified (depending on the perspective)?
- Was uncertainty in the estimates adequately evaluated?



Key Points

- Decision-makers rely on clinical effectiveness and economic efficiency when making decisions
- Infection prevention and control is not immune to the rise in cost-consciousness
 - IC professionals should learn the basic tenets of economical evaluation

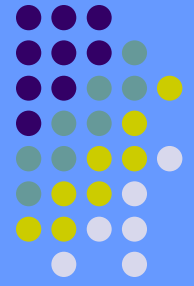




Key Points

- Cost-effectiveness analysis quantifies the trade-off between increased expenditure and improved outcome and measures the cost to achieve a given clinical benefit
- When reading an economic evaluation within IC, several important criteria can be used to judge its validity





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