Economics midterm main points

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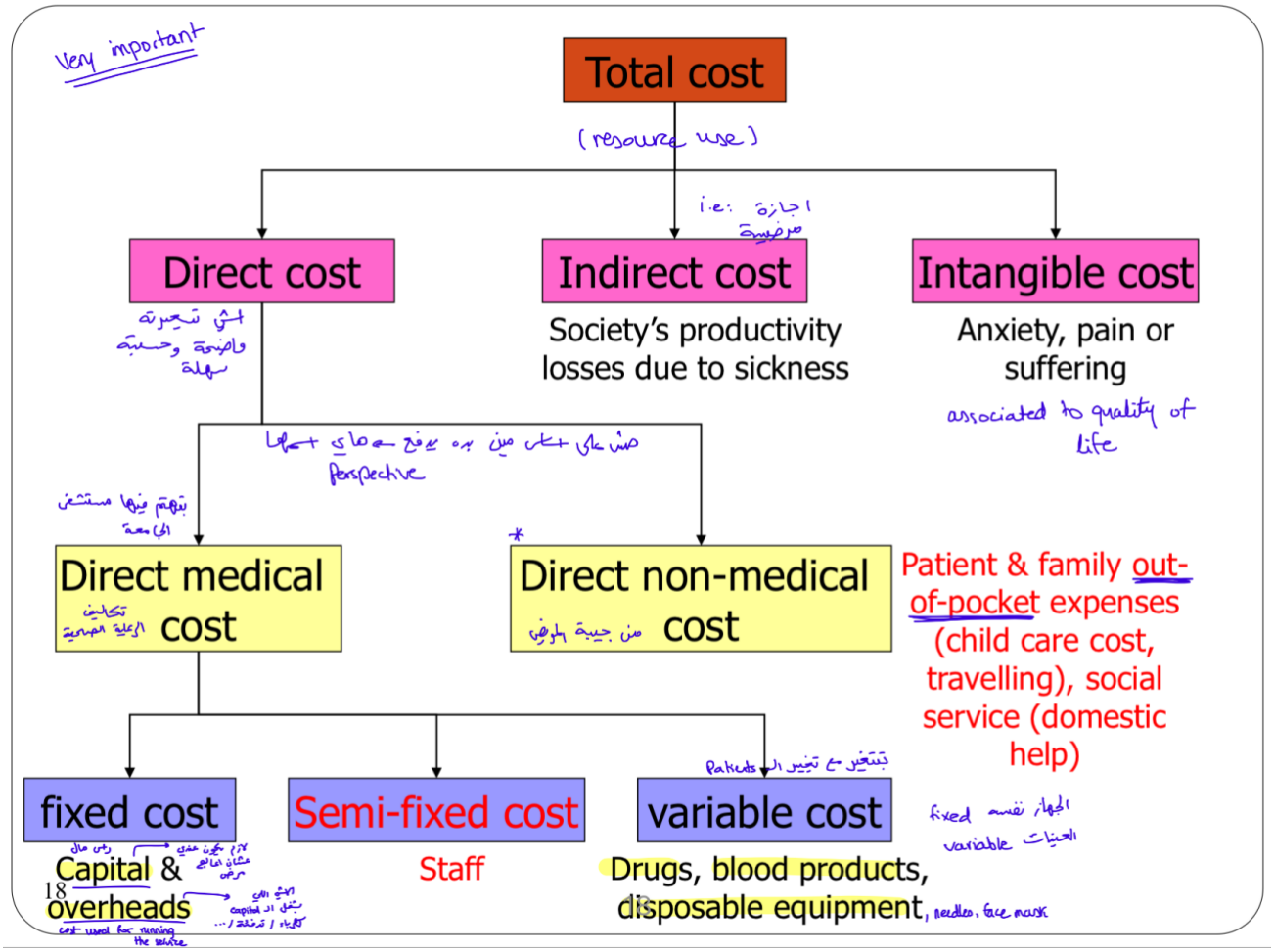
INTRODUCTION

- **Economics:** how individuals, society and governments choose to use fixed resources
- **Health economics:** application of economic principles to the production of health
- **Pharmacoeconomics:** economics to the provision of pharmaceutical services
- Health economics can **aid in decision making** and to identify what's the most efficient
- **Efficiency is the key concept in economics** (greatest benefit for a given resource use)
- **Eco model:** economic part / clinical part / humanistic past
- All economic problems arise from **scarcity**
- It is **comparative** weighing the costs and benefits of option 1 with those of option 2

COST

- We have limited resources and thus health systems can't afford all interventions
- **Economics evaluations:** tools used to assess the cost effectiveness of interventions
- **Costing analysis:** identify / measure / value
- **Total costs:** resource use quantity consumed * unit cost
- **Unit cost:** price of each unit of resource
- **Total cost of production = fixed costs + variable costs**
- **Direct costs:** associated directly with the health care interventions (includes medical and non medical costs)
- **Direct medical costs** include **fixed** costs (do not vary with quantity but vary with with time) / **capital** costs (associated with setting up the service, building an OR or purchasing equipment) / **overhead** costs (associated with running the service, light, heat, or water supply)
- **Variable costs:** associated with treating patients and varies with the level of output (number of patients, drugs, tests, or disposable equipment)
- **Direct non medical costs:** incurred by the patient himself (out of pocket expenses, transportation from and to the hospital)
- **Indirect costs:** incurred by the reduced productivity of a patient and his family resulting from illness, death or treatment (time off work due to sick leave, early retirement, reduced productivity at work)
  - **Morbidity costs** (incurred from missing work = loss of productivity)
  - **Mortality costs** (incurred due to premature death)
- **Intangible costs:** result from anxiety, pain or suffering from an illness or treatment (impossible to attach a monetary value but might affect QOL)



- **Opportunity costs:** choices have to be made between interventions due to scarcity of resources, the benefits I lost from the one I didn't choose is the opportunistic cost (the value of the forgone benefits)
- **Incremental cost:** difference in overall cost between running a service and not running it or comparing different interventions or programs
- **Average cost: total cost / total quantity**
- **Marginal cost تكلفة هامشية:** cost of treating more patients by carrying out more interventions or extra tests (include the variable costs, some fixed costs may change if the level of output exceeded the capacity)
- **Marginal cost = (total cost 2 – total cost 1) / difference in # of patients**
- The **main outcome categories** used in economic evaluation are: effectiveness / QOL / utility / expressing benefits as monetary values (willing to pay)
- Costing methods are common to all types of economic evaluations
- The range of costs is determined by the perspective of the analysis

PERSPECTIVES IN PE STUDIES

- **Perspective:** point of view from which an economic analysis is performed
- Its **importance**: an intervention that looks unattractive from one perspective might look attractive from a different one
- An economic evaluation can be conducted from a single perspective or multiple ones
- **Types of perspectives:**
  - **Societal:** is the broadest, considers all the benefits or costs to the society as a while (direct medical, direct non medical, indirect, intangible), irrespective of whom the payer is, its drawback: impractical in measuring intangible and indirect costs.
  - **Payer:** charges (insurance companies, employers, MOH), MOH and JUH can be considered as payer for employees and students and as provider to all patients, or can be considered as a provider only if the patient doesn't have insurance or the patient is transferred to another hospital (from MOH to JUH —> MOH is still the payer while JUH is only the provider)
  - **Charge of the payer = actual cost if insurance covers 100%**
  - **Provider:** true actual expense of providing the product or the service (hospitals, dispensaries or poly clinics, private practice physicians), asks the payer for reimbursement of the actual cost
  - **Patient:** what patients (ultimate consumers of the service) pay for it (portion not covered by the insurance, out of patient pocket expenses, indirect costs like sick leaves, direct non medical costs like transportation, intangible costs related to the QOL)
- **Deductibles:** اشتراك سنوي للتأمين / paid before the insurance plan starts
- **Copayment:** نسبة او مبلغ ثابت مندفعه عند الدكتور اللي على التأمين / paid after the deductibles
- Costs might be shifted rather that saved
- A societal perspective is the recommended option for health economic analyses

Type of cost	Perspective			
	Societal	Provider	Payer	Patient
Direct medical cost	√	√	√	√
Direct non-medical	√	✖	✖	√
Indirect cost + Intangible	√	? — it depends متى الـ Provider بيهتم بالـ indirect cost ؟ لما يكون موظف عنده	? متى الـ Payer بيهتم بالـ indirect cost ؟ لما يكون موظف بنفس الشركة الـ Payer يعني موظف من الجامعة عنده	√

TYPES OF ECONOMIC EVALUATION

- Health economic evaluations are tools to make comparison, used to ensure that society get a good return on its investment in pubic health
- They provide a systematic way to identify, measure, value and compare costs and consequences of programs, policies or interventions in order to achieve the most efficient use of resources
- It's NOT about choosing the cheapest alternatives but determining those that provide the best health care outcome per dinar spent
- Used to assess cost effectiveness of interventions
- **Economic evaluation:** a comparative analysis of alternatives in terms of cost and consequences
- **Full economic evaluation:** comparison of 2 or more alternatives and both costs and consequences must be examined
- **Partial evaluation:** considers costs and/or consequences but either do not involve comparison or do not relate costs to benefits

<table>
<tr><td></td><td colspan="3">Question2: Are both costs and consequences of alternatives examined?</td></tr>
<tr><td rowspan="4">Question1: Is there Comparison of two or more alternatives?</td><td rowspan="3">NO</td><td colspan="2">NO</td><td>YES</td></tr>
<tr><td>Examines only consequences</td><td>Examines only costs</td><td></td></tr>
<tr><td colspan="2">Partial Evaluation
Outcome description | Cost description</td><td>Partial Evaluation
Cost-outcome description</td></tr>
<tr><td>YES</td><td colspan="2">Partial Evaluation
Efficacy or effectiveness evaluation
i.e: RCT or observational study
only clinical outcome | Cost analysis</td><td>Full Economic Evaluation
Cost-effectiveness analysis
Cost-utility analysis
Cost-benefit analysis</td></tr>
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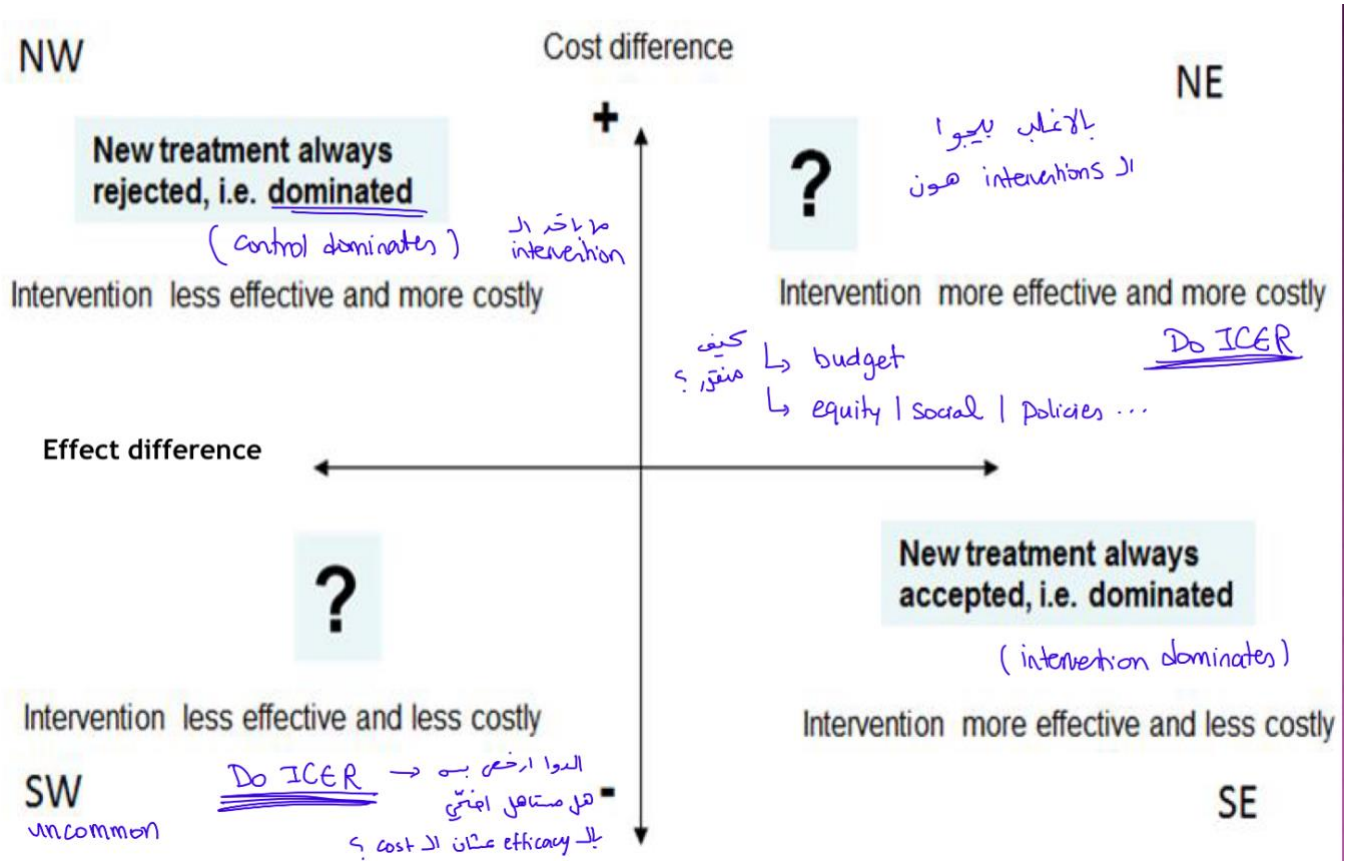
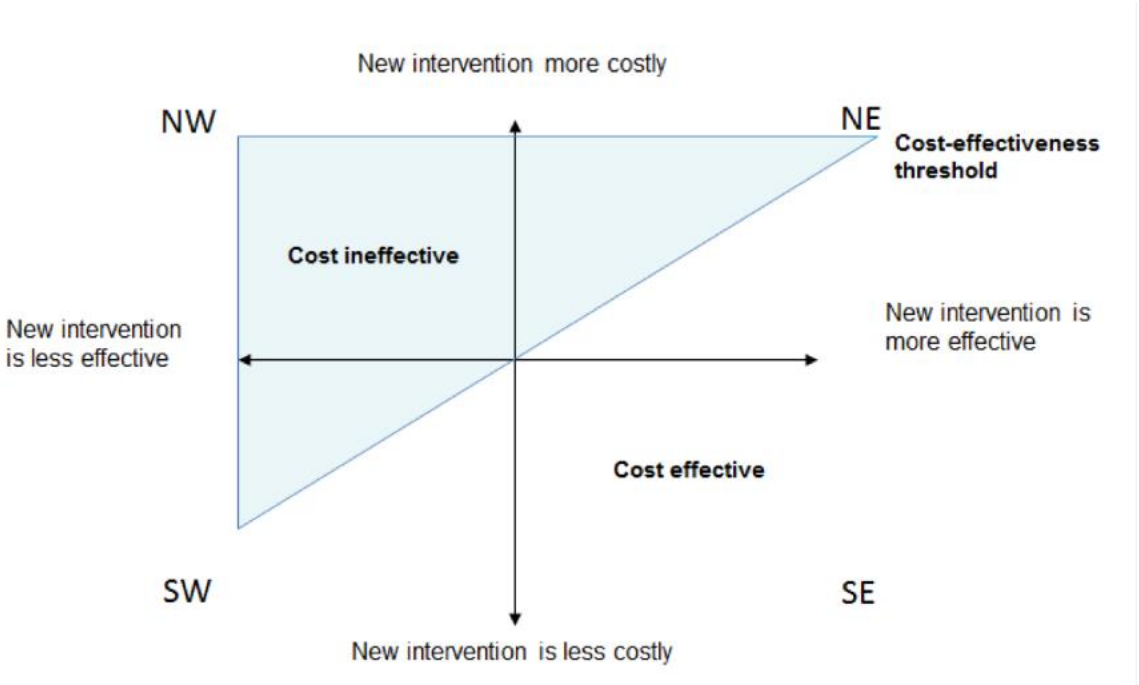
- Basic methods of economic evaluation: (differ in type of outcome measure used)
  1- Cost effectiveness analysis CEA – quantity not quality كم سنة عاش المريض؟
  2- Cost utility analysis CUA – quantity and quality
  3- Cost benefit analysis CBA – outcome measures into money
  4- Cost minimisation analysis CMA – special case (analysis of the comparative costs for which consequences have been shown to be therapeutically equivalent, outcomes of different interventions are the same so we choose the cheapest). CMA is simple to implement but not really suitable for new health interventions bcc outcomes are rarely identical and effects are multi factorial (used when buying the same service from different providers)
- **Cost effectiveness analysis CEA:** should ONLY be described as so if it has been proven by economic analysis
  - **Effectiveness:** outcome of an intervention measured in natural units (outcome measure, shall be common to both alternatives but at different degrees), we use clinical indicators that serve as proxy for the final outcome measure like LDL (humanistic reasons, easier to demonstrate clinical efficacy and faster so it reduces time and cost required for a clinical trial)
  - We use incremental economic analysis to identify the **dominance** (more effective and less costly) of the intervention or the control (graphically illustrated by **cost effectiveness plan**



- **Incremental cost effectiveness ratio ICER:** costs required to achieve 1 extra unit of outcome
- **ICER = Cost difference / efficacy difference**
- ICER is more accurate and meaningful
- CEA advantages —> appropriate if the outcomes measured using the same unit
- CEA disadvantages —> can't be used when comparing alternatives with different types of outcomes (MI tx vs influenza vaccine in terms of increasing life year gain) or when interventions affect both quantity and QOL

- **Cost utility analysis CUA:** gives attention to QOL, outcomes measured in units of **utility**
  - **Factors that impact QOL:** functional / societal / psychological / cognitive / subjective (obtained through questionnaires)
  - Instruments are divided into **generic** (Short form 36) **and disease specific** (EORTC QLQ-C30)
  - Limitation: no comparison between different patients and different illnesses or interventions
  - **Utility score:** 0 represents dead and 1 represents full health, generating this scale allows combing in utility with LYG to generate QALY
  - Different individuals may attach different values (utility) to the same health state
  - **QALY = utility * LYG**
  - EQ-5D utility instrument —> mobility / self care / activities / pain / anxiety or depression (3 levels per dimension —> 245 possible health states = 3^5 + dead + unconscious)
  - 1 QALY means 1 year of perfect quality of life
  - CUA advantages: comparing health outcomes measures across different disease area and services with the health care system (generic measure)
  - CUA disadvantages: measuring utilities is difficulty and preferences may change in the course of an illness + it depends on perspectives or values
  - QALY is biased toward the younger population since the LYG expected to be prolonged for younger population are longer than those for older population
- **Cost benefit analysis CBU:** benefits translated into money (perceives value used as the outcome (most comprehensive method but not the most used
  - **Value determined by willingness to pay so can be HIGHLY BIASED** (willingness to pay depends on perceived need / experience / values / personal wealth and culture)
  - ICER not required
  - Allows comparisons between very different areas not just medical ones (health vs non health)
  - **Net benefit = total benefit – total cost**
  - **Net cost = total cost – total benefit**
  - **We accept to fund the intervention if benefit > 0 (positive) or cost < 0 (negative)**

ANALYSING ECONOMIC RESULTS



- ICER is the difference in costs divided by difference in outcomes
- **Cost effectiveness threshold:** the value a decision maker is willing to pay for a unit of health gained
- If ICER of the new intervention is **LESS** than the acceptable threshold —> treatment adopted
- If threshold is too high —> inefficient uses of resources
- If threshold is too low —> the most valuable interventions will NOT be adopted
- Values and decisions vary across countries or institutions depending on budget, degree of uncertainty of ICERs, the innovative nature of the new intervention and features of the condition and population receiving it
- Defining acceptable max value or threshold for ICER is difficult (value judgement, willingness to pay to avoid an unfavourable outcome and common consents
- Thresholds are set equal to per capita Gross Domestic Product (fair share of a nation's wealth)
- If expenditure is MORE than this value (per capita GDP) —> nation spending more than earning or some people are receiving less than their fair share
- If less than per capita GDP —> very cost effective
- If 1 to 3 times * per capita GDP —> cost effective
- If more than per capita GDP (more than 3 times) —> NOT cost effective

BEST OF LUCK