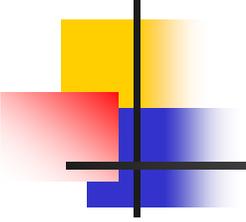
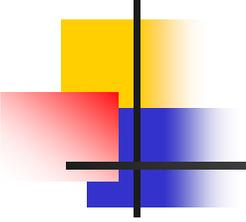


Pharmacoeconomics Overview



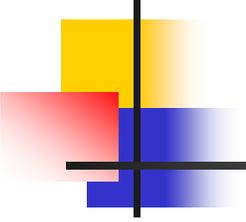
What is Pharmacoeconomics?

- The study of how people & society chose to employ scarce productive resources, that could have alternative resources, to produce various pharmaceutical products to distribute amongst society to enhance the quantity & quality of life
- Analyzes the costs & benefits of improving patterns of resource allocation in production, distribution, & consumption of products



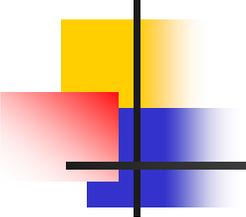
How Is Pharmacoeconomics Useful?

- Gives an economic evaluation of pharmaceuticals to aid in the decision making process in healthcare
- Strategic planning in clinical drug research
- Determines the likely market of future drugs



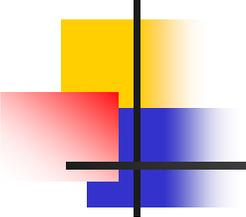
Economic Evaluations

- There has been a high level of interest in the use of economic evaluation for decision making in healthcare over the past decade
- Economic evaluations of pharmaceuticals will be increasingly used by prescribers in:
 - Treatment choices
 - Pricing and reimbursement negotiations between the pharmaceutical industry, government, and other bodies funding healthcare expenditure



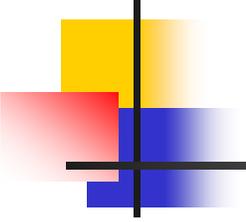
What Is Economic Evaluation?

- A tool used to assist decision makers in achieving value for the limited budget that is allotted for healthcare
- Economic evaluation considers both costs and outcomes



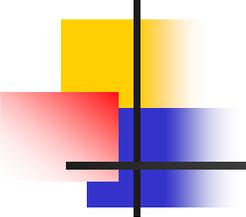
Measurement of Cost

- There are two types of cost in economic evaluation; direct cost and indirect cost
- Direct cost is related to resources that are directly used in treating the patient
 - Medications
 - Doctors
 - Hospitals
- Indirect cost is relate to the impact on the time of the patient and their friends/relatives as a result of treatment
 - Patient's time in undergoing treatment
 - Lost opportunities for patient to engage in work



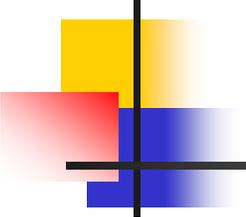
Types of Economic Evaluation

- Cost Minimization Analysis
 - Studies in which the outcomes are equivalent across the interventions being compared
 - Focuses on the least costly alternative
- Cost Consequence Analysis presents results for a range of outcome measures



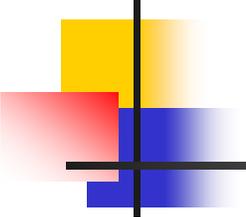
Types of Economic Evaluation (Con't)

- Cost Effectiveness Analysis is applied to those studies that use a single outcome
- Cost Utility Analysis can be used to compare the value for money of investments in different program areas
- Cost Benefit Analysis: In this form of analysis, both resource use and health outcomes being valued use the willingness to pay approach



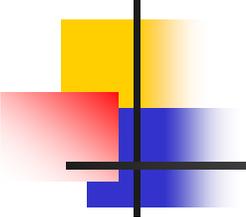
Decision Making On The Basis Of An Economic Evaluation

- The principle issue related to economic evaluation is how to provide valid cost-effectiveness information to the decision maker
- There are nine possible results when comparing the relative costs and health benefits of two forms of alternative interventions
 - The costs and health benefits of one alternative can be higher or lower than the other alternative
 - The costs and health benefits can be the same for two alternatives
- Decisions concerning the pricing and reimbursement of pharmaceutical products are likely to be increasingly influenced by economic evaluations in determining the value of a product in treating patients



Application of Economic Evaluation

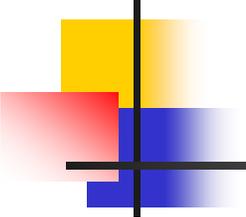
- Drug X provides an additional 6 months of unassisted living to 8 out of 10 Alzheimer's sufferers.
- Drug X costs \$2000 for one year
- Cost Effectiveness = $\frac{\text{Cost of treatment}}{\text{Life Years Gained}}$
= $\frac{\$2000}{8 \times 0.5}$
= \$500/LYG



Application of Economic Evaluation (2)

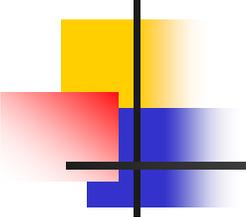
- Drug Y provides an additional 2 years of unassisted living to 3 out of 10 Alzheimer's sufferers
- Drug Y costs \$2500 for one year
- Cost Effectiveness = $\frac{\text{Cost of treatment}}{\text{Life Years Gained}}$
 - = $\frac{\$2500}{3 \times 2}$
 - = \$416/LYG

From an economic perspective, Drug Y is more cost effective than drug X (\$500/LYG). Therefore it would be in the best interest of the pharmaceutical company to invest in Drug Y.



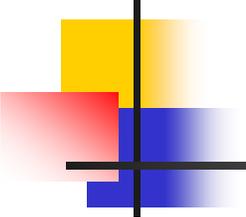
Clinical Drug Research

- In addition to Economic Evaluations, Pharmacoeconomics can also be applied to clinical drug research
- The value of pharmaceutical products can be measured through appropriate data collection and analysis techniques
- Information collected early in clinical trials regarding the impact of a new product on the healthcare system can help:
 - Determine price of product
 - Provide information to prospective purchasers of the value that the new product will have versus the current alternatives



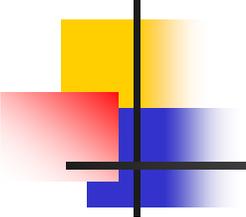
Pharmacoeconomic Research

- Can be used to assess the economic and humanistic value of the therapies by identifying and measuring variables that will be affected by healthcare intervention
- Determines the outcomes of intervention and the impact of that intervention on other healthcare resources
- The outcomes of healthcare procedures and treatments are assessed by evaluating the clinical, economic, and humanistic dimensions



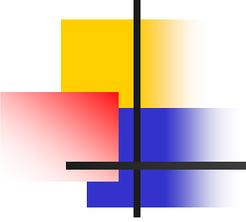
Objectives of Pharmacoeconomic Research

- To demonstrate the economic and humanistic value of alternative drug therapies in a clinical trial setting
- To demonstrate the *value for money* of individual pharmaceutical products by establishing the direct and indirect costs of their acquisition and the use and benefits conferred upon recipients



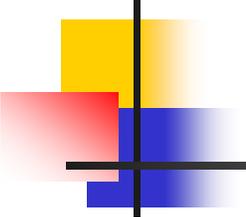
How Are The Clinical, Economic, & Humanistic Dimensions Of Outcomes Measured?

- Clinical Dimensions, or the safety and efficacy of a product, are evaluated during the drug development process in clinical trials
- Economic and Humanistic Dimensions are measured using pharmacoeconomic research methods and data techniques employed within and alongside of the traditional drug development process



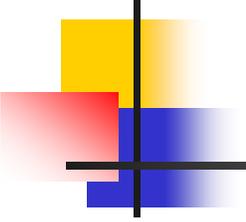
Determining The Baseline

- The absence of baseline information reduces the value of any information generated by the incorporation of pharmacoeconomics into an isolated clinical study
 - Critical to document baseline effects early in the research program
 - Leads to results which can be interpreted more confidently
- Identifying what is known about a condition, and its current treatments helps to focus the research effort



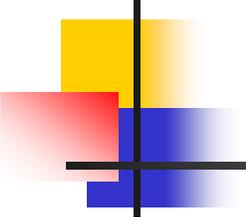
Determining The Baseline (Con't)

- Humanistic factors affected by the disease should be assessed to determine the total burden of the illness and to establish baseline information
- Establishing baseline levels of resource use is valuable because the basis for economic evaluation is an appropriate and complete assessment of resources being used as opposed to dollars being spent



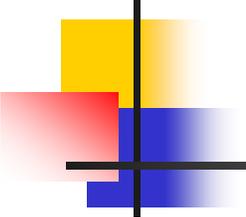
Why Pharmacoeconomic Research Is Needed

- In recent years, containing costs in the healthcare field has motivated decision makers to consider *value for money*, in addition to safety and efficacy when assessing the overall impact of medical technologies
- Pressure for cost containment has led to growing interests in identifying, measuring, and evaluating the balance between the benefits of new medical technologies and their costs



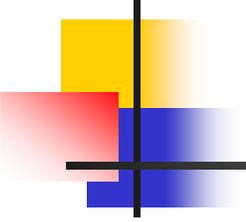
Why Pharmacoeconomic Research Is Needed (2)

- The search is for *value for money*, the optimal balance of outlays and outcomes, rather than for cost containment
- Marketplace competition and demands play roles in the decision of a drug approval



Application of Pharmacoeconomics in Clinical Research

- Using pharmacoeconomic research during clinical trials, the *value for money* can be calculated
- Value for money compares the output, indirect costs and direct costs of the clinical, economic, and humanistic factors of a product
- Value for money =
$$\frac{\text{Value of output}}{\text{Cost of inputs}}$$
$$\frac{(\text{Efficacy}) + (\text{Safety}) + (\text{Quality of life}) + (\text{Demand}) + \dots}{(\text{Manufacturing cost}) + (\text{Side Effects}) + (\text{Advertising}) + \dots}$$



Benefits of Pharmacoeconomic Research

- Can help provide rational justifications for pharmaceutical prices
- Data can be used in marketing activities to:
 - Differentiate products from competitors
 - Gain access to formularies and restricted lists
 - Incorporation into treatment guidelines
- Valuable tool for making rational choices about pharmaceutical care interventions
- Data can be collected in controlled trials before a drug has been approved