INTRODUCTION TO COST EFFECTIVENESS.

BUDGET IMPACT ANALYSIS OF EVEROLIMUS PLUS EXEMESTANE VERSUS GEMCITABINE PLUS PACLITAXEL AND CAPECITABINE PLUS DOCETAXEL IN METASTATIC BREAST CANCER PATIENTS IN EGYPT.

COST EFFECTIVENESS OF APREPITANT IN EGYPTIAN PATIENTS RECEIVING HIGHLY EMETOGENIC THERAPY FROM THE THIRD PARTY PAYER PERSPECTIVE.

ECONOMIC EVALUATION OF LAPATINIB IN HER-2-POSITIVE METASTATIC BREAST CANCER PATIENTS IN EGYPT.

WHAT’ S THE NEWS !!
• Introduction to cost effectiveness.
• Importance of cost-effectiveness and its application in pharmacy.
• Training Programs.
• Cost-Effectiveness of Aprepitant In Egyptian Patients Receiving Highly Emetogenic Therapy From The Third Party Payer Perspective.
• Cost-Effectiveness of Pazopanib Versus Sunitinib In Egyptian Patients With Metastatic Renal Cell Carcinoma From The Health Insurance Perspective: A Markov Model.
• Economic Evaluation of Lapatinib In Her-2-Positive Metastatic Breast Cancer Patients In Egypt.
• The Latest News.
Pharmacoeconomic Unit Staff

**Gihan Hamdy El-sisi , MSc, PhD Candidate**
Head of Pharmacoeconomic Unit, Central Administration for Pharmaceutical Affairs, Ministry of Health, Egypt
Treasurer of International Society for Pharmacoeconomics and Outcomes Research (ISPOR) Egypt Chapter
Certificate Program in Health Economics and Outcomes Research, University of Washington.

**Esraa Said Ahmed**
B.Sc. Pharmaceutical sciences- Faculty of Pharmacy - Cairo University.

**Shaimaa Fouad Ahmed**
B.Sc. Pharmaceutical sciences- Faculty of Pharmacy – Misr University for Science and Technology
Health Economics Diploma- Arab Academy for science, technology and Maritime transport.

**Asmaa Saad Abo Rawash**
B.Sc. Pharmaceutical sciences- Faculty of Pharmacy - Cairo University
Health Economics Diploma- Arab Academy for science, technology and Maritime transport.

**Moustafa Gouda Kamel Helal**
B.Sc. Pharmaceutical sciences- Faculty of Pharmacy - MSA University.

**Hossam Mohamed Abd Allal**
B.Sc. Pharmaceutical sciences- Faculty of Pharmacy - Russian University in Cairo.

**Noura Mohammed Salah El-Din**
B.Sc. Pharmaceutical sciences- Faculty of Pharmacy - Future University.

**Mai Ahmed Samir**
B.Sc. Pharmaceutical sciences- Faculty of Pharmacy - Tanta University.
Economics is about trade-offs and choices between wants, needs, and the scarcity of resources to fulfill these wants. When considering economics, most people think of the trade-offs between goods and services and money; however, the trade-off might also be expressed in humanistic terms. Pharmacoeconomics has been defined as "the description and analysis of the costs of drug therapy to health care systems and society". Pharmacoeconomic research identifies, measures, and compares the costs (i.e. resources consumed) and consequences (i.e. clinical, economic, humanistic) of pharmaceutical products and services [1].

Pharmacoeconomic analysis uses important tools for examining the outcome or the impact (desirable, undesirable) of alternative drug therapies and other medical interventions. In the case of some pharmaceuticals, the intermediate or surrogate health benefit observed in pivotal clinical trials eventually does not result in survival and/or clinically meaningful quality-of-life (QoL) benefit in real-world situations. When the application of a pharmaceutical intervention does not result in benefit in real world, health care resources are wasted [2].

The most important applications of cost effectiveness are; 1)Marketing approval usually for drugs and devices (an assessment of benefit-risk balance), 2)Coverage inclusion as a covered service in health plan benefit package, 3)Reimbursement—establishes considering “value of money” or budget impact, and 4)Clinical guidelines— HTA information use to support clinical guidelines in disease areas.
Cost-effectiveness research has begun to emerge for health care reform by promoting head to head research to determine which drugs, devices, and procedures are most effective and carry the lowest risk. Comparative effectiveness research (CER) must enable policy makers to alter individual level choices of treatments, not by restricting access but by investing in research to generate individualized information that can guide treatment choices much more precisely than is possible today. Ideally, CER can maximize patient health and improve the efficiency of health care expenditures by allowing patients to make smart health care choices for themselves [3]. Theoretically, if the potential outcome under each intervention for each individual were known, then both individual allocation of treatments and social policies on access could be optimized [4].

When a physician indicates a therapy for a patient, this means that at the end of the day another patient will miss the appropriate treatment due to the scarcity of resources. If in the latter case the missed treatment would have resulted in more health benefit than for the former patient, the opportunity cost of the decision – the amount of the missed health gain – is greater than the proceeds of the decision. This is the reason why we have to spend public resources only on the most cost-effective health care interventions [2].

References:


The Pharmacoeconomic unit organized a training program "Shape the Future" for 3 months jointly with ISPOR Egypt Chapter and sponsored by Abbott Company under the patronage of Ministry of Health. The program targeted pharmacists who are decision makers in the Ministry of Health and certified by ISPOR Egypt Chapter. The main aim of the program was building capacity for HTA implementation in Egypt. The participants were provided by the theoretical basis as well as the practical tools necessary to read, interpret, design and conduct a pharmacoeconomic analysis.

Speakers:

Zoltán Kaló, MSc, MD, PhD
Health Economics Research Centre, Eötvös Loránd University, Budapest, Hungary.

Gihan Hamdy El-Sisi, MSc, PhD Candidate
Head of Pharmacoeconomic Unit, Central Administration for Pharmaceutical Affairs, Ministry Of Health, Egypt.

Mahmoud El Mahdawy, Pharm D
Hospital Pharmacy Administration, Central Administration for Pharmaceutical Affairs, Ministry of Health, Egypt.
Training modules
The Attendee experienced a course covering the following modules:

Module 1:
- Comparative effectiveness research
- Introduction to Pharmacoeconomics
- Types of pharmacoeconomic studies
- Determination of Costs
- Health Related Quality of Life

Module 2:
- Decision tree modeling
- Markov modeling
- Deterministic Sensitivity analysis
- Criticism of pharmacoeconomic studies
- Budget impact analysis

Module 3:
- Clinical evidence synthesis
- Assessment of Quality of evidence
- Transferability of data
- Comparative health systems in low and middle income countries
- Practice of Health Technology Assessment in different countries
- Risk sharing agreements
BUDGET IMPACT ANALYSIS OF EVEROLIMUS PLUS EXEMESTANE VERSUS GEMCITABINE PLUS PACLITAXEL AND CAPECITABINE PLUS DOCETAXEL IN METASTATIC BREAST CANCER PATIENTS IN EGYPT

Gihan H. ElSisi¹, Esraa Said¹, Mahmoud D. ElMahdawy²
¹Pharmacoeconomic unit, Central Administration Of Pharmaceutical Affairs, Ministry of Health Egypt, ²Hospital Pharmacy Administration, Central Administration Of Pharmaceutical Affairs, Ministry Of Health, Egypt.

Abstract

Objective:
To estimate the budget impact of everolimus-exemestane versus the most commonly used regimens in the Egyptian practice; gemcitabine-paclitaxel and capecitabine-docetaxel for a health care plan that introduces Everolimus for post-menopausal hormone receptor positive, human epidermal growth factor receptor-2 negative metastatic breast cancer (HR+,HER2-MBC) patients over three years.

Methods:
Drug and medical budget impacts (2013 EGP) were estimated over the first three years of the three drug regimens use from the health insurance perspective. Epidemiology data were used to estimate target population size. The treatment data for MBC patients were obtained from published and no published sources. The model considered 2 scenarios—without (pre) and with (post) everolimus-exemestane. Monthly medical costs were calculated for the pre- and post-progression phase. Results were considered on a per member per month (PMPM) basis to examine the relative impact on the plan. Deterministic sensitivity analyses were conducted.

Results:
In a real-world 6,055,902 targeted patients, 288,261 of them were found to be candidates for everolimus-exemestane regimen. For patients taking gemcitabine-paclitaxel and capecitabine-docetaxel regimens, the estimated incremental cost PMPM was LE3.00 and LE2.94 respectively for each after three years. The estimated incremental cost PMPM for the gemcitabine-paclitaxel population was LE0.62, LE2.60 and LE5.77 for year 1, 2 and 3 respectively while for the capecitabine-docetaxel population was LE0.59, LE2.54 and LE5.70 for year 1, 2 and 3 respectively. The capecitabine-docetaxel results were most sensitive to the cost of everolimus while gemcitabine-paclitaxel results were most sensitive to the number of eligible patients.

Conclusion:
Increased acquisition costs of everolimus-exemestane for HR+,HER2-MBC treatment are expected to be obviously offset by both the reduced number of progressed patients and the relatively small medical costs due to avoided adverse events of each of gemcitabine-paclitaxel and capecitabine-docetaxel regimens. The expected budget impact of covering everolimus for this group of patients was relatively small.

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COST-EFFECTIVENESS OF APREPITANT IN EGYPTIAN PATIENTS RECEIVING HIGHLY EMETOGENIC THERAPY FROM THE THIRD PARTY PAYER PERSPECTIVE
Moustafa Helal¹, Gihan Elsi²
¹Pharmacoeconomic Unit, Central Administration for Pharmaceutical Affairs, Ministry of Health, Egypt.

Abstract

Objective:
Cost-effectiveness of adding aprepitant to the standard regimen in Egyptian patients with chemotherapy inducing vomiting has not yet been established. The aim of the present study was to evaluate the cost-effectiveness of aprepitant as add-on therapy to the standard Egyptian regimen in patients receiving highly emetogenic therapy.

Methods:
A decision tree model was developed based on the Egyptian clinical practice, and was derived from published sources. This decision analytical model was constructed to assess the costs and consequences associated with aprepitant containing regimen compared with standard therapy for Chemotherapy-Induced Nausea and Vomiting. The clinical parameters were derived from a randomized trial previously published. The utility of the health states was derived using the available published data. Direct medical costs were obtained from the third party payer tariff in Egypt. Deterministic sensitivity analyses were conducted. All costs (in 2014 EGP) and outcomes were discounted at 3.5% annually.

Results:
The total quality-adjusted life-years (QALYs) of adding aprepitant to the standard regimen was estimated to be 0.0082, whereas that of the standard regimen was estimated to be 0.0072 (with a net difference of 0.001QALYs). The total costs for aprepitant plus standard regimen and standard regimen alone were EGP 414.25 and EGP 346.62 respectively (with a net difference of EGP 67.63). Thus the incremental cost-effectiveness ratio (ICER) for aprepitant was EGP 66,004/QALY gained.

Conclusions:
The present study concludes that adding Aprepitant to the standard regimen is cost effective based on the threshold stated by world health organization (3xGDP/capita) for patients with severe vomiting after chemotherapy.

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Abstract

Objective:
Cost-effectiveness of pazopanib versus sunitinib in Egyptian patients with metastatic renal cell carcinoma (mRCC) has not yet been established. The aim of the present study was to evaluate the cost-effectiveness of pazopanib versus sunitinib in Egyptian patients with mRCC over a five-year time horizon from the perspective of the health insurance.

Methods:
A half-cycle corrected Markov cohort chain model with three mutually exclusive health states (first line until progression, progression/best supportive care, and death) was derived from published sources. The model structure reflects disease natural history, current Egyptian clinical practice and the published sources in this disease area. The length of a cycle was set at one month. The clinical parameters were derived from randomized trial previously published (COMPARZ). The quality of life of the health states was derived using the available published data (PISCES trial). Adverse events incidence rates were converted to reflect the incidence rates per cycle. Direct medical costs were obtained from the health insurance tariff in Egypt. All costs and effects were discounted at 3.5% annually. All costs were reported in Egyptian pounds of the financial year 2013.

Results:
The total quality-adjusted life-years (QALYs) of pazopanib was estimated to be 78.99 and that for sunitinib was 77.96, which resulted in a difference of 1.03 QALYs. The total costs for pazopanib and sunitinib were EGP 4,033,668 and EGP 5,088,813, respectively (the difference was -1,055,146), which yielded an incremental cost-effectiveness ratio (ICER) of EGP -1,026,391/QALY. Thus, pazopanib was dominant. Various one-way sensitivity analyses indicated that the median progression-free survival of Pazopanib and the utility values of both drugs had the major impact on the results.

Conclusions:
The present study concludes that, from the perspective of the Egyptian insurer perspective (PTES), pazopanib is more effective and less costly than sunitinib for patients with metastatic renal cell carcinoma. This model addresses both the health and economic implications of both drugs. Our results suggest that pazopanib is the dominant therapy. Cost-effectiveness models help to inform decisions about the allocation of health care system resources and to achieve better health in the Egyptian population.

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Fig. 1: Markov State-transition Bubble diagram

Fig. 2: One Way Sensitivity Analysis
Abstract

Objective:
The objective of the current analysis was to assess the cost-effectiveness of lapatinib plus capecitabine versus capecitabine alone in human epidermal growth factor receptor-2-positive metastatic breast cancer patients from the third party payer perspective over a time horizon of ten years.

Methods:
A half cycle corrected Markov chain model comprising 3 health states (stable, progression and death) was developed to estimate the projected clinical and economic implications of Lapatinib. Transition probabilities were estimated based on the results from the EGF100151 clinical trial of Lapatinib. Health state utilities and major adverse events were obtained from published sources. Direct medical costs were obtained from the third party payer list. Costs (in 2013 EGP) and effects were discounted at 3.5% annually. One way sensitivity analyses were conducted.

Results:
The economic evaluation of lapatinib plus capecitabine as combination therapy resulted in additional cost of 1,597,796 EGP, with an incremental positive effect of 5.7 quality adjusted life years (QALY) or an incremental cost-effectiveness ratio (ICER) of 277,169 EGP/QALY gained. The overall survival of the two arms was found to have the greatest impact on the results.

Conclusions:
Compared with our willingness-to-pay threshold stated by world health organization for middle and lower income countries, the addition of lapatinib to capecitabine is not clearly cost-effective; and most likely to result in an ICER higher than the threshold limit.

Pharmacoeconomic committee recommended:
A risk sharing agreement should be done with the manufacturer for the supply of Tykerb.

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Congratulations to Andrew Metry on winning a travel scholarship award at ISPOR 6th Asia-Pacific Conference, held on 6-9 September 2014, Beijing, China. He had presented the research poster ‘Cost Minimization Analysis Of U100 Insulin And U40 Insulin In Egyptian Diabetic Patients’.

Congratulations to Moustafa Gouda on winning a travel scholarship award at ISPOR 17th Annual European Congress that will be held on 8-12 November 2014, Amesterdam Netherlands. He will present the research paper ‘Cost-Effectiveness Of Aprepitant In Egyptian Patients Receiving Highly Emetogenic Therapy From The Third Party Payer Perspective’.