

EGYPTIAN PHARMACOECONOMIC UNIT

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MINISTRY OF HEALTH

Measuring and Valuing Health Benefits

Economic Evaluation

of Lidocaine/Tetracaine Patch Versus Lidocaine/Prilocaine Cream For Topical Anaesthesia Before Vascular Access.

Cost-Effectiveness

Analysis of Fidaxomicin versus Oral Vancomycin for the Treatment of Clostridium difficile Infection in Egypt

Economic Evaluation

of Transarterial Chemoembolization With Lipiodol Versus Drug Eluting Bead For The Treatment of Hepato-cellular Carcinoma In Egyptian Patients.

Economic Evaluation

of using Ipilimumab for unresectable or metastatic melanoma versus best supportive care in Egypt.

WHAT' S THE NEWS !!



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Measuring and Valuing of Health Benefits

What is Health?

World health organization defined Health as “A state of complete physical, mental and social well-being, and not merely the absence of disease and infirmity.”

According to this broad definition measuring Health is about identifying and quantifying symptoms and functioning that may be affected by a condition and/or a healthcare intervention and this can be done using QUESTIONNAIRE.

Health questionnaire has to focus on the area of health that you're interested in otherwise broad questionnaire would be too long and irrelevant.

What to measure?

There are different types of health measures can be categorized as follows:

Objective measures those based on clinical outcomes such as blood glucose level.

Subjective measures based on the patient’s report symptom's frequency.

Subjective measures allow us to assess symptoms which affect patients daily activities, such as fatigue, which cannot be verified objectively as well as what is important to patients.

Condition specific measures: those related only to health outcomes specific to a condition.

Generic measures: those covering symptoms and/or functioning areas that are important for health in general.

Clinician assessed measures (or proxy): for example, clinicians may complete health measures in order to diagnosis and/or classify the severity of schizophrenic patients also a care giver for someone who has dementia, may complete the measure on their behalf.

Patient Reported Outcome Measures or PROMs: health measures that are completed by the patient themselves.

Health related quality of life measures: focus on all aspects of quality of life including general health, physical functioning, social functioning, role functioning, emotional functioning, cognitive functioning, vision, hearing, pain etc.

Economic Evaluation

In the healthcare sector, even during the best of economic climates, there will not be enough resources to meet all of society's healthcare needs. This problem is exacerbated (but not caused) by expensive technological advancement and changing demographic patterns.

As a result of this scarcity of resources and Health being an important objective, the amount of health need to be maximized for a fixed budget and choices have to be made in healthcare about what treatments and interventions to fund.

One way in which we can help inform these choices is to look at the cost effectiveness of drugs and treatments. To do this, we can undertake an economic evaluation.

An economic evaluation compares the costs and benefits of at least two alternatives which need to **identify, measure, and value** both the costs and benefits.

Quality Adjusted Life Years and Decision Making

Making decisions about how to allocate health care resources across many different interventions, and for many different patient groups, it is extremely difficult to compare benefits if we're using lots of different PROMs, all for different clinical areas so we need a single measure of benefit "QALY".

QALY, the Quality Adjusted Life Year, combines length of life and quality of life into a single index measure.

To calculate QALYs, we multiply the length of life by the quality of life. Length of life is typically measured in years. And quality of life is measured on a scale of 0 to 1, where 1 is equivalent to perfect health and zero is equivalent to dead. This score represent how much we value different levels of health and referred to as utilities or preferences.

Valuing The Health States

There are different techniques that can be used to measure health state utilities. The most common ones are the time trade off and the standard gamble and Visual analogue scale (VAS).

Time Trade Off

An Iterative Process where we ask a person to consider a particular health state that we want them to value, and we present them with a choice between two alternatives-- choice A and choice B.

Choice A live in full health for certain number of years "X" e.g. 8 years

Choice B involves living in certain health state for a certain number of years "T" e.g. 10 years.

We vary the time lived in the full health state until the respondent is indifferent i.e. they can't decide between the two choices. We can then calculate the value of the health state as X divided by T.

Standard Gamble:

Respondents are asked to choose between remaining in a state of ill health for a period of time, or choosing a medical intervention which has a chance of either restoring them to perfect health, or killing them.

Visual analogue scale (VAS):

Respondents are asked to rate a state of ill health on a scale from 0 to 100, with 0 representing being dead and 100 representing perfect health. This method has the advantage of being the easiest to ask, but is the most subjective.

USING QALY INFORMATION IN DECISION-MAKING

Recently there has been a general increase worldwide in the use of economic evaluation as a tool to help inform these decisions. This has been formalized in many countries by decision-making bodies; for example, the National Institute for Health and Care Excellence, or NICE, in England. These decision-making bodies provide guidance on whether treatment should be funded.

Where are QALYs used around the world?

This world map shows the countries around the world where QALYs are required or recommended for considering drugs or interventions for funding.

Continent	Country
Africa	Egypt, South Africa
Asia	China, Taiwan, Thailand
Australasia	New Zealand, Australia
Europe	Belgium, Croatia, Denmark, England and Wales, Finland, Hungary, Ireland, Italy, The Netherlands, Norway, Poland, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland
North America	Canada, USA
South America	Colombia

Information taken from the International Society for Pharmacoeconomics and Outcomes Research website.

Reference:

Katherine Stevens. 2015. "Measuring and valuing health benefits", The University of Sheffield. retrieved from <https://futurelearn.com/Courses/Valuing-Health>

Economic Evaluation Of Lidocaine/Tetracaine Patch Versus Lidocaine/Prilocaine Cream For Topical Anaesthesia Before Vascular Access

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Abstract

Objective:

The aim of this study was to estimate the cost-effectiveness of lidocaine/tetracaine patch versus lidocaine/prilocaine cream for topical anaesthesia before vascular access.

Methods:

A decision analytic model comparing lidocaine/tetracaine patch versus lidocaine/prilocaine cream for topical anaesthesia before vascular access was constructed based on the current clinical practice in Egypt and was derived from published sources. The clinical parameters were derived from a double-blind, randomized, paired study. The utility of the health states was derived using the available published data. Direct medical costs were obtained from the Ministry of health tariff in Egypt. No discounting was performed. Probabilistic sensitivity analysis (PSA) was conducted.

Results:

The total quality-adjusted life-years (QALYs) of Lidocaine/Tetracaine patch was estimated to be 0.914147, whereas that of the lidocaine/prilocaine was estimated to be 0.826098 (with a net difference of 0.088049 QALYs). The total costs for Lidocaine/Tetracaine and lidocaine/prilocaine were EGP 93.19 and EGP 60.00 respectively (with a net difference of 33.19 EGP). Thus the incremental cost-effectiveness ratio (ICER) for Lidocaine/Tetracaine was EGP 376.95 /quality-adjusted life year. Results from PSA indicate that Lidocaine/Tetracaine had an 100% chance of being cost-effective at our EGP 70,000 per QALY threshold.

Conclusion:

The present study concludes that Lidocaine/Tetracaine (Heated Patch Delivery System) is cost effective option for topical anaesthesia before vascular access when compared with lidocaine/prilocaine (Cream) based on the threshold stated by world health organization (3xGDP/capita) for low and middle-income countries.

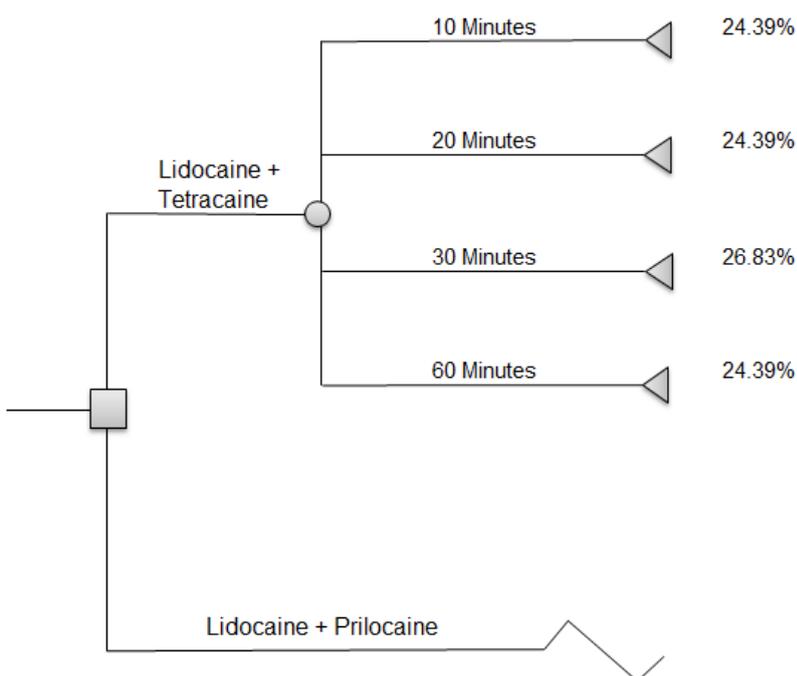


Fig. 1: Decision Tree Diagram

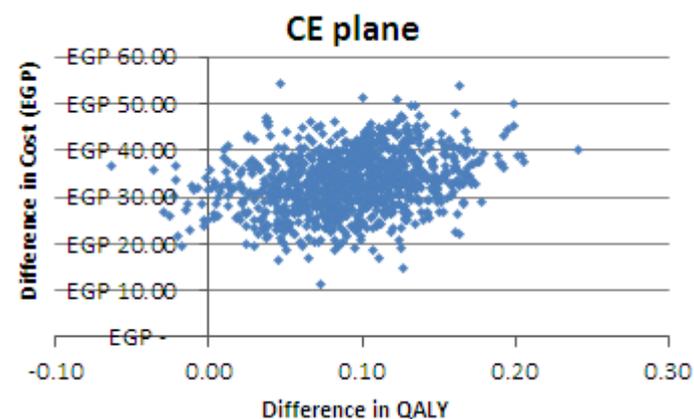


Fig. 2 : Cost effectiveness Plane

*Accepted to be published at ISPOR 5th Latin America Conference, CentroParque Event & Convention Center Santiago, Chile.

Cost-Effectiveness Analysis of Fidaxomicin versus Oral Vancomycin for the Treatment of Clostridium difficile Infection in Egypt

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Abstract

Objective: The aim of this study was to estimate the cost-effectiveness of oral fidaxomicin versus oral vancomycin for the treatment of clostridium difficile infections (CDIs) in patients aged 16 years or older.

Methods: We conducted a decision analytic model comparing fidaxomicin with vancomycin for treatment of CDIs based on the Egyptian current clinical practice. The model probabilities and utilities were derived from the available published sources. Direct medical costs were obtained from Ministry of health lists. Probabilistic sensitivity analysis (PSA) was conducted. No discounting was performed.

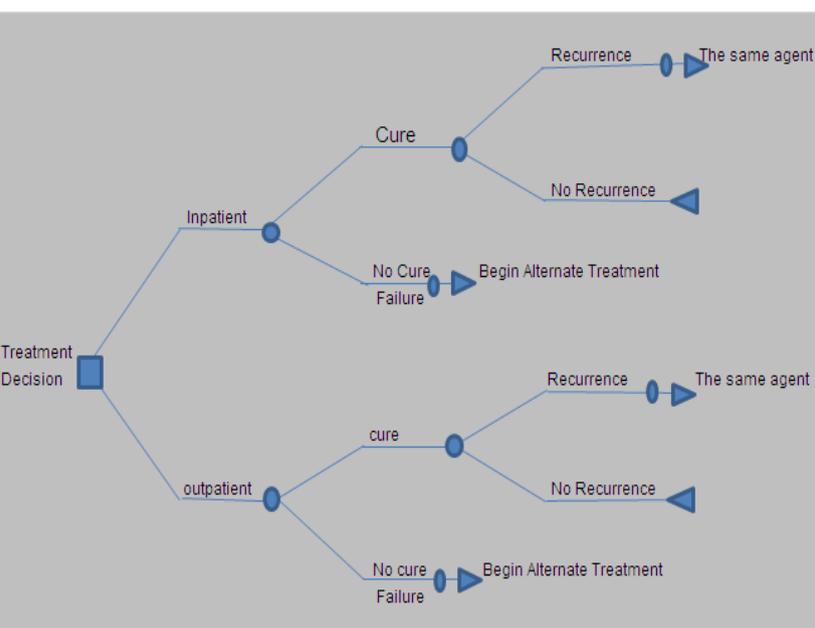


Fig. 1: Decision Tree diagram:

Results: The total quality-adjusted life-years (QALYs) of fidaxomicin was estimated to be 0.7986, whereas that of the vancomycin was estimated to be 0.7659 (with a net difference of 0.0327 QALYs). The total costs for fidaxomicin and vancomycin were 2335.97 EGP and 2182.69 EGP respectively (with a net difference of 153.28 EGP). Thus the incremental cost-effectiveness ratio (ICER) for fidaxomicin was EGP 4684.33 /QALY. Results from PSA indicate that the fidaxomicin had a 99% chance of being cost-effective at our EGP 70,000 per QALY threshold.

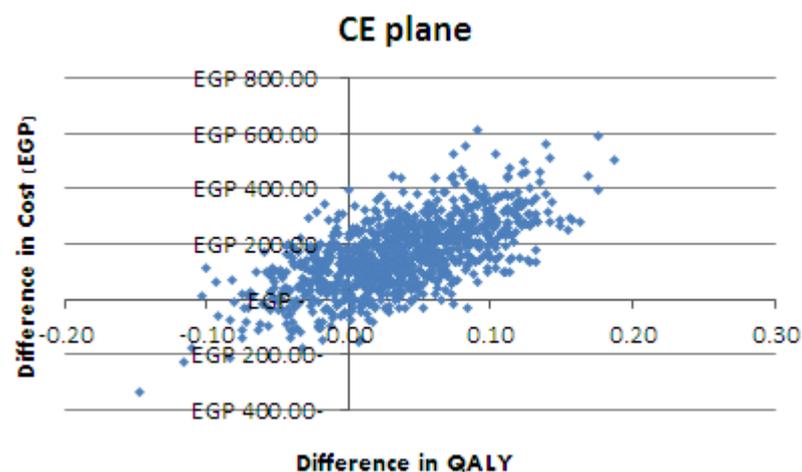


Fig. 2 : Cost effectiveness Plane

Conclusion: Compared with commonly accepted willingness-to-pay threshold in Egypt, the results of the model showed that fidaxomicin is a cost-effective option for the treatment of CDIs when compared with oral vancomycin.

*Accepted to be published at ISPOR 5th Latin America Conference, CentroParque Event & Convention Center Santiago, Chile.

Economic Evaluation Of Transarterial Chemoembolization With Lipiodol Versus Drug Eluting Bead For The Treatment Of Hepato-cellular Carcinoma In Egyptian Patients

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Abstract

Objective :

To evaluate the cost-effectiveness of conventional Transarterial chemoembolization with Lipiodol (cTACE) compared to Drug-Eluting-Bead-Chemoembolization (DEB TACE) in patients with hepatocellular carcinoma (HCC) from the Ministry of health perspective.

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 cTACE compared with DEB TACE. The clinical parameters were derived from a comparative study previously published. Direct medical costs were obtained from the Ministry of health hospitals in Egypt. Deterministic sensitivity analyses were conducted. No discounting was conducted.

Results:

The total survival days of cTACE strategy was estimated to be 414 days whereas that of DEB TACE strategy was estimated to be 651 days. The total costs for cTACE strategy and DEB TACE strategy were EGP 420,529 and EGP 1,351,105 respectively. Thus the incremental cost effectiveness ratio (ICER) for cTACE versus DEB TACE is EGP 3,926 per one day survival gained. The Deterministic sensitivity analysis demonstrated that survival associated by DEB TACE strategy and DEB-TACE operation costs have the greatest effect on the results.

Conclusion:

Results from this study suggest that employing a cTACE strategy is cost-effective intervention compared to DEB TACE in patients with hepatocellular carcinoma based on the willingness to pay threshold stated by world health organization (3xGDP/capita) for low and middle income countries.

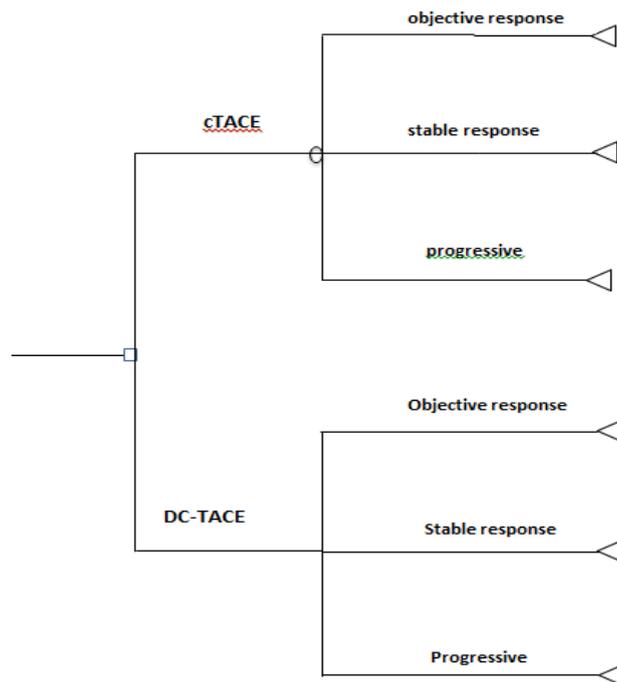


Fig. 1: Decision Tree Diagram

Tornado Diagram

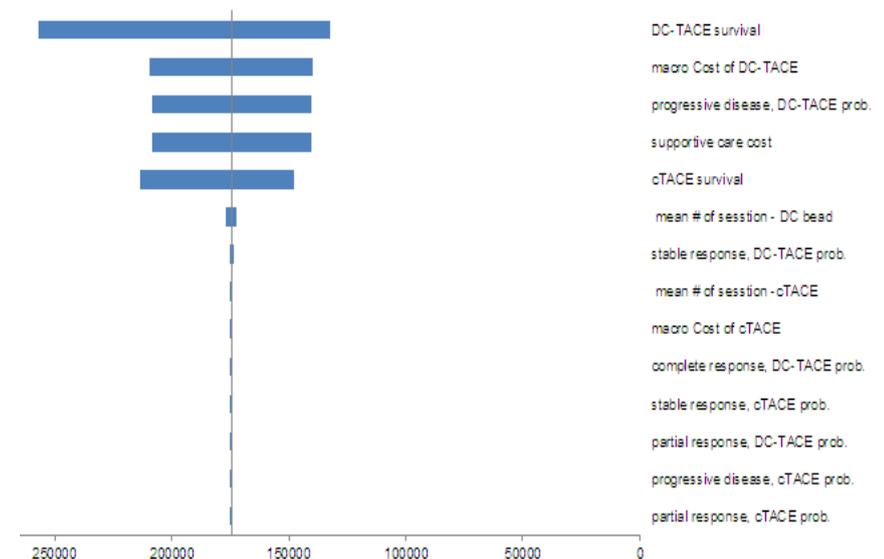


Fig. 2: One Way Sensitivity Analysis

*Accepted at ISPOR 20th Annual International Meeting, USA, May 16-20 2015, Philadelphia, USA .

Economic Evaluation of using Ipilimumab for unresectable or metastatic melanoma versus best supportive care in Egypt

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Abstract

Background:

Late-stage melanoma is devastating, with very few treatment options for patients, none of which previously prolonged a patient's life. Ipilimumab is the first therapy approved by the FDA to clearly demonstrate that patients with metastatic melanoma live longer by taking this treatment.

Objective:

To estimate the cost effectiveness of ipilimumab(3mg/kg) in unresectable or metastatic melanoma patients versus best supportive care (BSC) in Egypt.

Method:

A Markov model comprised of three health states (stable disease, disease progression, and death) was developed to represent relative efficacy, quality of life and costs of ipilimumab and best supportive Care. Transition probabilities were estimated based on progression free survival and overall survival derived from the randomized controlled trial MDX010-20. Health state utilities, major adverse events, and monitoring were obtained from published sources. Direct medical costs of the therapy and disease progression were included. All costs and effects were discounted at 3.5% annually, as recommended by Egyptian guidelines.

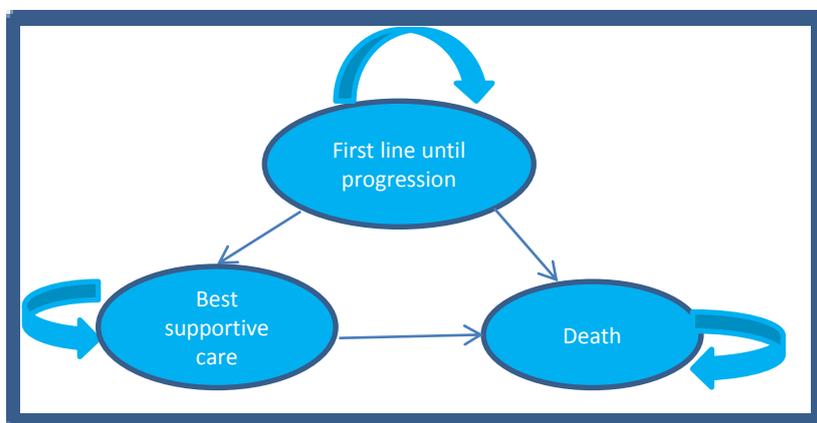


Fig. 1: Markov State-transition Bubble diagram:

Results:

Over 10 years time horizon, using Ipilimumab was estimated to cost an additional 647751 EGP, with an expected gain of 0.33 quality adjusted life years (QALY) or an incremental cost-effectiveness ratio (ICER) of 1,971,489 EGP per QALY gained. One-way sensitivity analyses indicated that the progressive disease utility and overall survival of both drugs had the major impact on the results.

Conclusion:

Compared with commonly accepted willingness-to-pay threshold using Ipilimumab is not cost-effective; and most likely to result in an ICER higher than the societal willingness-to-pay threshold limits.

Limitation:

MDX010-20 trial evaluated ipilimumab against Gp 100 Vaccine and the latter has no marketing authorization. Assumption had to be made that Gp 100 vaccine is clinically equivalent to BSC which is defined as disease management without active chemotherapy.

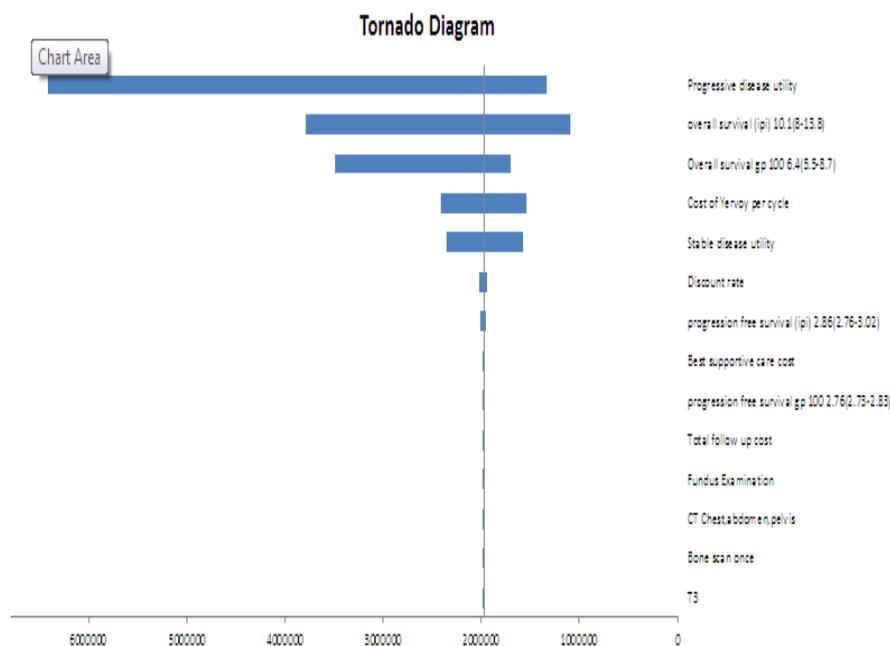


Fig. 2: One Way Sensitivity Analysis

The Latest News

Congratulations to [Shimaa Fouad, member of pharmacoeconomic unit](#), her research abstract entitled ‘Economic Evaluation of Transarterial Chemoembolization with Lipiodol Versus Drug Eluting Bead For The Treatment Of Hepatocellular Carcinoma In Egyptian Patients’ was accepted as a poster presentation during **ISPOR 20th Annual International Meeting, USA, May 16-20 2015, Philadelphia, USA.**

Congratulations to [Hossam M. Abdallah, member of pharmacoeconomic unit](#), his research abstracts entitled ‘Economic Evaluation Of Lidocaine/Tetracaine Patch Versus Lidocaine/Prilocaine Cream For Topical Anaesthesia Before Vascular Access’ and ‘Cost-effectiveness Analysis Of Fidaxomicin Versus Oral Vancomycin For The Treatment Of Clostridium Difficile Infection In Egypt’ were accepted as poster presentation during **ISPOR 5th Latin America Conference 6-8 September 2015 CentroParque Event & Convention Center Santiago, Chile.**

[Gihan H. Elsis, Head of pharmacoeconomic unit](#), has presented a poster entitled ‘Pharmacoeconomic implementation in Egypt’ during the **Second Arab Conference on Food & Drugs: Present Challenges & Future Requirements. Sharm El Sheikh, Arab republic of Egypt, 11-13 April 2015.**

[Asmaa Saad , member of pharmacoeconomic unit](#), has Presented podium presentation entitled ‘Pharmacoeconomic Unit: a Success Story from Egypt’ during **Kuwait Conference and Exhibition on national Health economics-Ministry of Health.**



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