



Economic Value VS Price in Non-Small-Cell Lung Cancer. Egypt Case

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Abstract

Background: Selecting the right patient for the right treatment with efficient cost is the main goal for effective health system.

According to national registries Lung cancer comes at top 20 cause of death in and third rank in mortality rates among all cancer types Egypt. Due to previous facts and high population for Egypt which categorized as low income country which lead to Increase economic burden on health care system and creating a need for managing and minimizing that burden plus how policy maker enhance patient's outcomes (clinical aspect – economic aspect– quality of life aspect).

The objective of this study is policy analysis for Health care policy maker in oncology for diversion of concept for reimbursement system from price into economic value and it is consequences on patient's outcomes and health system resources. By analyzing Reimbursement case for oral Vinorelbine at Non-Small-Cell Lung Cancer.

Methods: A cost-effectiveness analysis from the perspective of the Ministry of health was conducted.

Cost - effectiveness analysis (CEA) and cost-utility analysis (CUA) in medical decision making from multiple perspectives. It will describe situations in which CEA is the acceptable method of Pharmacoeconomics (PE) analysis, the components included, computational methods, cost composition, effectiveness metrics [e.g., life-years saved (LYS) quality-adjusted life-years, new thrombosis avoided]; incremental vs. average cost-effectiveness ratios; primary and intermediate clinical outcomes; sensitivity analysis; absolute vs. relative values and use of CEA and CUA in medical decision making. A Markov model was applied with three health states.

A Markov model is a stochastic method for randomly changing systems where it is assumed that future states do not depend on past states. These models show all possible states as well as the transitions, rate of transitions and probabilities between them.

Markov models are often used to model the probabilities of different states and the rates of transitions among them. The method is generally used to model systems. Markov models can also be used to recognize patterns, make predictions and to learn the statistics of sequential data.

Utility data were incorporated in the model to make adjusted results.

In economic evaluation of healthcare interventions utilities (also called health state preference values) are used to represent the strength of individuals' preferences for different health states. When utility values are averaged over a population of responders they can be considered to be valuations of health states. Conventionally the valuations fall between 0 and 1, with 1 representing the valuation of a state of perfect health and 0 representing the valuation of death (non-existence). In some scoring systems a negative utility value is also possible, which indicates that a (very poor) health state is valued as less preferable than death. Sequences of utility values reported over periods of time for individual patients or cohorts of patients may be aggregated to derive quality-adjusted life years, commonly used as outcomes in economic evaluation. Several methods are used to obtain health state preference values (utilities).

Costs used were the local ones according to the national fund list. Discounting was applied at 3.5% annually both on costs and benefits. The results obtained were in term of ICER and number of QALYs. Robustness of our findings was checked using sensitivity analyses. Results are expressed in QALY terms.

Results: During the three-year time horizon, the total QALY gained for vinorelbine oral was (0.76 QALY) and for paclitaxel IV. (0.59 QALY) was gained. (1.8 QALY) for pemetrexed (VS 1.7) QALY vinorelbine oral in pemetrexed (VS vinorelbine oral the total cost difference is (182.45 EGP) for pemetrexed vs (174.02) EGP) That yields a difference of in QALY. Vinorelbine oral is likely going to be economically dominating the paclitaxel strategy, producing more benefit at a lower cost.

When conducting one-dimensional sensitivity analysis using plausible ranges, oral remained economically dominant in all cases.

Conclusion: Using oral Vinorelbine will reduce economic burden for Non-Small-Cell Lung Cancer plus outcomes enhancement for patients at it will represent a good opportunity for health care policy makers for efficient resources management.

Keywords: Lung Cancer; Vinorelbine; Economic Value

Introduction

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Methodology

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The study adopted the half-cycle corrected Markovian chain model with three mutually exclusive health states: first line until progression, progression disease (best supportive care), and death, as shown in (Figure 1). Markov model is a type of decision model that is used for analyzing clinical changes that are ongoing over time.

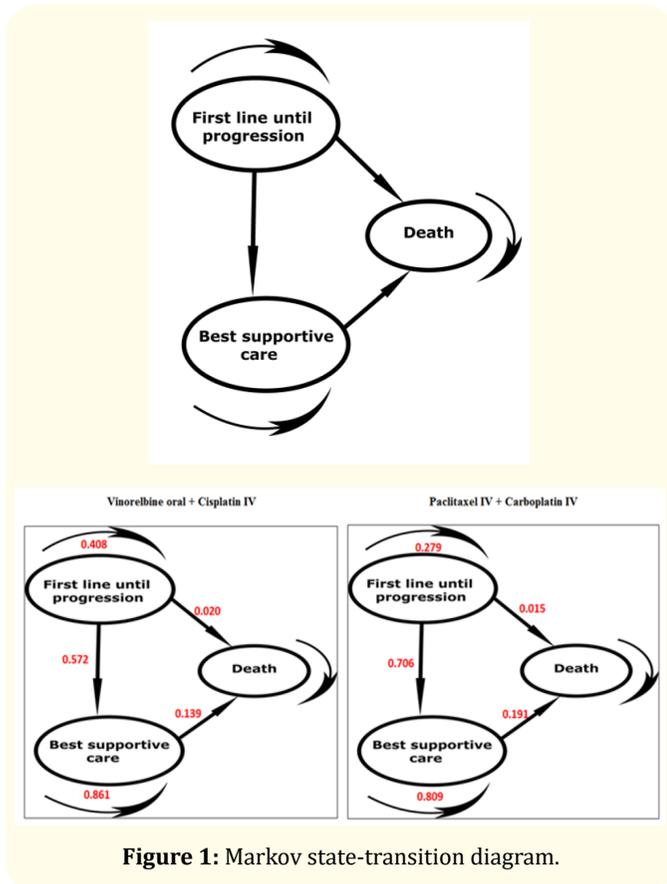


Figure 1: Markov state-transition diagram.

The structure of this model reflects the natural history of advanced non-SCLC and current treatment strategy compared to the medical literature related to the disease. The model conforms to real practice of management of advanced non-SCLC in Egypt and was validated by experts.

Quality of life questioner was developed using (EOTRC) templet patients interviews was conducted for collecting quality of life data for comparing real world quality of life data to study data.

Resources and budget analysis was conducted at 3 years' time horizon

Results and Discussion

During the three-year time horizon, the total QALY gained for vinorelbine oral was (0.76 QALY) and for paclitaxel IV. (0.59 QALY) was gained. (1.8 QALY) for pemetrexed (VS 1.7) QALY vinorelbine oral in pemetrexed (VS vinorelbine oral the total cost difference is (182.45 EGP) for pemetrexed vs (174.02) EGP) That yields a difference of in QALY. Vinorelbine oral is likely going to be economically dominating the paclitaxel strategy, producing more benefit at a lower cost.

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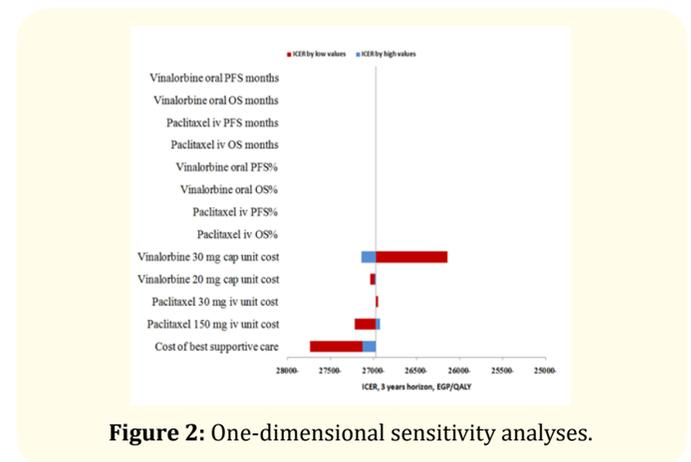


Figure 2: One-dimensional sensitivity analyses.

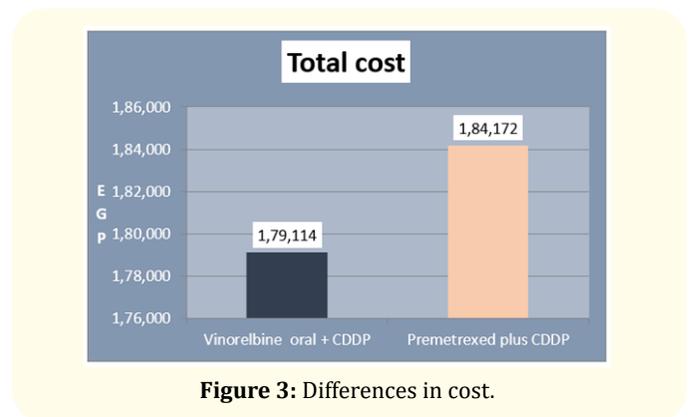


Figure 3: Differences in cost.

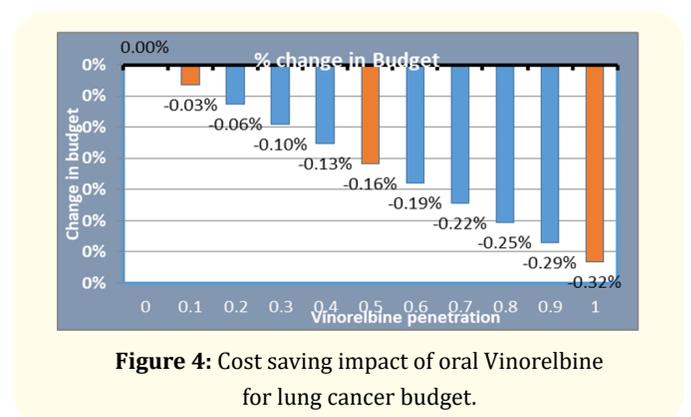


Figure 4: Cost saving impact of oral Vinorelbine for lung cancer budget.

Conclusion

To enhance health care resources in Non-Small-Cell Lung Cancer at high population country with limited resources like Egypt health care policy maker should take into consideration economic values for different medical procedures because economic value when compared to price value is the efficient way for health system enhancement plus resources utilizations and patients outcomes enhancement.

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