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Budget impact analysis of ondansetron oral dissolving film vs oral solution in the chemotherapy induced nausea and vomiting for Egyptian patients

Gihan Hamdy Elsisi[1-2], Hany William3, Wessam Elsherief3, Yousra Hamed1, Mohamed Aly4, Noha Hamed5 , Rania Hussein5

HTA Office, Cairo, Egypt[1].
Economics Department, American University in Cairo, Egypt[2].
Clinical oncology department, Kasr Alaini, Cairo university, Egypt 3
Market Access Department, Nerhado, Cairo Egypt4
Pharmacy Department, Specialized Medical Centers, Ministry of Health5

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Introduction:

Chemotherapy-induced nausea and vomiting (CINV) is among the most distressing adverse effects related to chemotherapy, significantly impacting treatment compliance and patients' quality of life (QOL). Determination of patient-related risk factors in addition to emetogenic risk is essential for determining appropriate rescue medicine and tailoring anti-emetic regimens. Ondansetron, a selective 5-HT3-RA drugs, and one of the most commonly prescribed medicines for prophylaxis against CINV among cancer patients. It is available in many formulations, including oral dissolving film (ODF), which is an oral formulation with proven efficacy, aiming at delivering medicines when conventional oral formulations might be inconvenient. The aim of this study is to assess the budget impact of adopting ondansetron ODF as an alternative formulation to conventional oral tablets and intravenous (IV) ondansetron for the prophylaxis against CINV among adult cancer patients receiving HEC or MEC, from the Egyptian public healthcare sector perspective, over three-year time horizon.

Methodology:

A static budget impact analysis model was developed in Microsoft Excel to evaluate the economic consequences of adopting ondansetron ODF. The model included both incident and prevalent cancer populations. The model parameters and demographic assumptions were validated by our expert panel of local experts to reflect the national practice (Specialized Medical Centers) in Egypt. Two scenarios were modeled. The current scenario reflected the current practice, and included two subpopulations based on adherence rates to prophylactic therapy.

Clinical efficacy inputs were derived primarily from randomized control trials, reporting efficacy of ondansetron among compliant and non-compliant groups. The model evaluated direct medical costs, including prophylactic anti-emetic regimens and management of CINV episodes, and indirect costs representing activity impairment and work loss during extended CINV episodes. The model evaluated ODF ondansetron adoption over three-year time period.

Results:

The adoption of ondansetron ODF resulted in total direct medical cost savings of EGP 1.9 million, EGP 5.5 million, and EGP 9 million, during the first, second, and third years, respectively. Total direct budget savings across 3 years estimated EGP16 million. Indirect cost savings were also remarkable, reflecting reduction in activity impairment and work time lost during extended CINV episodes in the new scenario. Indirect budget savings were estimated at EGP 89.5 million, EGP 263 million, and EGP 436 million, over the three-year time horizon.

Conclusion:

Our budget impact analysis demonstrated that adopting ondansetron ODF in Egypt's specialized medical center (SMC) hospitals can provide a clinically comparable, yet economically superior alternative to oral tablet and IV formulations for the prevention of CINV among patients on high emetogenic (HEC) and moderate emetogenic (MEC). Integrating it into the local practice and Egyptian guidelines represents a strategic approach to enhance patients experience and achieve substantial cost savings in the Egyptian healthcare sector.

Direct budget impact			
	Year1	Year2	Year3
Prophylactic costs	EGP 447,104	EGP 1,312,588	EGP 2,178,072
CINV episodes management			
Acute			
Mild CINV episode	EGP (21,898)	EGP (64,288)	EGP (106,677)
Mod/Sev CINV episode	EGP (853,026)	EGP (2,504,277)	EGP (4,155,528)
Total acute episode costs BI	EGP (874,924)	EGP (2,568,564)	EGP (4,262,205)
Delayed			
Mild CINV episode	EGP (17,228)	EGP (50,577)	EGP (83,926)
Mod/Sev CINV episode	EGP (1,421,368)	EGP (4,172,793)	EGP (6,924,218)
Total delayed episode costs BI	EGP (1,438,596)	EGP (4,223,370)	EGP (7,008,143)
Total BI of CINV episode management	EGP (2,313,520)	EGP (6,791,934)	EGP (11,270,348)
Total BI of direct medical costs of CINV	EGP (1,866,417)	EGP (5,479,346)	EGP (9,092,276)
Indirect budget impact			
CINV episodes management			
Acute			
Mod/Sev CINV episode	EGP (39,273,735)	EGP (115,298,158)	EGP (191,322,582)
Delayed			
Mod/Sev CINV episode	EGP (50,217,389)	EGP (147,426,072)	EGP (244,634,756)

Table (1): Base-Case resulted costs

For correspondence: Gihan.elsisi@htaoffice.com