

# POPULATION-BASED BUDGET IMPACT MODEL OF APREPITANT (EMEND®) IN MODERATELY EMETOGENIC CHEMOTHERAPY

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**INTRODUCTION:** Chemotherapy induced nausea and vomiting (CINV) remains a major adverse effect of cancer chemotherapy. Aprepitant, first NK1 antagonist, indicated for prevention of nausea and vomiting during cisplatin based highly emetogenic chemotherapy, has obtained an extension of indication to moderately emetogenic chemotherapies (MECs). In combination with corticoids and 5-HT3 antagonist on day 1, and alone on day 2 and 3, aprepitant demonstrated a superior efficacy in the complete response (no vomiting and no rescue treatment) over standard therapy (corticoid and 5-HT3 antagonist on day 1, and 5-HT3 antagonist alone on day 2 and 3) (50.8% v 42.5%; p = 0.015). Numerically more patients in the aprepitant group reported minimal or no impact of CINV on daily life (63.5% v 55.6%; p = 0.19).

**OBJECTIVES:** To assess the budget impact for the French Health Insurance funds of aprepitant specifically related to this new indication.

## METHODS

### 1. Definition of the patient population

Patients receiving MECs associated with anti emetic prophylaxis including corticoid and a 5-HT3 antagonist. MECs were defined according to the recommendations of the Multinational Association of Supportive Care in Cancer [1].

**Data source:** IMS Health ONCO Analyser (2004)

### 2. Costs of antiemetic treatments

Patients were split into 2 groups: those receiving a 5-HT3 antagonist both in the acute and the delayed phase and those receiving a 5-HT3 antagonist only during the acute phase.

For each group, cost of anti emetic therapy per cycle was calculated.

Two types of costs were calculated:

- one for public hospitals (named "hospitals") using hospital listing price,
  - and one for private hospitals and retail pharmacies (named "private/ambulatory care") based on ex factory price.
- For both hospital and private/ambulatory care, the cost of aprepitant was based on an ex factory price of 20 € for the acute phase and of 40 € in the delayed one.

Costs are fully covered by the French Health Insurance

**Data source:** IMS Health ONCO Analyser (2004) and GERS (2004)

### 3. Budget Impact model

The budget impact model was built over a four year period (2006-2009).

#### 3.1 Base-line assumptions

- Number of MEC cycles containing a standard antiemetic treatment with a 5-HT3 antagonist remain stable over the study period.
- During the acute phase, 45 % and 55 % of patients receive aprepitant respectively in private/ambulatory care and in public hospitals (IMS EHPP- LMHP 2004).

- During the delayed phase, 76 % and 24 % of patients receive aprepitant respectively in private/ambulatory care and in public hospitals (IMS EHPP- LMHP 2004).
- The percentage of use of aprepitant within patients treated with MEC and the percentage of use of aprepitant in the delayed phase as a the substitution to 5-HT3 antagonists are displayed in the table below. Mean duration of use of 5-HT3 during the delayed phase is 3,1 days (IMS ONCO Analyser).

	Year 1	Year 2	Year 3	Year 4
% of use in MEC cycles	10 %	15 %	20 %	25 %
% of use in the delayed phase as a substitution to 5-HT3 antagonists	70 %	80 %	90 %	95 %

#### 3.2 Calculations

This budget impact is only based on drug costs.

Results are expressed for 10,000 (hypothetical) moderately emetogenic chemotherapy (according to MASCC definition) cycles in combination an anti emetic regimen including a 5-HT3 antagonist and a corticoid.

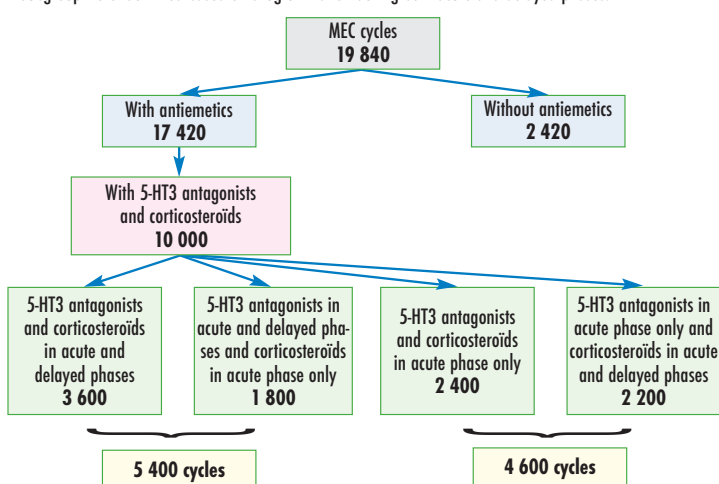
#### 3.3 Sensitivity analyses

- Use of aprepitant in MEC patients: 25 %, 30 %, 57 % and 67 % respectively the first, second, third and the fourth year
- 10 % discount of the hospital price of the 5-HT3 antagonists
- Variation of the split between private/ambulatory care and public hospitals of aprepitant utilization during the acute phase: respectively 30 % and 70 %.

## RESULTS

### 1. Patients population

Among patients receiving antiemetic prophylaxis including corticoid and a 5HT3 antagonist during MEC, 4 subgroup were identified based on drug utilization during both acute and delayed phases.



### 2. Costs of antiemetic treatments

Average cost of 5-HT3 antagonists per cycle (€ 2004) according to the type of antiemetic regimen (n = 10 000)	Private/ambulatory care	Hospitals
5-HT3 antagonist and corticosteroids administered during acute phase only (n = 2400)	19,47	27,75
5-HT3 antagonist administered during the acute phase only and corticosteroids administered during the acute and delayed phase (n = 2200)	16,84	23,58
5-HT3 antagonist and corticosteroids administered during the acute and delayed phases: (n = 3600)		
• acute phase	18,38	26,83
• delayed phase	47,19	75,04
5-HT3 antagonist administered during the acute and delayed phases and corticosteroids during the acute phase only: (n = 1800)		
• acute phase	22,28	31,87
• delayed phase	58,98	94,7

### 3. Impact budget under base-line assumptions

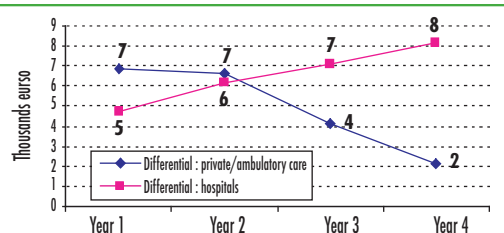
The impact budget due to aprepitant does not exceed a net increase of 3 % per year.

Euros (000)	Year 1	Year 2	Year 3	Year 4
Without aprepitant	466	466	466	466
With aprepitant	477	478	477	476
Net budget impact	12	13	11	10
% of increase	2.5%	2.8%	2.4%	2.2%

### Study limitations:

- This budget impact analysis was only based on drug cost and does not take into consideration the reduction of health care resources related to better control of vomiting. From this perspective the results can be considered as conservative.
- Hospital drug costs were based on the listing prices on which some discounts may be confidentially applied.
- There is no historical basis for reliably estimating penetration rate of a new technology

**CONCLUSION:** For an annual net budget increase of less than 3 %, use of aprepitant significantly reduce vomiting and improve activities of daily living in cancer patients compared to a standard therapy comprising 5-HT3 antagonists in MEC.



### 4. Sensitivity analyses

#### 4.1 With an increase of use in MEC cycles

Euros (000)	Year 1	Year 2	Year 3	Year 4
Without aprepitant	466	466	466	466
With aprepitant	494	500	498	493
Net budget impact	29	34	32	28
% of increase	6.2 %	7.4 %	6.9 %	5.9 %

#### 4.2 With a 10% discount of the price of 5-HT3 antagonists

Euros (000)	Year 1	Year 2	Year 3	Year 4
Without aprepitant	451	451	451	451
With aprepitant	463	465	464	463
Net budget impact	12	14	12	12
% of increase	2.7 %	3.0 %	2.7 %	2.6 %

#### 4.3 With a variation of the split between private/ambulatory care and public hospitals of aprepitant utilization

Euros (000)	Year 1	Year 2	Year 3	Year 4
Without aprepitant	479	479	479	479
With aprepitant	490	491	489	487
Net budget impact	11	12	10	9
% of increase	2.3 %	2.5 %	2.1 %	1.9 %

