Incidence of Chemotherapy Induced Nausea and Vomiting Following Prophylaxis with I.V. 5-HT$_3$-RA Antiemetics with and without Subsequent Oral 5-HT$_3$-RAs

Russell L. Knoth, Ph.D.[1], Claudio Faria, Pharm.D.[1], Norman Nagl, Ph.D. [1], Annette Powers, Pharm.D., MBA[1], Eunice Chang, Ph.D.[2], Michael Broder, M.D.[2]

[1]Eisai, Inc., Woodcliff Lake, NJ 07677; [2]Partnership for Health Analytic Research, Beverly Hills, CA 90212

Background

- Chemotherapy-induced nausea and vomiting (CINV) is associated with significant health care utilization and costs.[1,2]
- The class of medications known as 5-hydroxytryptamine-3 serotonin receptor antagonists (5-HT3-RA) are effective prophylaxis for CINV. [3,4] One 5-HT3-RA, palonosetron, is indicated to prevent both acute (0 to 24 hours after chemotherapy) and delayed (25 to 120 hours after chemotherapy) CINV, but as a branded agent, may be more costly than the generic alternatives.
- Redosing with a generic oral 5-HT3-RA in the delayed phase has been proposed as a way to control CINV while keeping costs low.

Study Objectives

To compare costs and CINV-related efficacy between prophylactic IV palonosetron alone and other IV 5-HT$_3$-RAs in combination with redosing of oral 5-HT$_3$-RAs in the delayed phase.

Methods

Retrospective cohort analysis using OptumInsight health insurance claims database.

Inclusion Criteria:

- Adults with breast, lung, or colon cancer, AND
- Highly emetogenic chemotherapy (HEC) or moderately emetogenic chemotherapy (MEC) between 4/1/08 and 3/31/09; AND
- IV 5-HT3-RA on day 1 of chemotherapy (index day)

Exclusion Criteria:

- Chemotherapy in the preindex period (6 months before the index date)
- Not continuously enrolled from 6 months before CT to either the next CT cycle, or up to 30 days
- More than one day of HEC or MEC chemotherapy within a cycle
- More than one IV 5-HT3-RA on the index date
- Palonosetron used with additional oral antiemetics, or other IV 5HT3-RA users without oral 5-HT3-RA

Study Cohorts:

- Palonosetron users **without** any additional oral antiemetics (of any type, including 5-HT3-RA, NK1, etc)
- Other IV 5-HT3-RA users (dolasetron, granisetron, ondansetron) **with** additional oral 5-HT3-RA (who may also have used other oral antiemetics)

Baseline Measures:

- Age and gender, HEC vs. MEC, cancer type, Charlson Comorbidity Index (CCI)

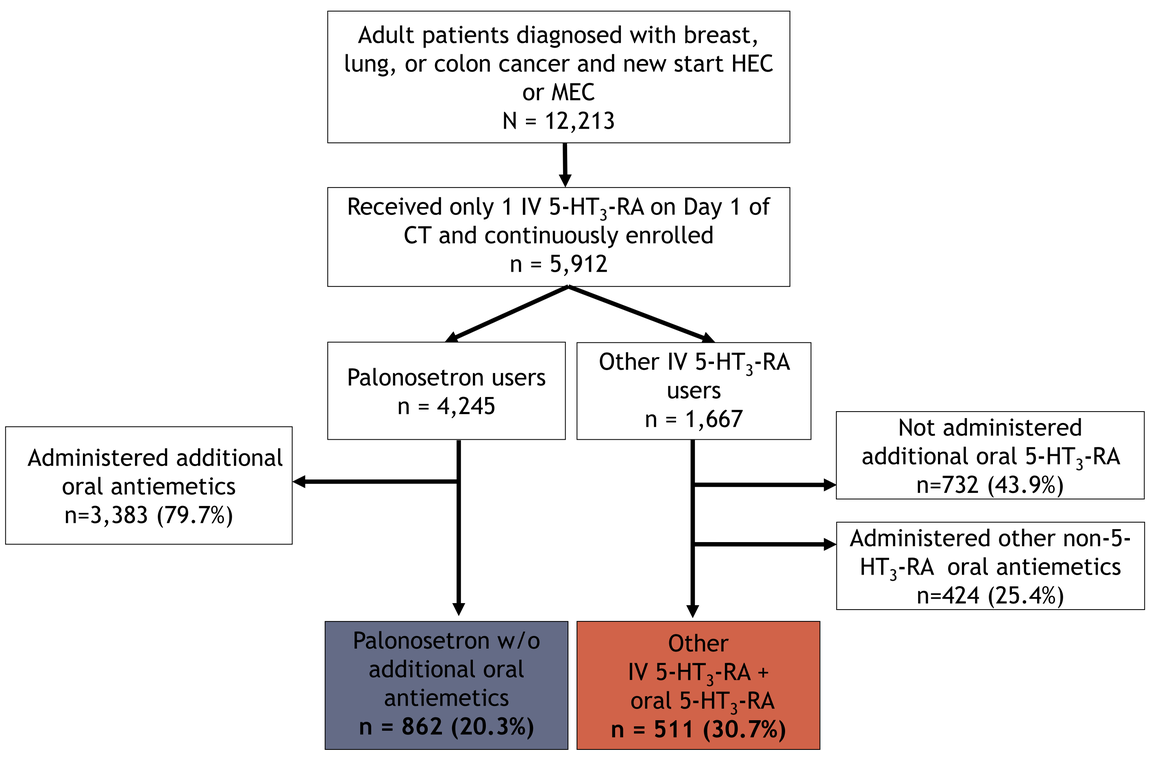
Study Outcomes: (measured from Day 2 of CT to end of follow-up)

- CINV (defined by CINV-related utilization: rescue antiemetic or claim with primary diagnosis of nausea/vomiting or volume depletion)
- Total and CINV-related costs

Statistical Analysis:

- Multivariate analysis, logistic regression modeling and analysis of covariance (ANCOVA)

Results

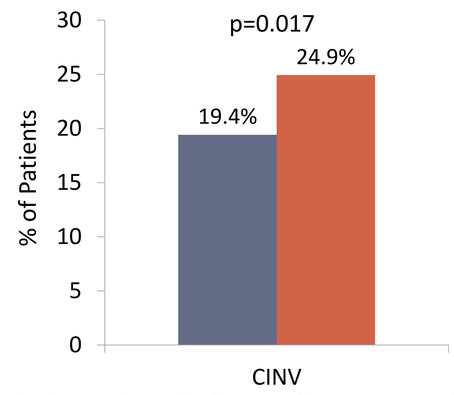


- 1,373 patients total with 862 (62.8%) initiated on antiemetic prophylaxis therapy with palonosetron and 511 (37.2%) with other IV 5-HT3-RAs.
- Palonosetron patients were older (mean 58.6 vs. 55.2 years), had a lower proportion of women (74.2% vs. 80.0%), and had a lower proportion of breast cancers (52.2% vs. 60.1%) than patients treated with other 5-HT3-RAs.

Results

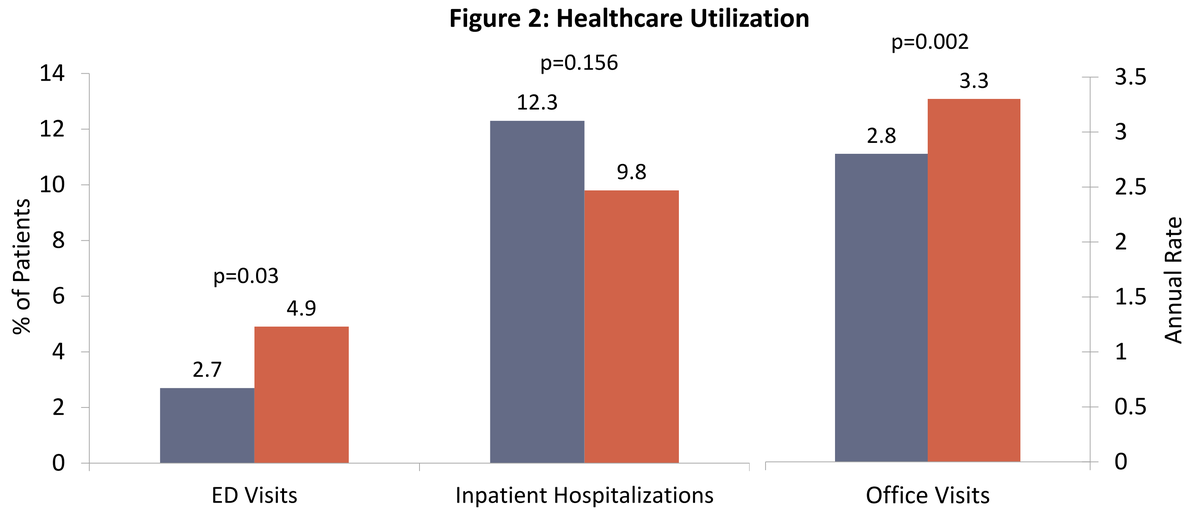
- Patients who received palonosetron alone were significantly less likely to have CINV (defined by a diagnosis of nausea, vomiting, or dehydration, or a need for rescue medication infusion) (Figure 1).

Figure 1: Proportion with CINV



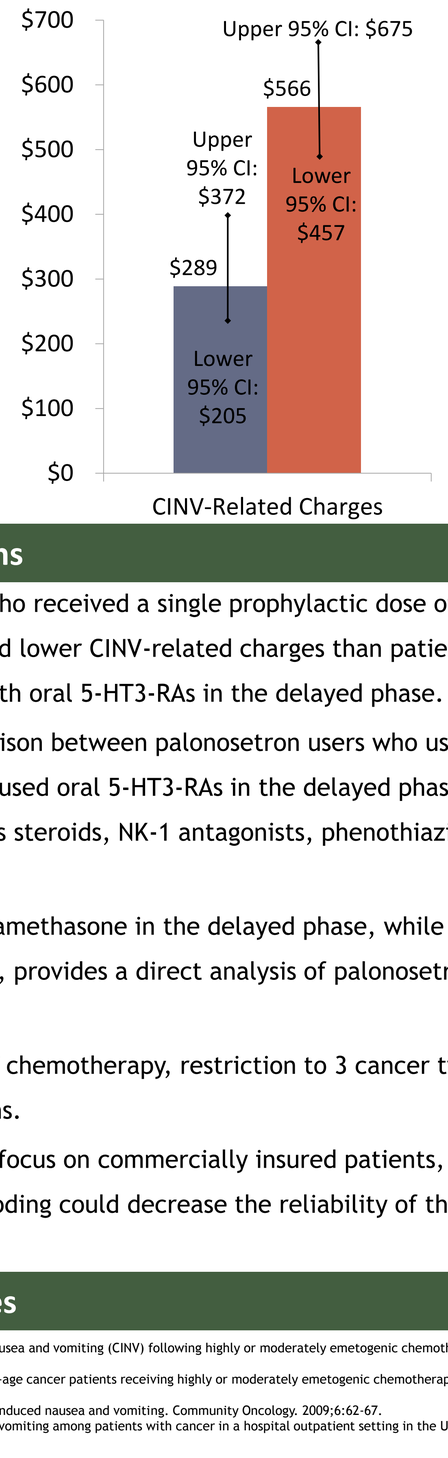
- Patients who received prophylactic IV palonosetron had significantly fewer office visits and emergency department (ED) visits than the comparison group (Figure 2).

Figure 2: Healthcare Utilization



- The palonosetron only group had significantly lower CINV-related healthcare charges vs. patients who received other IV 5-HT3-RAs with redosing of oral 5-HT3-RAs in the delayed phase ($283 vs. $575, p<0.001).
- Charges for non-chemotherapy medications were significantly lower for the palonosetron only group than patients administered other IV 5-HT3-RAs in the delayed phase ($448 vs. $801, p<0.001).
- Total healthcare charges were not significantly different between groups ($10,227 vs. $12,140, p=0.09), nor were charges for emergency department visits ($14 vs. $218, p=0.11) or hospitalizations ($2,824 vs. $3,235, p=0.66).
- In the multivariate analysis (controlling for age, gender, emetic risk of index chemotherapy, cancer type, and CCI):
  - The risk of CINV was significantly lower in the palonosetron only group (odds ratio=0.67; p=0.006)
  - CINV-related health care charges were $277 lower for patients who received IV palonosetron vs. another 5-HT$_3$-RA with redosing of oral 5-HT$_3$-RAs in the delayed phase (p<0.001) (Figure 3).

Figure 3: Charges for CINV: Adjusted Means and 95% Confidence Intervals



Conclusions

- In both unadjusted and adjusted analyses, patients who received a single prophylactic dose of IV palonosetron had a significantly lower risk of CINV and lower CINV-related charges than patients administered other IV 5-HT3-RAs, despite redosing with oral 5-HT3-RAs in the delayed phase.
- Strengths of this study include a conservative comparison between palonosetron users who used no oral antiemetics of any type to a group that not only used oral 5-HT3-RAs in the delayed phase, but also may have used other oral antiemetics such as steroids, NK-1 antagonists, phenothiazines, etc.
  - Exclusion of HEC patients receiving oral dexamethasone in the delayed phase, while not consistent with the current standard of care, provides a direct analysis of palonosetron alone.
- Limitations include lack of inclusion of later cycles of chemotherapy, restriction to 3 cancer types, and examination of single-day chemotherapy regimens.
- Limitations common to all claims studies include the focus on commercially insured patients, lack of detailed clinical data, and the potential that miscoding could decrease the reliability of the results.

References

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