Neurokinin-1 Antagonist Therapy Optimization Through a Systematic Approach at the University of New Mexico Comprehensive Cancer Center

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Introduction

Chemotherapy-induced nausea and vomiting (CINV) is one of the most common side effects of chemotherapy and decreases quality of life. First-line management of CINV for highly emetogenic regimens includes combinations of serotonin (5-HT3) receptor antagonists, neurokinin-1 (NK-1) receptor antagonists, and corticosteroids. At the University of New Mexico Comprehensive Cancer Center (UNMCCC), the formulary NK-1 receptor antagonists include aprepitant and fosaprepitant. The standard regimen for aprepitant is 125 mg prior to chemotherapy on day 1, followed by 80 mg on days 2 and 3. Fosaprepitant is a single dose of 150 mg. Prior to pharmacist intervention, the majority of NK-1 antagonist therapy consisted of a single dose of aprepitant 125 mg during an infusion appointment. Our pharmacists were concerned that patients were not receiving a prescription for the remaining two 80 mg aprepitant capsules. To address this concern, the antiemetic order sets began to be updated to fosaprepitant in February 2022.

Purpose

- Primary objective:
  - To assess guideline adherence of NK-1 receptor antagonists at UNMCCC as the result of pharmacist intervention through updated antiemetic order sets.
- Secondary objectives:
  - To determine if updating the antiemetic order sets lowered the number of hydration infusions and doses of intravenous (IV) ondansetron administered for breakthrough CINV following chemotherapy.
  - To determine if updating the antiemetic order sets lowered the cost of NK-1 receptor antagonist usage for the UNMCCC.

Methods

This study utilized retrospective chart review to identify adult patients at the UNMCCC infusion clinic who received chemotherapy and an antiemetic regimen containing an NK-1 antagonist between July 2018 and July 2023. Guideline adherence to NK-1 antagonist was defined as patients who received a dose of 125 mg aprepitant followed by a prescription for two capsules of 80 mg aprepitant or a single dose of fosaprepitant 150 mg. In addition, a prescription for refills of the 80 mg doses was considered compliant for an equal number of 125 mg aprepitant doses, as well as multi-day regimens and protocol-directed alternative dosing for aprepitant. Breakthrough CINV was defined as one or more hydration infusions or doses of IV ondansetron administered between one- and ten-days following chemotherapy or before the next dose of chemotherapy if earlier than 10 days, unless it was part of a planned multi-day regimen. Hydration infusions and IV ondansetron doses administered during a hospital visit were excluded. For cost analysis, we used average wholesale prices (AWPs) as of February 2024. Data was collected from electronic medical records on MOSAIQ and CERNER Power Chart. Data was analyzed using Python with coding assistance from ChatGPT. ChatGPT was not used for the development of poster content, including text or graphics. This study received approval from the Institutional Review Board.

Results

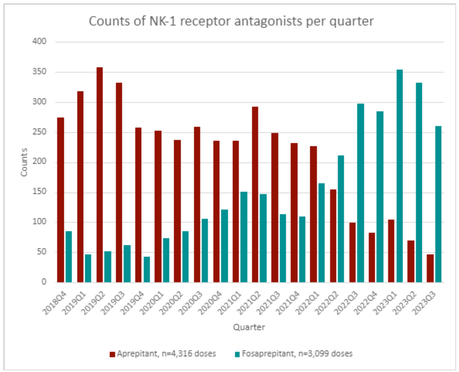

Figure 1. Pharmacist intervention clearly led to increased fosaprepitant and decreased aprepitant usage.

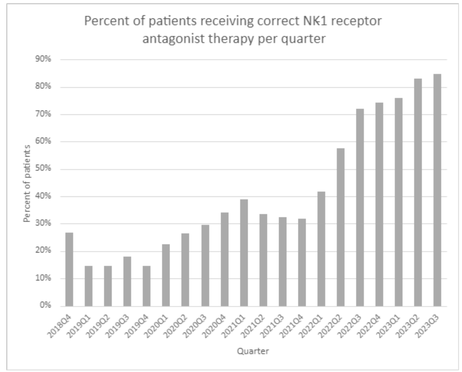

Figure 2. Pharmacist intervention clearly led to an increased percent of patients receiving correct NK-1 receptor antagonist therapy, primarily because providers rarely prescribed the standard regimen of aprepitant.

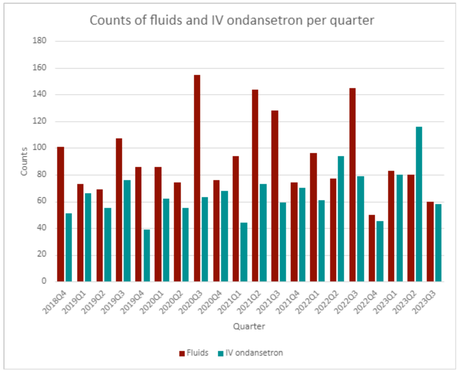

Figure 3. There was not a clear trend in change of hydration infusions or doses of IV ondansetron administered during the transition to fosaprepitant.

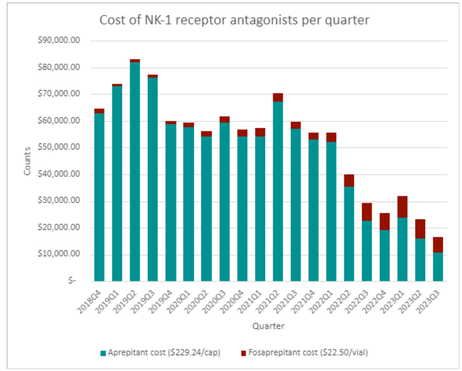

Figure 4. UNMCCC NK-1 receptor antagonist cost clearly decreased during the transition to fosaprepitant, a less expensive agent.

Results

The percentage of aprepitant doses compared with fosaprepitant doses associated with post-chemotherapy hydration infusions administered was not different (26% and 24%, respectively ($p>0.05$)). There was a small difference in the percentage of post-chemotherapy doses of IV ondansetron administered with patients receiving aprepitant compared to fosaprepitant (17% and 19%, respectively $p<0.05$). This small difference may not be clinically meaningful, especially since we did not control for patient characteristics, type of cancer, chemotherapy regimen, or preferences in prescribing.

Conclusion

Systematic pharmacist interventions, including updates to order sets, may improve quality of care, as well as reduce costs. Anecdotally, through discussions with the providers, we learned that some were unaware of the standard regimen of aprepitant, and they appreciated the ease of the new antiemetic order sets. In addition, it is more convenient for the patients. Our research showed that correct NK-1 antagonist prescribing for CINV increased while reducing costs. A limitation to our pricing model is that while fosaprepitant is more cost-effective as of February 2024, we did not use historical pricing of aprepitant and fosaprepitant. Another limitation is that we were unable to differentiate between planned versus unplanned visits for hydration infusion and doses of IV ondansetron administration, and we did not control for preferences in prescribing. Finally, hydration infusions and doses of IV ondansetron administered were only surrogate endpoints to nausea and vomiting, meaning a true difference may exist with more robust endpoints. Future research should evaluate patient comfort with aprepitant versus fosaprepitant.

References

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2. Rao KV, Faso A. Chemotherapy-induced nausea and vomiting: optimizing prevention and management. Am Health Drug Benefits. 2012;5(4):232-240.

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Disclosure:

Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.