# Pharmacist Impact on the Occurrence of Chemotherapy-Induced Nausea and Vomiting


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## Background

- Chemotherapy-induced nausea and vomiting (CINV) can affect up to 80% of cancer patients and lead to clinical complications, including dehydration, metabolic imbalances, decline in patient's performance status, or poor compliance[1]
- CINV may necessitate frequent doctor visits, adding to the economic burden in cancer treatment[2]
- The National Comprehensive Cancer Network (NCCN) Guidelines recommends antiemetic prophylaxis agents based on the chemotherapy regimen's emetogenic potential[3]

## Objectives

To assess the impact of a revised chemotherapy order set and pharmacist-delivered education on compliance to NCCN guidelines and incidence of CINV.

## Methodology and Interventions

**Table 1: Inclusion and Exclusion Criteria**

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| Patients 18 years and older who received chemotherapy in the hospital for cancer diagnosis | Patients receiving concurrent therapy or admitted with severe nausea and vomiting unrelated to chemotherapy |

**Table 2: Revised SJMC Chemotherapy Order Set**

**PRE-TREATMENT MEDICATION:** Give at least 30 minutes prior to chemotherapy.

| Drug | Dose (mg) | Route | Repeat doses |
|---|---|---|---|
| ❑ **High Emetogenic (One $5HT_3$ antagonist + One NK-1 antagonist + Dexamethasone)** | | | |
| Palonosetron | 0.25 mg | IV on day 1 only | |
| Fosaprepitant | 150 mg | IV on day 1 only | |
| Dexamethasone | 10 mg | IV | Repeat daily on days # |
| ❑ **Moderate Emetogenic (One $5HT_3$ antagonist + Dexamethasone)** | | | |
| Palonosetron | 0.25 mg | IV on day 1 only | |
| Dexamethasone | 10 mg | IV | Repeat daily on days # |
| ❑ **Rituximab** | | | |
| Acetaminophen | | PO | X 1 dose |
| Diphenhydramine | | ❑ PO ❑ IV | X 1 dose |
| Dexamethasone | | ❑ PO ❑ IV | X 1 dose |
| **Other pre-treatment medications** | | | |
| ❑ Diphenhydramine | | ❑ PO ❑ IV | Repeat daily on days # |
| ❑ Lorazepam | | ❑ PO ❑ IV | Repeat daily on days # |
| ❑ Famotidine | | ❑ PO ❑ IV | Prior to _____ |
| ❑ Acetaminophen | | PO | Prior to _____ |
| ❑ Dexamethasone | | ❑ PO ❑ IV | Repeat daily on days # |
| ❑ Olanzapine | | PO | |
| ❑ Atropine | 0. 4mg | IV | X 1 dose PRN for early diarrhea associated with irinotecan |
| ❑ | | | |

Additional treatments for breakthrough nausea and vomiting:

| Rank | Drug | Dose (mg) | Route | Frequency |
|---|---|---|---|---|
| | ❑ Ondansetron | | ❑ PO ❑ IV | Every _____ hours PRN |
| | ❑ Metoclopramide | | ❑ PO ❑ IV | Every _____ hours PRN. |
| | ❑ Prochlorperazine | 10mg | ❑ PO ❑ IV | Every 6 hours PRN. |
| | ❑ Prochlorperazine 25mg PR every 12 hours PRN. | | | |
| | ❑ Lorazepam | | ❑ PO ❑ IV | Every _____ hours PRN. |
| | ❑ | | | |

❑ The risks, benefits, and potential side effects have been discussed with patient or caregiver.

## Methodology and Inteventions

**Figure 1: Intervention**

## Results

**Table 3: Patient Characteristics**

| Patient Characteristics | Pre-Intervention of chemotherapy order set N = 51 No. (%) | Post-intervention of chemotherapy order set N = 10 No. (%) |
|---|---|---|
| Female | 15 (29) | 4 (40) |
| Age, years | | |
| Mean (mean ± SD) | 57 ± 18 | 52 ± 21 |
| < 50 | 19 (37) | 4 (40) |
| 50-64 | 6 (12) | 2 (20) |
| ≥ 65 | 26 (51) | 4 (40) |
| BMI ($kg/m^2$) | | |
| Mean (mean ± SD) | 26 ± 6.4 | 29.9 ± 11.3 |
| < 18.5 | 6 (12) | 2 (20) |
| 18.5-24.9 | 21 (41) | 2 (20) |
| 25-29.9 | 9 (18) | 2 (20) |
| > 30 | 15 (29) | 4 (40) |
| Primary cancer diagnosis | | |
| Breast | 1 (2) | 1 (10) |
| Gastric | 3 (5.9) | 2 (20) |
| Lung | 5 (9.8) | 1 (10) |
| Lymphoma | 26 (51) | 3 (30) |
| Myeloma | 2 (3.9) | 0 |
| Ovarian | 5 (9.8) | 1 (10) |
| Sarcoma | 5 (9.8) | 0 |
| Others | 4 (7.8) | 2 (20) |
| Chemotherapy emetic risk | | |
| High | 42 (82) | 7 (70) |
| Moderate | 7 (14) | 2 (20) |
| Low | 1 (2) | 0 |
| Minimal | 1 (2) | 0 |

Statistical Analysis: Alpha was set at 0.05. Fisher's Exact and Mann Whitney were used to analyze differences in baseline characteristics. Fisher's exact and Chi-square test were used to analyze primary and secondary outcomes.

## Results

**Table 4: Primary Outcome**

| Primary Outcome | Pre-Intervention of chemotherapy order set N = 51 No. (%) | Post-intervention of chemotherapy order set N = 10 No. (%) | P-value |
|---|---|---|---|
| Number of guideline-consistent antiemetic regimen | 27 (53) | 9 (90) | 0.037 |

**Table 5: Secondary Outcome**

| Secondary Outcome | Pre-Intervention of chemotherapy order set N = 51 No. (%) | Post-intervention of chemotherapy order set N = 10 No. (%) | P-value |
|---|---|---|---|
| Total number of CINV incidences | 23 (45) | 3 (30) | 0.494 |

- **In a subgroup analysis of the patients who were on guideline-consistent regimens, the proportion of patients who experienced CINV decreased from 44% pre-intervention to 33% post-intervention.**

## Conclusion

The revised chemotherapy order set increased compliance to the NCCN antiemetic prescribing guideline. A reduction in the incidence of CINV was also observed.

## Limitations

- Small sample size
- Short length of study period
- Deviations from the NCCN guideline
- Lack of documentation by physicians
- Lack of access to documentation as an outpatient

## Future Direction

- To assess the long-term impact, antiemetic prescribing patterns should be continually monitored and updates to the order set should be made accordingly
- Additionally, expanded pharmacist roles in the oncology unit should be explored

## Disclosure Statement

- Primary Investigator: Helen Mi Hye Rhee, PharmD
- Potential conflicts of interest: none
- Sponsorship: none
- Proprietary information or results of ongoing research may be subject to different interpretations
- This presentation is educational in nature and indicates agreement to abide by the non-commercialism guidelines provided

## References


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