

# To what extent are guidelines adhered to in the management of chemotherapy-induced nausea and vomiting in paediatric oncology? A retrospective audit

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## Abstract

**Aims** Chemotherapy-induced nausea and vomiting (CINV) continues to be a concern within paediatric oncology. Its management in children is important to prevent future physical and psychological complications. According to recently updated guidelines, the emetogenic potential of the chemotherapy being administered should be used to determine the most appropriate anti-emetic regime to manage CINV. This audit aims to assess whether guidelines are adhered to in the management of CINV in paediatric patients.

**Methods** A retrospective audit of 11 patients, each receiving three sequential cycles of chemotherapy, was carried out to assess prescribing adherence to the guidelines.

**Results** It was found that anti-emetic prescribing was not in line with recommendations, with 48% of recorded episodes having incorrect prescribing. Additionally, results suggested that the probability of subsequent anti-emetic treatment failure may be increased given that anti-emetics were not prescribed according to guidance.

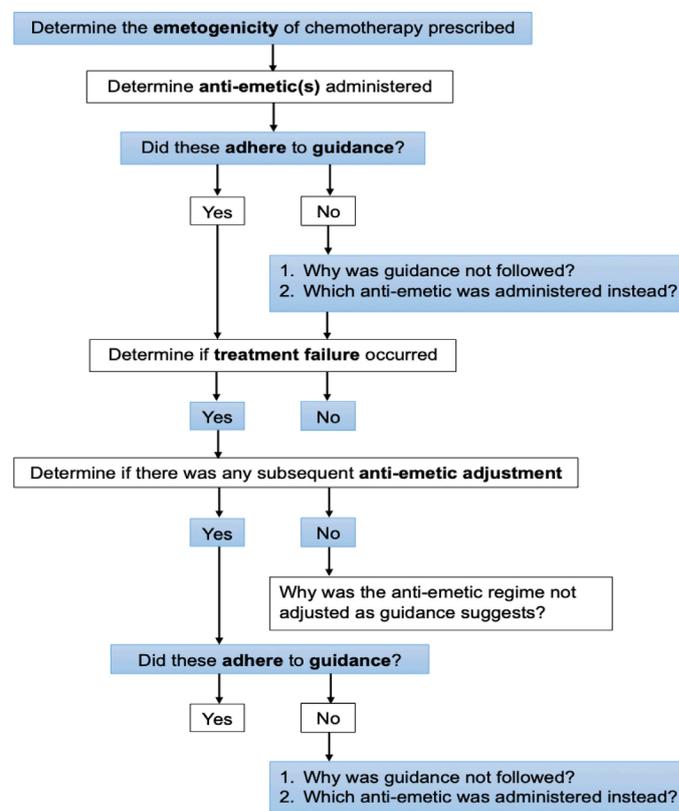
**Conclusions** Prescribing habit may be a major factor in the discrepancies between guidance and prescribing. Following this audit, strategies to improve guideline adherence may be implemented with the potential for improved outcomes for paediatric patients undergoing chemotherapy.

## Introduction

Despite common use of chemotherapy in treating paediatric cancer, chemotherapy-induced nausea and vomiting (CINV) remains a significant concern.<sup>1,2</sup> Managing CINV is particularly key in children because the effects of malnutrition can have significant implications on their future growth and development.<sup>3</sup> Therefore, it is important that emetogenicity of therapy (the chance that it will cause CINV) is understood and steps are implemented to reduce and prevent CINV. The Children's Cancer and Leukaemia Group (CCLG) published updated guidelines on the management of CINV. The recommendations focus on three over-riding principles: appropriate assessment of emetogenicity of chemotherapy, effective assessment of CINV and personalisation with adjustments when anti-emetic treatment failure occurs.<sup>4</sup> This audit assessed guideline adherence in the management of CINV within the paediatric oncology department at the Royal Devon and Exeter Hospital (Exeter, UK).

## Methods

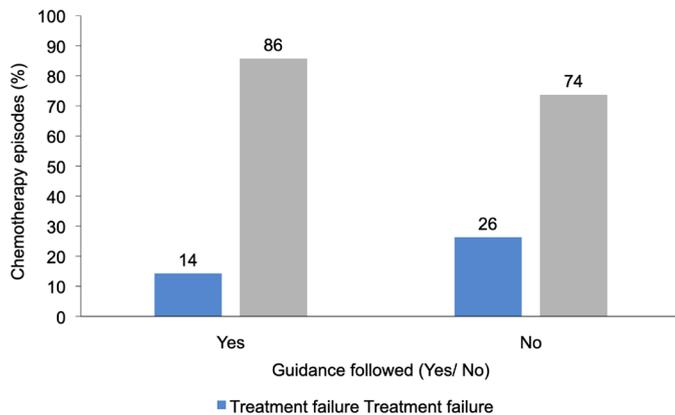
A retrospective audit assessed guideline adherence in the management of CINV in the paediatric oncology department of the Royal Devon and Exeter Hospital. Patients receiving chemotherapy in the department at the time of the audit were considered. Eleven patients with solid tumours who had received three sequential cycles of chemotherapy between January 2015 and March 2019 (33 episodes of care in total) were included. Parameters recorded were emetogenic potential of chemotherapy, anti-emetics administered, whether guidance was followed and any reasoning if it was not, anti-emetic treatment failure occurrence and whether there was any subsequent medication adjustment (**Figure 1**).



**Figure 1.** Parameters recorded to assess guideline adherence in the management of CINV in paediatric oncology.

## Results

Fifty-two per cent of total chemotherapy episodes had anti-emetics prescribed in line with guidance. Of these episodes, treatment failure occurred in 14%. In comparison, 26% of episodes had treatment failure when anti-emetics were not prescribed in line with the guidance (Figure 2).



**Figure 2. Anti-emetic prescription in chemotherapy episodes and associated treatment failure.** The graph shows the percentage of chemotherapy episodes in which anti-emetics were prescribed according to guidelines or not and the associated percentage of treatment failure in each of these groups.

Additionally, six patients (55% of total patients) had incorrect anti-emetics prescribed. Of these, one patient had corrected anti-emetics prescribed in the subsequent two rounds of chemotherapy. Guidelines recommended that six of the patients should have received dexamethasone as part of their anti-emetic regime; however, only one of these patients (17% of recommended patients) received this.

Metoclopramide and hyoscine patches were the most common anti-emetics administered when not following guidance. Finally, most dosages were found to be prescribed in line with guidance but, in some cases, dosages were not correct for the patient's current weight.

## Discussion

Overall, the results showed that the guidelines for anti-emetic prescribing are not always adhered to and almost half (48%) of anti-emetic prescribing is inaccurate according to guidance. Furthermore, results suggested that if anti-emetics are prescribed incorrectly, there is a higher incidence of treatment failure.

Additionally, metoclopramide and hyoscine patches, which were regularly prescribed, are not recommended first-line drugs. This may indicate that prescribing habit may contribute to prescribing discrepancies and further research may discover additional prescribing patterns. Results also implied a reluctance to prescribe dexamethasone; despite it being a key recommended anti-emetic, only 17% of the recommended patient group received it. Personal discussion with clinicians indicated this may be a result of hesitant steroid use in paediatrics. This should be explored further with prescribers, alongside the rationale for prescribing anti-emetics that are not recommended first-line drugs.

Despite a significant proportion of patients not experiencing treatment failure regardless of anti-emetic given, clinicians strive to provide patients with the best, evidenced-based medicine, as per guidelines. The effects of CINV can have serious psychological and physical effects;<sup>3</sup> therefore, every opportunity to reduce CINV in this patient group should be taken. In highlighting discrepancies

between prescribing patterns and guideline recommendations, clinicians are given the opportunity to re-evaluate their prescribing habits. To increase prescribing adherence, some strategies suggested may include peer discussions or teaching and additional reminders in patient notes. In addition, adding an anti-emetic reminder into the chemotherapy-prescribing pathway may be an effective strategy. Clinicians can then prescribe appropriate, guidance-informed anti-emetics alongside chemotherapy.

The CCLG recognises guidance limitations. Potentially poor-quality evidence of anti-emetic outcomes within paediatrics and small studies are acknowledged. Furthermore, results can be confounded by the anticipation of CINV and the use of prophylactic anti-emetics.<sup>4</sup> The limitations of this audit include a small sample size, the use of patients from one department, and the restriction of using retrospective data as information was limited by documentation quality in hospital notes. Consequently, further prospective research with a larger sample size and varying demographics is warranted to increase reliability and generalisability.

**Conclusion** In conclusion, the results from this audit suggested that anti-emetic prescribing does not adhere to the current guidance, which leads to an increased probability of treatment failure. Managing CINV in children undergoing chemotherapy is imperative in reducing long-term complications. Therefore, it is essential that anti-emetic prescribing habits are reviewed. Strategies, including an anti-emetic reminder tool, could be implemented to improve adherence and potentially reduce CINV in this patient group. Further research on a larger scale should be conducted to increase validity of the findings and to assess if poor anti-emetic prescribing adherence to guidelines is a systemic problem that requires addressing.

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**Contribution statement** The author certifies that they have participated sufficiently in the work to take responsibility for the content, including participation in the concept, design, analysis, writing and revision of the manuscript. Abigail Wong is responsible for the work as a whole.

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