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Resident Scholarly Project / Resident Proposal
7/22/2022

Title:
Assessing efficacy of Chemotherapy Induced Nausea and Vomiting (CINV) management and guideline awareness by pediatric oncology providers at NYP-Columbia Morgan Stanley Children's Hospital

Background:
Chemotherapy-induced nausea and vomiting (CINV) is very common in children undergoing cancer treatment, and is a significant cause of morbidity that greatly impacts quality of life (Sommariva et. al 2016). In 2018, the Children's Oncology Group (COG) endorsed evidence-based guidelines published by the Pediatric Oncology Group of Ontario (POGO) that classify chemotherapies based on acute emetogenicity and provide recommendations to prevent CINV (Dupuis et. al 2011, Patel et. al 2017). Although these guidelines exist, they are underutilized by oncology providers.

For instance, in a study surveying various COG institutions, 78% of respondents stated they had a standardized approach to preventing CINV, however, there was great diversity in anti-emetics of choice (Patel et al. 2016). This gap between practice and recommendations was similarly demonstrated in a Canadian hospital, where adherence to guidelines were low and patients experienced low CINV control and high reports of emesis (McKinnon et al. 2018). At our institution, CUIMC, a retrospective study of 180 children, adolescents, and young adults receiving highly or moderately emetogenic chemotherapy demonstrated that only 36% of patients received guideline-concordant CINV prophylaxis (Beauchemin et al. 2020). Notably, in one prospective, observational multicenter study, adult oncology patients receiving highly or moderately emetogenic chemotherapy had reduced incidence of CINV with guideline-consistent prophylaxis (Aapro et al. 2012). Altogether, these findings suggest that when not receiving guideline-concordant care, patients may not be receiving optimal prophylaxis for acute CINV.

This study began first as a needs assessment to determine oncology provider awareness of CINV guidelines at NYP-MSCH. In its current phase of the study, both provider and patient perceptions of CINV control are being evaluated to determine effectiveness of CINV management. This will enable us to devise/implement provider-based educational interventions to improve patient experience and overall morbidity associated with CINV.

Aims:
To determine how effective pediatric oncology providers and patients admitted for scheduled chemotherapy perceive CINV symptom control, and to devise/implement provider-based educational interventions aimed at improving these perceptions.

Study Design/Methodology:
This is a prospective study whereby pediatric oncology providers and patients (or their caregivers) will be surveyed longitudinally. The needs assessment portion of the study, where providers were voluntarily surveyed via an anonymous electronic survey regarding knowledge of existing CINV guidelines and perceptions of CINV symptom control in their patients, has already been completed. Oncology departmental lists of patients scheduled for inpatient chemotherapy are screened on a weekly basis to identify eligible patients. Once a patient is determined to be eligible, a study team member will approach the patient to participate in the study with the oncology treatment team's permission. If the family agrees to participate, informed consent (including aims, risks/benefits to participation) is obtained and data is

collected using self-administered paper surveys linked to a study ID the day prior to discharge. Surveys are available in both English and Spanish, depending on the family's language preference. These assessments will be used to identify any knowledge gaps, and apply interventions to improve the patient experience and reduce distress associated with chemotherapy. Additional information, including patient demographics, cancer diagnosis, chemotherapies received, and anti-emetics provided, will be collected by searching through each patient participant's electronic medical record. While we are now completing the baseline pre-intervention surveys, the same procedures described will apply to our post-intervention surveys.

Study Subjects:
The subjects will be pediatric oncology providers (including residents, fellows, attendings, NP's and nursing staff) involved in the care of inpatient pediatric oncology patients, and patients admitted to MSCH for chemotherapy. So far, 20 individual patient surveys have been completed pre-intervention. Post-intervention, our goal is to re-survey the same study participants.

Recruitment of Subjects:
Study subjects will be screened and identified as outlined in the Methodology section above, and consented on admission for their scheduled chemotherapy.

Study Questionnaires:
Provider survey: Electronic survey distributed via email regarding knowledge surrounding existing CINV guidelines and perceptions of CINV symptom control. Contained Likert scale questions, multiple choice, and free response questions.

Patient survey: Paper survey pertaining to nausea/vomiting symptoms and management. Contains Likert scale questions. The same survey administered to patients pre-intervention will be administered to patients post-intervention to assess for improvement in perceptions of CINV control.

Statistical Analysis:
Survey data on perceptions will be assessed using Likert scale questions, which will likely be totaled to equal a score for each survey that we can then compare pre- and post-intervention. Data will be analyzed using means and paired t-tests. Other predictors of perceptions (patient demographics, chemotherapy received, anti-emetics used), as well as gaps between perceptions between providers and patients will be compared using chi-square analysis.

Study Drugs: No drugs will be used in this study.

Medical Devices: No medical devices will be used in this study.

Location of Study: NYP - Morgan Stanley Children's Hospital (MSCH).

Confidentiality of Data:
All information gathered from patient EMRs, data storage, and analyses will be performed on encrypted and password protected devices. Each study participant will be assigned a study ID and all patient information, as well as survey responses, will be de-identified. There is one document linking study ID to patient health information including name and MRN, which is also stored on an encrypted and password protected devise. Data collected is only accessible to study personnel and will be destroyed on completion of the study.

Potential Conflict of Interest: None.

Potential Risks:
The study has minimal risk of loss of confidentiality. All surveys and data collected will be de-identified.

Potential Benefits: Findings from baseline surveys may identify gaps in care that inform how we devise/implement our provider education-based intervention. This may lead to optimization of antiemetic utilization and acute CINV control, thereby improving overall patient experience during scheduled chemotherapy admissions.

Minors as Research Subjects: The surveys will be voluntarily completed by patients or their caregivers. Confidentiality will be maintained as indicated above.

Alternative Therapies: No alternative therapies will be offered as part of this study.

Compensation to Subjects: No monetary compensation will be provided to study participants.

Costs to Subjects: No additional costs to study subjects will be incurred.

Radiation or Radioactive Subjects: No radiation involved in this study.

References:
Aapro M, Molassiotis A, Dicato M, Pelaez I, Rodriguez-Lescure A, Pastorelli D, Ma L, Burke T, Gu A, Gascon P, Roila F. The effect of guideline-consistent antiemetic therapy on chemotherapy-induced nausea and vomiting (CINV): the Pan European Emesis Registry (PEER). *Annals of Oncology*. 2012; 23(8): 1986-1992. doi: 10.1093/annonc/mds021

Beauchemin M, Sung L, Hershman DL, Weng C, Dupuis LL, Schnall R. Guideline concordant care for prevention of acute chemotherapy-induced nausea and vomiting in children, adolescents, and young adults. *Support Care Cancer*. 2020; 28(10):4761-4769. doi:10.1007/s00520-020-05310-6

Dupuis LL, Boodhan S, Sung L, Portwine C, Hain R, McCarthy P, and Holdsworth M. Guideline for the classification of the acute emetogenic potential of antineoplastic medication in pediatric cancer patients. *Pediatric Blood & Cancer*. 2011; 57: 191-198. doi: 10.1002/pbc.23114

McKinnon, K, Jupp, J, Ghosh, S, Digout, C, Eason, S, Romanick, M. Adherence to pediatric acute chemotherapy-induced nausea and vomiting guidelines in Canadian hospitals. *Pediatric Blood & Cancer*. 2019; 66:e27488. doi: 10.1002/pbc.27488

Patel, P., Robinson, P.D., Orsey, A., Freedman, J.L., Langevin, A.-M., Woods, D., Sung, L. and Dupuis, L.L. Chemotherapy-Induced Nausea and Vomiting Prophylaxis: Practice Within the Children's Oncology Group. *Pediatric Blood & Cancer*. 2016; 63: 887-892. doi: 10.1002/pbc.25915

Patel P, Robinson PD, Thackray J, et al. Guideline for the prevention of acute chemotherapy induced nausea and vomiting in pediatric cancer patients: a focused update. *Pediatric Blood & Cancer*. 2017; 64:e26542. doi: 10.1002/pbc.26542

Sommariva S, Pongiglione B, Tarricone R. Impact of chemotherapy-induced nausea and vomiting on health-related quality of life and resource utilization: A systematic review. *Critical Reviews in Oncology/Hematology*. 2016; 99: 13-36. doi:10.1016/j.critrevonc.2015.12.001