REMOVING THE NEUTROPENIC DIET FROM A HEMATOLOGY/ ONCOLOGY BMT UNIT

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Purpose and PICO Question

In a population of hospitalized adult BMT patients, what is the impact of eliminating the neutropenic diet on patient weight, patient satisfaction, and incidence of *c. dificile* infection?

Background and Evidence Review

Patient's receiving chemotherapy and undergoing a bone marrow transplant have an increased risk of morbidity due to a compromised immune system (Restau, J., Clark, A., 2008). In order to protect the patient during this time of neutropenia, the neutropenic diet was developed 30 years ago when patients were placed in protective isolated environments. The diet was designed to limit the amount of bacteria exposed to patients through ingestion of food. A patient is usually placed on a neutropenic diet when their absolute neutrophil count (ANC) is less than 500. There currently is no standardized neutropenic diet. Among several institutions there was variation in the timing and ANC for placing a patient on the neutropenic diet. There is also variation among the permitted and restricted foods (Mank, A., et al, 2009). Most institutions restrict the ingestion of fresh fruits and vegetables, ground pepper, outside foods, and some restrict the use of tap water. The neutropenic diet limits foods that are usually appealing choices for patients with nausea and altered taste sensations. This limitation keeps patients from ingesting the proper amount of calories and nutrients needed during a time when they're bodies are undergoing rapid healing. The restrictions also limit the amount of variety for patients who have extended lengths of stay leading to a decrease in quality of life and overall satisfaction.

Currently the FDA and CDC do not support the neutropenic diet because there is a lack of evidence (Restau, J., Clark, A., 2008). Protective isolation and other interventions from the 1970s have disappeared from practice due to the fact it was deemed to expensive, ineffective and there is a lack of evidence to support the practice. The neutropenic diet is the only practice still in place in many institutions despite the fact that it is the one practice from protective isolation that has the least amount of evidence to support it (Restau, J., Clark, A., 2008). Several studies have recently been published indicating the lack of effectiveness in the neutropenic diet from protecting against infection. Researchers have determined that liberalizing the diet improved food intake and quality of life for patients (Restau, J., Clark, A., 2008). In a study performed by Gardner et al, patients were randomized on either a cooked diet or a non cooked diet. They found that those placed on a non cooked diet did not have higher infection rates than those receiving a cooked diet (Gardner et al, 2008). The rates of infection and death were also similar amongst the two groups. Another study found that patients receiving a neutropenic diet have a greater incidence of C.difficile (Trifilio, S. et al, 2009).

Methods

Education across several professions played a major role in the implementation of this project. Collaboration with nutrition services was done in order to complete a project of this caliber. Education of the nurses was done through the use of posters placed strategically in the break-room, bathroom, hallways, and physician's charting rooms on three different adult units. Education also took place at the July staff meeting through a power-point presentation presented in collaboration with the unit nutritionist. During this time patient education was handed out to all the nurses in attendance. The nurses not in attendance of the staff meeting were all sent an email with the power-point presentation and patient education materials. The research articles, patient education, and power-point presentation were also made available to the nurses through the use of unit's journal club. Physician education was done through hospitalist orientation and emails. Nutrition services educated the kitchen staff on proper handling of food on the trays as well as the changes to the diet. Patients were given the patient education handouts on admission and were also shown the posters throughout the unit hallways.

Patient Satisfaction Surveys were conducted both pre and post the diet intervention. There were a total of 54 surveys collected, with an equal number of participants for pre and post intervention. Surveys were handed out randomly over several days. Some patients were eliminated from completing the survey due to their health and well being. Some patients felt too ill or nauseous to complete a survey. The survey consisted of 11 questions designed to give an overall sense of patient satisfaction and suggestions for nutrition services.

Weights were collected on a total of 42 patients both pre and post the diet intervention. Weights were conducted on the same patients for both pre and post interventions through the use of the audit function on the computer charting program, UCARE. The admission and discharge weights were collected for pre and post intervention. The weight loss or gain was totaled for each patient and an average weight loss or gain was calculated for each.

The C. difficile rates were collected from Infection Control data that was collected from positive C. difficile cultures on CRI patients throughout the hospital for a one year period.

Results

Twenty seven patients filled out the pre-intervention survey. The patient's overall satisfaction was 48%. The pre-intervention showed that 55% of the patients were on a special diet and they felt the variety of food offered was limited only 37% agreed there was enough variety. The majority of patients, 52%, had a length of stay of 15+ days. Only 26% said they ate 100% of their trays. Many of the patients offered suggestions on ways to improve their satisfaction and many stated they would like to see more fresh fruits and vegetables, as well as, an increase in the variety of foods.

Twenty seven patients filled out the post-intervention survey. The patient's overall satisfaction was 74%. The post-intervention survey showed that only 19% of patients were on a special diet. Due to the fact that fewer patients were on a special diet the patients felt that the variety of foods increased and their satisfaction with the variety of foods increased to 77%. The majority of patients, 59%, had a length of stay of 15+ days. Patients eating 100% of their trays increased to 33%. Many of the patients suggestions commented on their satisfaction with the salads and fresh fruit plates offered.

Forty two patient's weights were analyzed for pre and post intervention. The same patients were used for both. Pre-Intervention the number of patients who experienced a weight loss was 23 and the number of patients who experienced a weight gain was 19. The average weight loss for pre-intervention was 2.6kg. The average weight gain for post-intervention was 3.5kg. Post-intervention the number of patients who experienced a weight loss was 19 and the number of patients who experienced a weight gain was 23. The average weight loss for post-intervention was 2.7kg. The average weight gain for post-intervention was 1.8kg.

The C.difficile rates were collected by Infection Control from 7/1/08 through 6/30/09. It was found that 51 patients had tested positive for C.difficile. Of those patients sixteen had tested positive more than one time.

Discussion

The results of the survey indicate that removing the neutropenic diet increased overall patient satisfaction. The number of patients eating 100% of their tray also increased with the removal of the neutropenic diet indicating these patients are consuming more calories and the variety of foods offered to them increased. The sample size was smaller than anticipated due to a decrease in the patient census during the pre intervention period.

The overall patient weights did not show a significant increase in weight gain after the removal of the neutropenic diet. There are several confounding factors affecting the patient's overall weight. The amount of fluid the patient receives, mucositis, stage of treatment regimen, length of stay, and length of time between treatments all affect a patient's weight.

The C.difficile weights will continue to be collected. At the time of this project there was not enough time from the post-intervention to make substantial conclusions about the affect the removal of the neutropenic diet would have on C.difficile rates.

In the future, education will need to be continued. The neutropenic diet has been a staple in the care of our patient population for thirty years, changing the diet requires substantial reinforcement for the physicians, nurses, and especially the patients. Our patients have been told since their first admission about the importance of adhering to the neutropenic diet and they must now be educated and reinforcement done on the changes.

Selected References

1. The Neutropenic Diet: Does the Evidence Support this Intervention? (Restau, J., Clark, A. Clinical Nurse Specialist 2008; 22: 208 – 211.)

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Key words: neutropenic diet, infection rates, c. difficile, low bacterial diet