

Neutropenic Diet: Standardizing the Practice Using Evidence-Based Practice Methods

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- 10 week summer research experience for undergraduate students from New Hampshire schools
- Christina Martin, an Inpatient Hematology/ Bone
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NH-INBRE

CLINICAL SITUATION

- Patients in the Norris Cotton Cancer Center report inconsistent information regarding neutropenic diet recommendations
- Unclear role of diet in the development of infection in patients with neutropenia
- Variation in dietary restrictions
- Provider instructions differ



BACKGROUND

Neutropenia is a low level of neutrophils (type of WBCs).

- Varied definitions (ex: ANC<500, ANC<1000)</p>
- Neutrophils fight infection by destroying harmful bacteria and fungi or yeast that invade the body.
- People who have neutropenia have a higher risk of developing serious infections.
- Chemotherapy may cause neutropenia that can last a couple of days or sometimes weeks

BACKGROUND



 Historically, restrictive neutropenic diets were used to minimize the risk of acquiring infections through food in at risk groups

 1960's neutropenic diet emerged as part of "total protective environment" for leukemia patients with prolonged neutropenia





 Most transplant centers use some type of neutropenic diet (Smith, 2000; August, 2009)

BACKGROUND

- Patients prescribed a neutropenic diet have been shown to have poor nutritional status
- As a result of the restrictive diet, some patients even require supplementation via total parenteral nutrition
- Quality of life
- Many restrictions for this population have been lifted, however use of the neutropenic diet has continued in practice despite limited evidence

PROCESS: OVERVIEW

- IRB not required
- Using the lowa Model of Evidence-Based Practice:
 - Developed a PICO question
 - Assembled & critiqued relevant research
 - Reviewed potential survey tools



PROCESS: OVERVIEW

P (Patient Population or Problem)

Norris Cotton Cancer Center Health Care Providers

I (Intervention)

Staff education regarding standardized neutropenic diet guidelines

C (Comparison with Other Treatments)

Staff knowledge of neutropenic diet guidelines prior to education

O (Outcomes)

Knowledge of standardized neutropenic guidelines as measured by knowledge survey pre- and post- intervention

Literature Review Conclusions

- There is NO evidence to support benefit of restrictive neutropenic diets for patients with neutropenia.
 - No difference in the rates of febrile admissions or positive blood cultures between compliant vs. non-compliant patients. (DeMille, 2006)
 - Infection rates not significant between groups who followed vs. those who did not follow diet restrictions. (Moody, 2006)
 - Retrospective review of 726 transplant patients: higher rate of infection in recipients who followed a neutropenic diet. (Trifilio, 2012)
 - Meta-Analysis: Found no difference in major infection or mortality rates between ND and RD groups (Sonbol, 2015)

Literature Review Conclusions

- Educate on safe food handling practices & hand washing
 - Primary cause of food-borne illness is unsafe handling of foods
 - Focus on safe food handling practices for patients with neutropenia to help reduce exposure to food-borne pathogens
 - FDA Food Safety for People with Cancer
 - Preferred because less restrictive, better adherence



PROJECT GOALS

- Perform a Pre-survey to NCCC providers to better understand individual professional practice
- Identify current practices regarding neutropenic precautions



- Standardize the practice and education around neutropenic diets for cancer patients of the Norris Cotton Cancer Center
 - Put information together and give education to staff on findings

RESEARCH QUESTION

- What are the current best-evidence recommendations regarding neutropenic diet?
- What is current practice around neutropenic diet at the Norris Cotton Cancer Center?
 - Who is put on a Neutropenic Diet?
 - What does the diet include/exclude?
 - Where (Differences among locations)?
 - When is Neutropenic Diet initiated/discontinued?
 - How is the information being gathered/distributed?

METHODS

- 9-item survey adapted with permission by Dr. Arno Mank and Michelle Davies (2008)
- Survey link was emailed to NCCC Health Care Providers stating "Please complete the survey about your beliefs and practices regarding dietary advice for patients with cancer"
- The completion of the survey was considered consent to participate



METHODS

- Surveyed NCCC healthcare providers on
 - Different practices regarding what food items are restricted for patients with neutropenia and what different names they call this special diet
 - At what point in the patient's treatment might restrictions be implemented/ discontinued
 - What might account for differences amongst practitioner/practice settings



REDCAP SURVEY RESULTS

- 60 responses consisted of 77% Nurses, 2% Dietitians, 13% Associate Providers, 7% Physicians, and 1% "Other"
- Individual practice of neutropenic diet precautions varies among providers
- Results support assumptions regarding inconsistent neutropenic diet instructions
- Standardized and up to date education is needed for staff
- The data will guide the work of standardizing education for NCCC providers

REDCAP SURVEY RESULTS





Which patients do you believe should receive information about a low bacterial diet? (Choose all that apply.) Refresh Plot







If you teach patients about a low bacterial diet, what specific foods do you caution against? Refresh Plot





If you've taught patients about low bacterial diet, where have you gotten your information? (Choose all that apply.) Refresh Plot



Survey Conclusions

- Supports assumptions and patients' feedback about inconsistent messages
- Demonstrates that updated education is needed for staff
- Oncology patients are being taught different information at different times
- Some advice given to patients is unnecessarily restrictive

Improvement Plan

- Remove inconsistent written education from eDH
- Periodic update of FDA Food Safety
 Guidelines for the Patient with decreased
 Immune Function booklet
- Standardize education to NCCC interdisciplinary team members



SAFE FOOD HANDLING FOR GENERAL ONCOLOGY POPULATION



KEEP YOUR FAMILY SAFER FROM FOOD POISONING

Check your steps at FoodSafety.gov

NCCC CURRENT PRACTICES:

- Outpatient NCCC dietitians educate BMT patients on food safety guidelines and reinforce safe food handling practices in general oncology population
 - These recommendations have **not** changed and **are** based on the most current evidence as evidenced by our literature review conclusions.
- Inpatients are placed on a "Neutropenic diet/BMT diet" in eD-H when ANC is <500.</p>
 - Similar to regular hospital diet
 - Differences from regular diet:
 - Steamed deli meats
 - No chicken salad (prepared at an outside facility).
 - Minimally restrictive

BEST PRACTICE:

- Educate general oncology patients on safe food handling.
- Can share FDA Food Safety for People with Cancer with general oncology patients.
 - Higher/lower risk foods.
 - Recommendations, not restrictions.
- Educate **BMT patients and those with prolonged low ANC levels** on higher and lower risk foods based on FDA food safety guidelines, with focus on hand washing and safe food handling/preparation.
 - Written information may include Food Safety Guidelines for the Patient with Decreased Immune Function for BMT patients or FDA food safety guidelines handout for cancer patients.

NEXT STEPS:

- Remove inconsistent written education from eDH (ex: handout with rec to peel fruits and vegetables)
- Periodic update of Food Safety Guidelines for the Patient with Decreased Immune Function booklet- NCCC Nutritionists working on now
- Standardize education to NCCC interdisciplinary team members
 - Include in orientation
 - Periodic refreshers

FRUITS AND VEGETABLES







FRUITS AND VEGETABLES

Higher Risk:









DAIRY/EGGS

Lower Risk:









DAIRY/ EGGS

Higher Risk:









MEAT, POULTRY, FISH

Lower Risk:









MEAT, POULTRY, FISH

Higher Risk:







BREAD, GRAINS, CEREALS

Lower risk:



- Higher risk:
 - Mixing or kneading any bread product containing yeast
 - Raw grain products



WATER AND BEVERAGES

Lower Risk:



Higher Risk:









FUTURE RECOMMENDATIONS

- Consult DHMC dietitians to meet with any oncology patient to educate on Food Safety Guidelines/safe food handling practices if needed.
- We will continue to monitor Pre- and post- patient satisfaction survey results
- Standard monitoring infection rates from common food-borne illnesses in our neutropenic population as compared to prior to our intervention

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