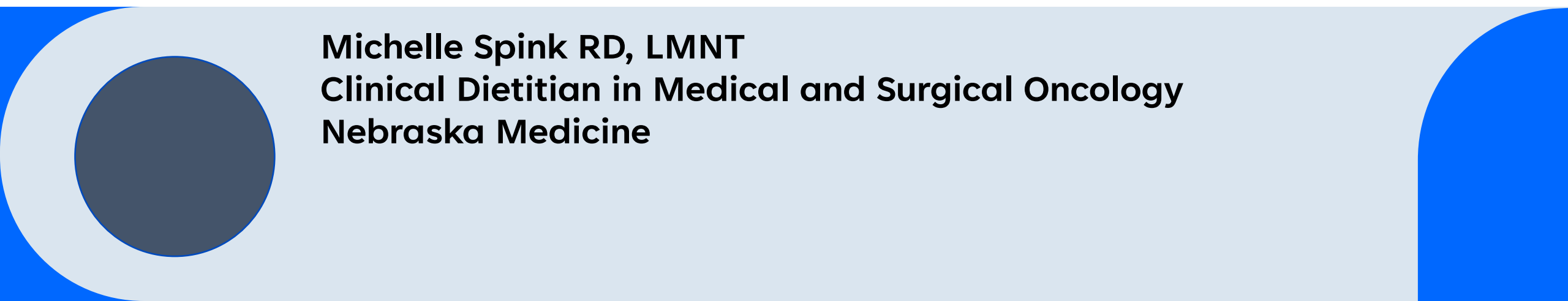




Myths and Science Behind Diet Recommendations for Patients with Cancer



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I have no conflicts of interest to disclose.

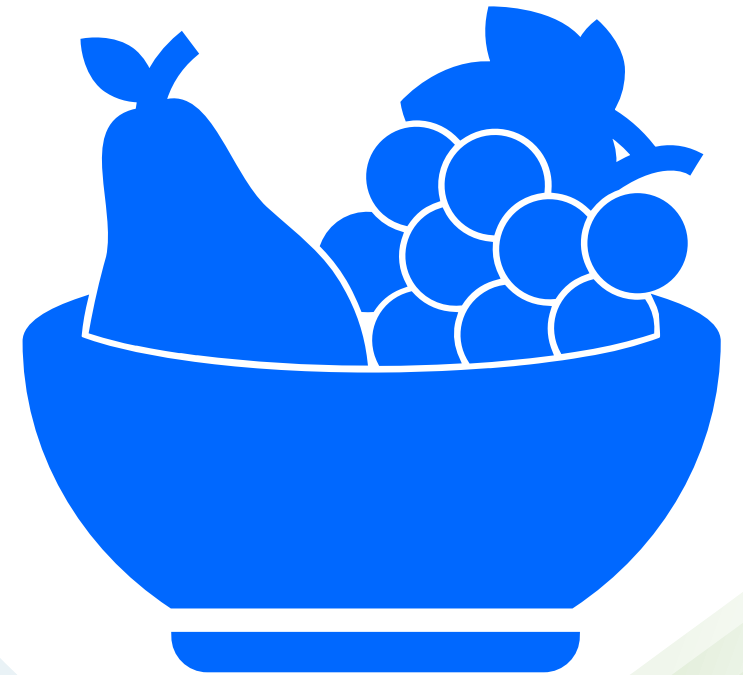
Objectives

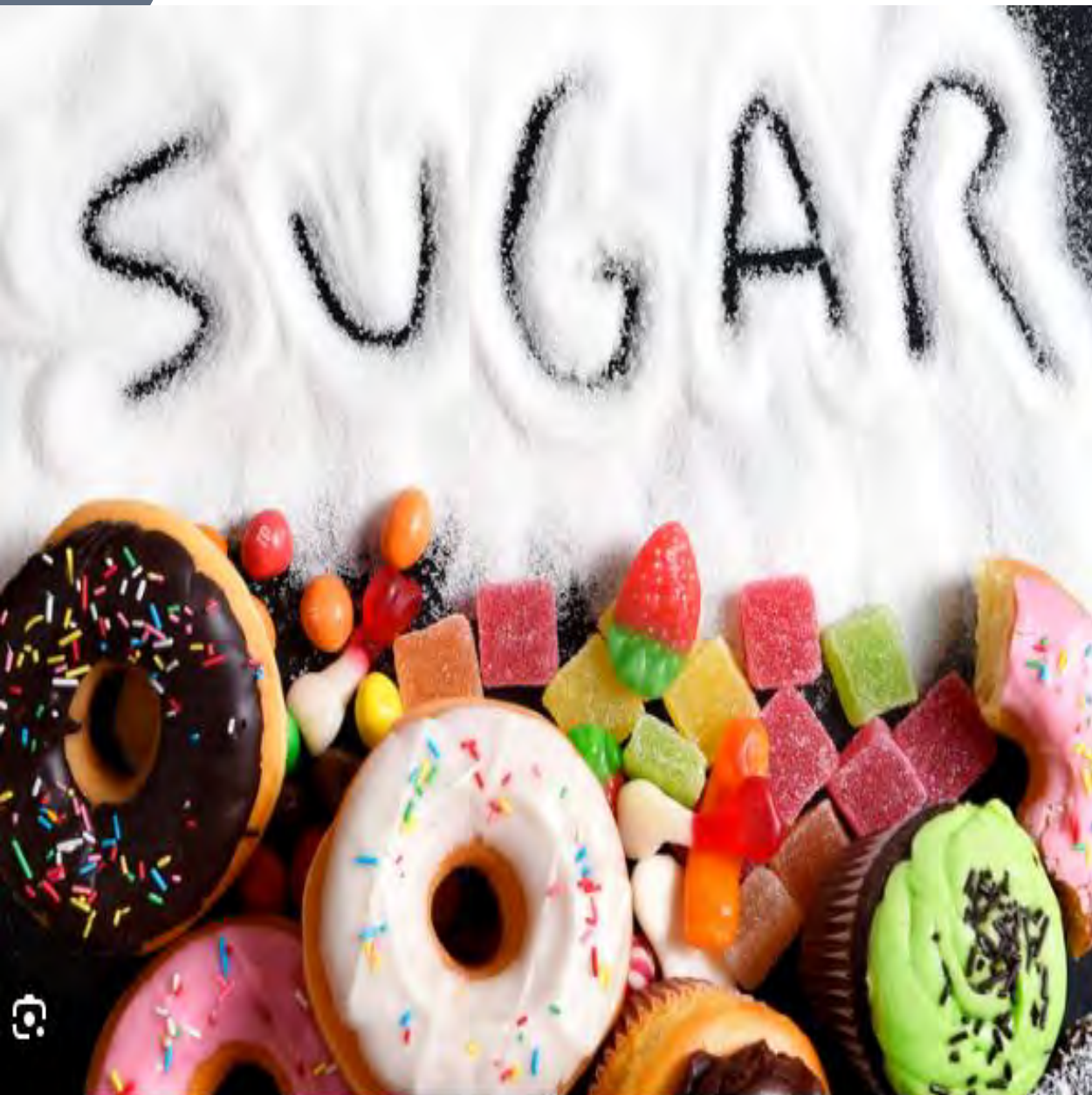
- Describe common nutrition claims surrounding cancer
 - Sugar feeds cancer
 - Alkaline diet
 - Neutropenic diet
- Review evidenced based nutrition recommendations
- Discuss trusted health resources for cancer and nutrition



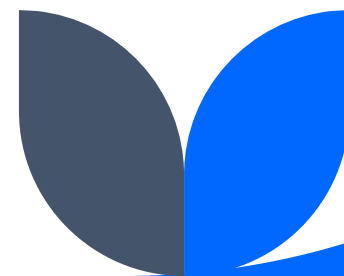
Nutrition Misinformation

- The online world has dramatically altered the way patients with cancer seek and find information. Online nutrition information is generally unregulated and often make invalidated claims to "cure" or "prevent" cancer. Patients with cancer and their caregivers are especially vulnerable to cancer nutrition misinformation.
- Claims vary from being low risk to highly controversial with the potential to negatively influence treatment decisions.





"Sugar feeds cancer"



"Sugar feeds cancer"

There is no evidence supporting the idea that sugar (glucose) in our diets preferentially feeds cancer cells over other cells.

All carbohydrates are metabolized to glucose whether they come from fruit, grains, dairy or added sugars.



"Sugar feeds cancer"

Sugar is not a carcinogen, however over consumption of added sugars can contribute to obesity which is a strong risk factor for cancer.

Type of sugar matters!

- Added sugars vs natural sugar
- Complex CHO vs simple CHO



Recommendations

- Enjoy a variety of dairy, fruits, grains and vegetables as they provide important nutrients for health.
- Avoid elimination diets as there are no proven studies to support one food or food group treating or causing cancer.
- Consume sugary beverages and foods in moderation.

Alkaline Diet

Based on a theory that cancer cells live in an acidic environment

Gained popularity in 2002 with the publication of The pH Miracle book series by Robert Young. He promoted the theory of a high pH diet to treat and prevent diseases like cancer.

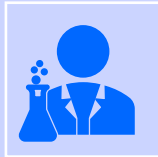
Alter pH by an 80/20 ratio



Alkaline Diet



Kidneys and lungs regulate our blood pH in a very tight range regardless of diet.



Diet can affect the pH of urine, leading to the misconception that diet can alter body pH.



Recommendations

- Increase your intake of fruits, vegetables (2.5 cups per day) and whole grains to support, protect and repair cells, as well as aid in proper digestion, hydration and immune support
- Eat a variety of lean meats/poultry/fish/beans/dairy to maintain and prevent the loss of muscle mass

“Neutropenic” or “Low Bacteria” Diets

A *nurse-initiated* intervention, the “neutropenic diet” was developed in the 1960s, despite limited evidence supporting its efficacy.

A preventative measure to limit the introduction of potentially harmful bacteria into the GI tract by restricting certain foods that might harbor that bacteria.

The primary etiology of foodborne illness comes from unsafe food handling, highlighting the importance of safe food handling practices.

Cytotoxic chemotherapy disrupts the normal gut flora and gut mucosal barrier putting neutropenic patients at risk for translocation of bacteria.

Recent survey data demonstrates that more than 80% of BMT centers continue to adopt the neutropenic diet.

The “Neutropenic/Low-Bacteria Diet”— Common Restrictions

- No raw/fresh fruits and vegetables
- No outside foods
- No moldy/aged or soft cheeses, no yogurt, no raw milk
- No uncooked spices other than salt
- No garnishes
- No raw nuts, no nuts in shells
- No undercooked meats/seafood or eggs, no cold cuts/luncheon meats
- Avoid salad bars or buffets
- Only bottled water
- No drinking of beverages directly from cans



Nonrestrictive diet does not increase infection during post-HSCT neutropenia: data from a multicenter randomized trial

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Objective: Assess the impact of diet on infection incidence and transplantation outcomes in patients undergoing auto or allo transplant and patients in whom a period of neutropenia > 7 days was expected.

Design: prospective multicenter, randomized parallel- group control trial. Randomly assigned to the protective diet (PD) group or the nonrestrictive diet (NRD) group. Began from the start of chemo and continuing through the period of severe neutropenia. Block randomization and stratification occurred for transplant type.



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Table 2. Patients' characteristics based on the diet assigned

	Total 222, n (%)	Diet		P value*
		PD 111, n (%)	NRD 111, n (%)	
Sex (female)	96 (43)	46 (41)	50 (45)	.7
Age, median (range)	57 (22-72)	57 (26-72)	57 (22-71)	.1
Disease				.7554
Lymphomas	105 (47)	51 (46)	54 (49)	
NHL aggressive	65 (62)	31 (61)	34 (63)	
NHL indolent	17 (16)	10 (20)	7 (13)	
HL	23 (22)	10 (20)	13 (24)	
Multiple myeloma	89 (40)	48 (43)	41 (37)	
AML	9 (4)	4 (4)	5 (4)	
Other	19 (9)	8 (7)	11 (10)	
Type of procedure				.9851
Auto-HSCT	175 (79)	88 (79)	87 (78)	
Allo-HSCT	41 (18)	20 (18)	21 (19)	
High-dose CHT	6 (3)	3 (3)	3 (3)	
Previous lines (≥2)	106 (48)	52 (47)	54 (49)	.9
Disease status at enrollment				.1233
Complete response	124 (56)	66 (60)	58 (52)	
Partial response	74 (33)	36 (34)	36 (32)	
Stable disease	10 (5)	2 (2)	8 (7)	
Progressive disease	10 (5)	3 (3)	7 (7)	
Not applicable	4 (2)	2 (2)	2 (2)	
Antimicrobial prophylaxis				
Antiviral	219 (99)	108 (97)	111 (100)	.2
Antibiotic†	125 (56)	61 (55)	64 (57)	.7
Antifungal	212 (95)	106 (95)	106 (95)	>.99
MDR colonization	24 (11)	12 (11)	12 (11)	>.99
Duration of neutropenia (days), median (range)	6 (3-22)	6 (3-20)	6 (3-22)	.4

AML, acute myeloid leukemia; high-dose CHT, high-dose chemotherapy with an expected period of neutropenia >7 days; NHL, non-Hodgkin lymphoma.

*P value resulting from a Mann-Whitney test for continuous variables and χ^2 test for categorical variables.

†Among the 125 patients who received antibiotic prophylaxis, 119 (95%) received fluoroquinolones.

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Table 1. Diet details

	PD	NRD
Fish and meat	Only well cooked	Only well-cooked
Vegetables	Only cooked above 80°C	Fresh vegetables allowed*
Fruit	Cooked or thick peel fruit washed and peeled	Fresh fruit allowed*
Milk	Only pasteurized	Only pasteurized
Cheese	Only pasteurized	Pasteurized and seasoned cheese without mold
Yogurt	No	Only pasteurized
Eggs	Only freeze-dried	Only cooked
Bread	Allowed	Allowed
Dessert and ice cream	Only industrial preparation	Only industrial preparation
Honey	No	Only pasteurized
Cold cuts and sausages	No	Yes single portioned

*Manipulated according to safe food handling procedures.

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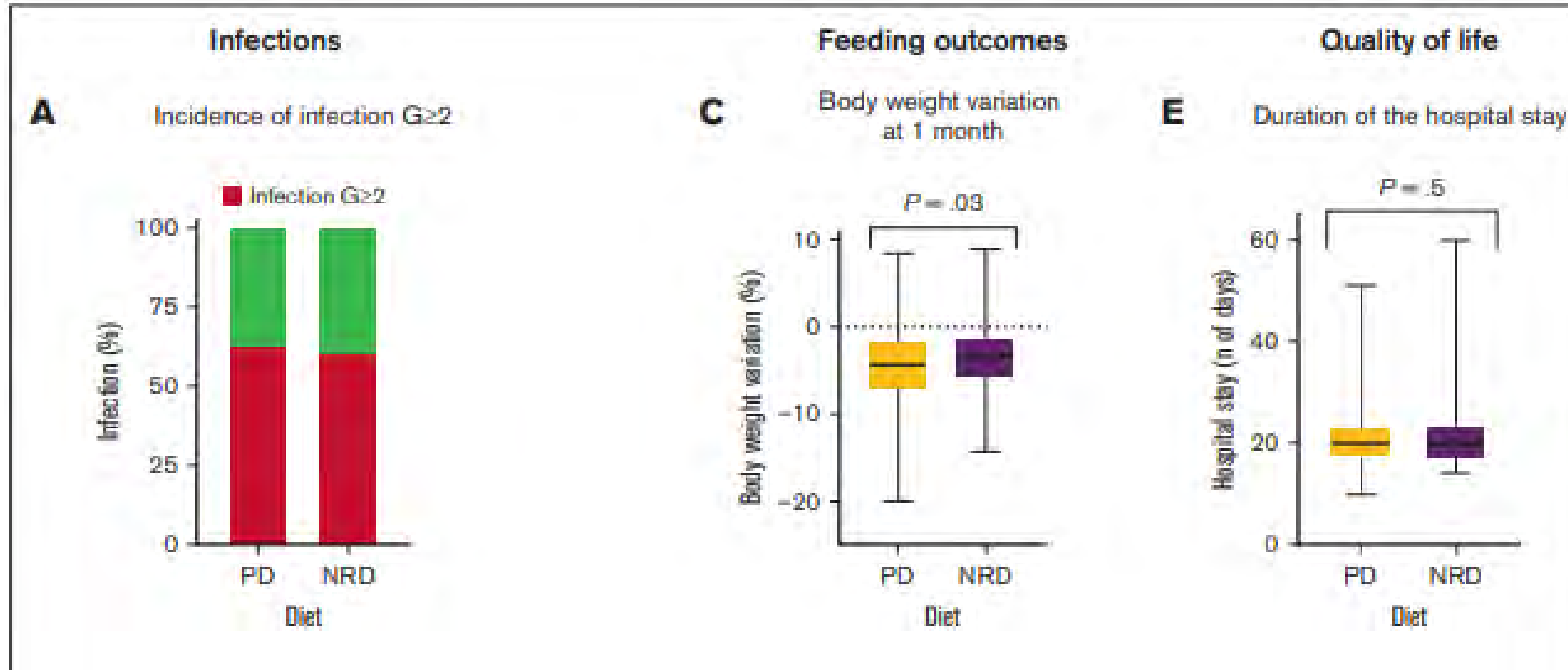


Figure 2. Infection, feeding outcomes, and QoL. (A) Incidence of infection G ≥ 2 in the 2 study arms; (B) types of infection G ≥ 2; (C) body weight variations at 1 month: change in normalized weight from baseline, expressed as a percentage; (D) albumin variation from admittance to discharge: change in normalized serum albumin from baseline, expressed as a percentage; (E) duration of the hospital stay expressed in days; and (F) patient-reported QoL. QoL, quality of life.

Nonrestrictive diet does not increase infection during post – HST neutropenia: data from a multicenter randomized trial

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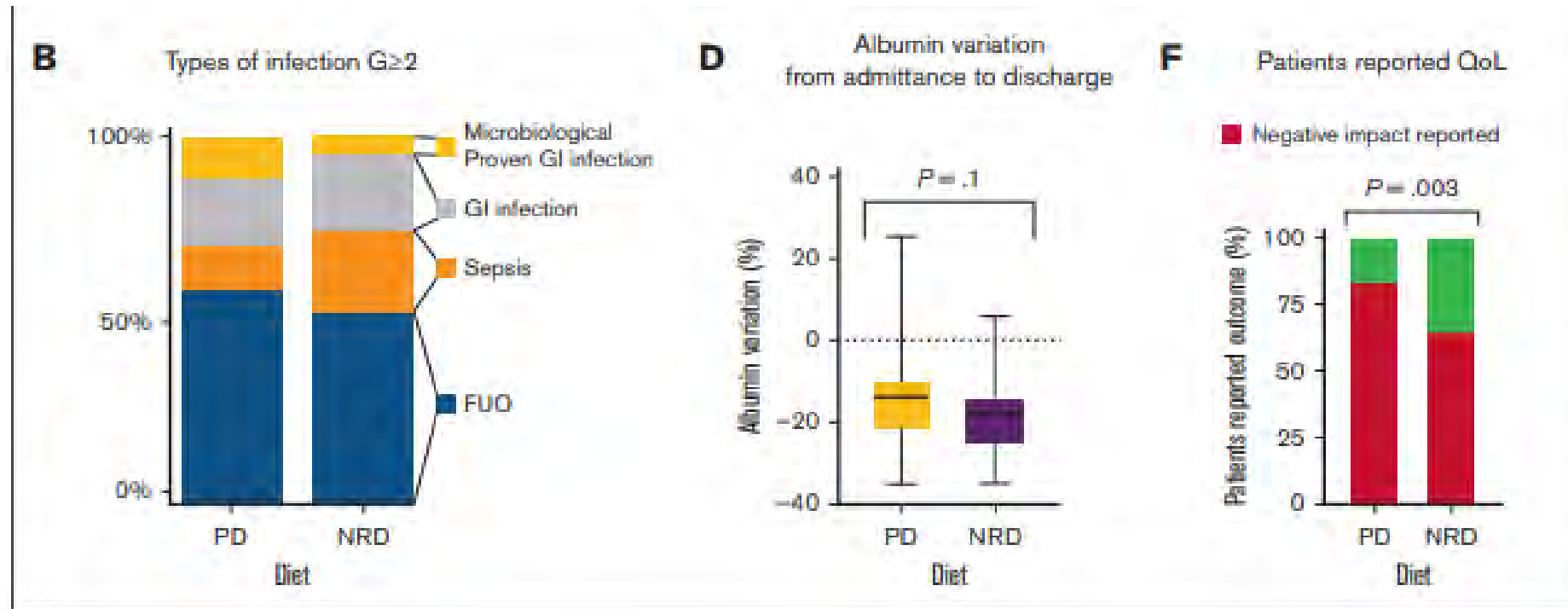
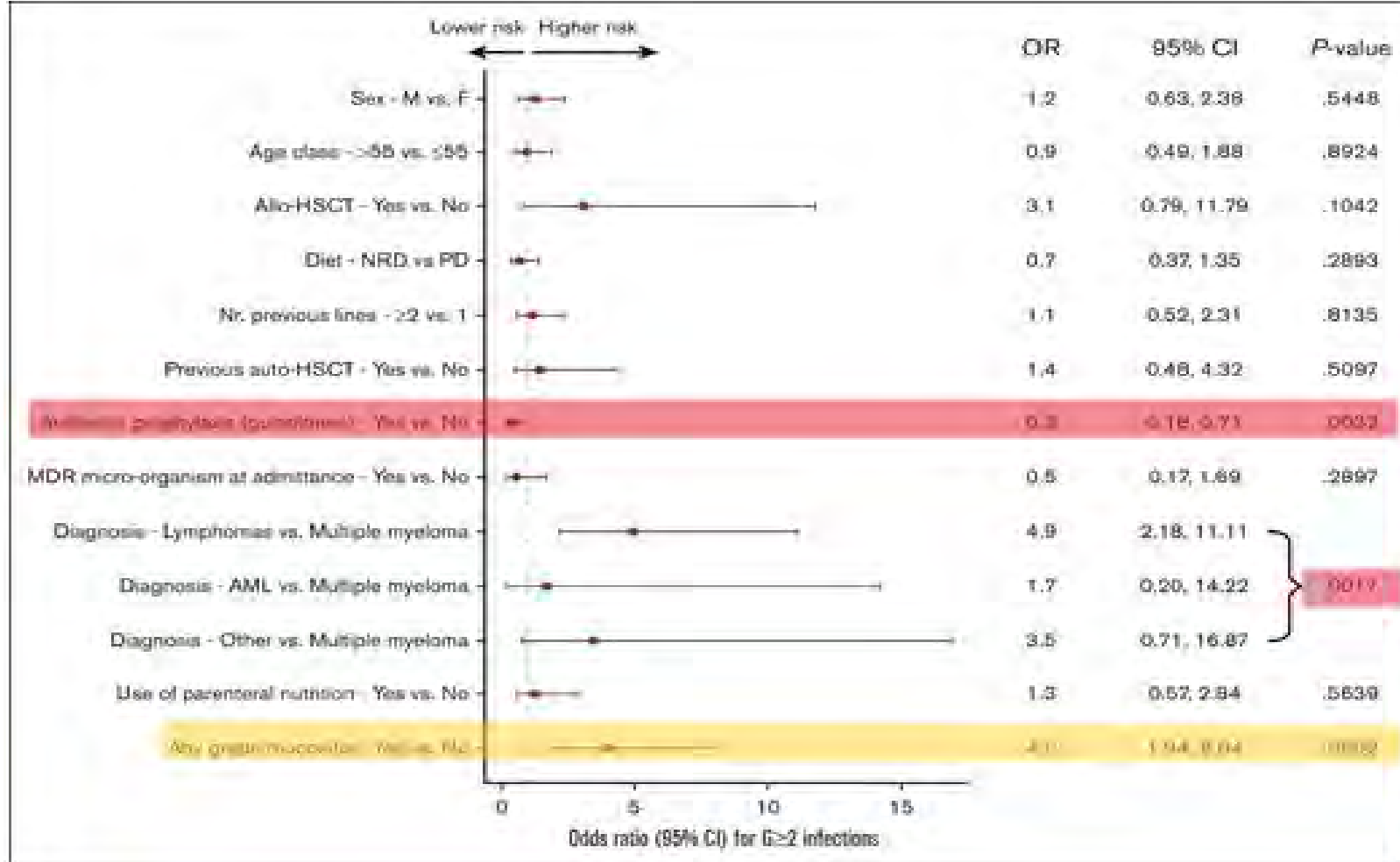


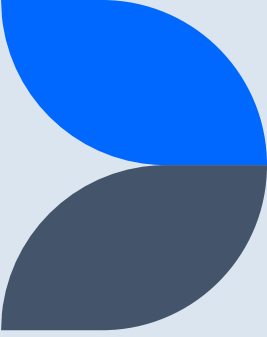
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Multivariate analysis. NRD, non-restrictive diet; PD, protective diet; F, female; M, male; Nr, number.

Nonrestrictive diet does not increase infection during post – HSCT neutropenia: data from a multicenter randomized trial

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Other Findings

- **Frequency of GVHD G>3: 20% in PD and 9.5% in NRD (p= .4)**
- **Frequency of any grade of gut GVHD: 15% in PD and 10% NRD (p= .7)**
- **Allo-HSCT recipients G>2 infections occurred is 95% of pt in PD group vs 76% in NRD group**

Recommendations

Standard diet with emphasis on food safety guidelines and hand hygiene.

[Keep Food Safe! Food Safety Basics | Food Safety and Inspection Service \(usda.gov\)](#)

[Food Safety During and After Cancer Treatment | Cancer.Net](#)

Trusted Nutrition and Cancer Resources

- **Consider the source**
 - Websites ending in .gov or .edu can often be trusted, but commercial sites, or sites that end in .com, may not always be a trustworthy source.
- **Look for red flags**
 - Does the information on the site promote a “quick fix” or unrealistic claim? Look out for key words like “guaranteed results,” “breakthrough” or “cure all.” If it sounds too good to be true, then it most likely is. Beware of advice that promotes cutting out specific food groups, focusing on specific foods or using supplement to relieve your nutrition related problems.
- **Research the author’s credentials or qualification**
 - A registered dietitian (RD) or registered dietitian nutritionist (RDN) holds a degree related to nutrition and dietetics, has completed an accredited supervised practice program, passed a national exam and maintains registration with continuing professional education requirements.
- **Check the date on the website and article**
 - Look for a date on the website of when it was last updated, or the date of when the article was written. The most reliable sources are kept up-to-date.

Trusted Nutrition and Cancer Resources

Cancer.org



Eatright.org



AICR.org



Cancer.gov



Summary

- Encourage patient to talk about the information they are seeking (clinical trials, supplements, or nutrition).
- There is no research to support the elimination of entire food groups or radically modifying one's diet to prevent or treat cancer.
- Neutropenic diets are not superior to standard food safety practices in reducing infections during BMT.
- Provide information from trusted health resources to guide our patients.



Resources

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[How to Find Reliable Nutrition & Cancer Information - American Institute for Cancer Research \(aicr.org\)](#)





Thank you

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