Reevaluating the Neutropenic Diet: Time to Change

Melissa Foster, MS, RN, WHNP-BC, OCN®

The neutropenic diet historically has been a mainstay in oncology practice, with many providers continuing to adhere tightly to the diet for patients with neutropenia. However, clinically sound evidence remains limited and weak and does not support the diet as a foundation for policy and practice. Therefore, two questions remain: Does evidence exist to support the effectiveness of the neutropenic diet in reducing infection rates in the neutropenic oncology population? Based on limited evidence supporting the neutropenic diet in this population, what clinically sound diet strategies are best for these patients?

The neutropenic diet was established as the so-called rules of the road for patients with absolute neutrophil counts less than 1,000 cells/mm³. The diet restricted all fresh fruits and vegetables from patients with neutropenia, with the intent to support germ-free or germ-reduced environments. In some cases, diet principles and restrictions were softened to allow family members to peel foods, such as oranges or bananas, to give to the patient (Jubelirer, 2011).

The neutropenic diet originated in the 1960s and 1970s when diets were treated as sterile—autoclaved and irradiated, then given to patient in germ-free environments. That environment was popularized with reference to the television character “The Bubble Boy” (Jubelirer, 2011).

Meanwhile, patients prescribed a neutropenic diet have been shown to have poor nutritional status, to the extent that a nutritional consultation is required. As a result of the restrictive diet, some patients even require supplementation via total parenteral nutrition (Murray & Pindoria, 2009). The diet and its effects led patients to become dissatisfied with their food choices and restrictions. Therefore, diets for patients with neutropenia eventually were changed to a cooked diet (allowing fully cooked fruits and vegetables and not requiring sterilization), although evidence supporting the change in practice was limited (Jubelirer, 2011).

Although many other restrictions for this population have been lifted, such as strict or reverse isolation, use of the neutropenic diet has continued in practice despite limited evidence from well-designed and statistically proven studies (Boeckh, 2012; Centers for Disease Control and Prevention [CDC], 2013; Jubelirer, 2011; National Institutes of Health, 2010).

**Literature Review**

Most studies published about the neutropenic diet have reported limited or weak evidence, concluding that diets have had little or no effect on infection rates in patients with neutropenia. Universally, study authors have suggested additional research on the topic is needed to prove the diet’s effectiveness (Jubelirer, 2011; Trifilio et al., 2012).

Since 2009, few new studies about the neutropenic diet have been published (see Table 1). Prior to Trifilio et al. (2012), these studies were based on limited or small samples sizes and concluded that (a) the diet has had minimal effect on infection rates and patients with neutropenia, and (b) additional research is needed to justify the merits of the diet (Jubelirer, 2011; Trifilio et al., 2012).

Trifilio et al. (2012) reported on a large retrospective study among 726 hematopoietic stem cell transplantation recipients. Half of the patients followed a neutropenic diet and half did not. Study results revealed following a neutropenic diet did not reduce infection. In addition, the diet actually was associated with increased patient risk for infection after the neutrophil recovery period in this study. *Clostridium difficile* infections also were higher in the neutropenic diet group. Study results suggested decreased bacteria in the gastrointestinal tract of these patients increased their risk of acquiring *Clostridium difficile*, in combination with the increased antibiotic use known to contribute to infection (Trifilio et al., 2012).

Ching’s (2013) summary review for cancer nursing also noted the need for more high-quality research regarding neutropenic diets and their effects on patient outcomes. No randomized, controlled trials support or refute the use of a neutropenic diet to reduce infection risk in patients with neutropenia in the oncology population (Ching, 2013).
Implications for Practice

So, how do these published studies and their limitations inform clinical practice? As a group and based on previous research, these study results suggest practice focus should move away from a traditional neutropenic diet to principles of safe food handling and patient education about food preparation and choices (American Cancer Society [ACS], 2013; CDC, 2013; Partnership for Food Safety Education [PFSE], 2010). With that clinically validated focus, patient satisfaction may improve and, more importantly, patients’ nutritional status could benefit.

At Virginia Commonwealth University Health System (VCUHS), for example, the Oncology Safe-Handling Diet is recommended in practice. The diet used the “Fight BAC!” campaign, from the CDC and a government/industry partnership with PFSE, as its model (CDC, 2013; PFSE, 2010). The Oncology Safe-Handling Diet has been in practice since 2012 at VCUHS; no statistical data have been collected, but incidences of neutropenic infection rates do not appear changed since implementation. In addition, patients’ nutritional statuses have not been compromised by not following a neutropenic diet (Foster, 2013).

Principles of the Oncology Safe-Handling Diet include:

• Teaching patients and family members how to wash produce, hands, and surfaces often
• Counseling patients and family members how to rewash produce labeled “prewashed”

• Cooking foods to the proper temperatures
• Avoiding unpasteurized dairy products and beer.

An overriding principle of the Oncology Safe-Handling Diet is to encourage patients to eat healthy, well-balanced diets designed to sustain their nutritional status throughout chemotherapy treatments (see Figure 1).

Clinicians experienced in implementing a change from the previously prescribed neutropenic diet used a comprehensive strategy toward effective outcomes. Components of an education and communication strategy include:

• Consistent resources and education materials with instruction on safe food handling, preparation, and storage for patients and family members

• Collaboration with interdisciplinary team members targeting inpatient and outpatient providers, operations, and support staff to ensure consistency in instruction and practice (Foster, 2013; Tarr & Allen, 2009)

• Published resources to guide and support nutrition and food safety for patients with cancer, including the CDC’s “Fight BAC!” campaign (CDC, 2013; PFSE, 2010), the ACS (2013), and U.S. Department of Agriculture.

Conclusion

Despite limited evidence to support the merits of the neutropenic diet for patients who are immunocompromised, the restrictive diet continues to be prescribed in the oncology community. By

<table>
<thead>
<tr>
<th>Table 1: Studies of the Neutropenic Diet in Patients With Cancer (2009–2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study</strong></td>
</tr>
<tr>
<td>Jubelirer, 2011</td>
</tr>
<tr>
<td>Tarr &amp; Allen, 2009</td>
</tr>
<tr>
<td>Trifilio et al., 2012</td>
</tr>
</tbody>
</table>

N/A—not available; VRE—vancomycin-resistant *enterococci*
championing the principles of safe food handling, healthcare providers are providing more holistic and comprehensive care to a vulnerable patient population. Reliable and easily available resources support the focus on safe food handling, preparation, and food choice for patients with neutropenia.

References


Do You Have an Interesting Topic to Share?

Oncology Essentials provides readers with a brief summary of oncology nursing basics. Length should be no more than 1,000–1,500 words, exclusive of tables, figures, insets, and references. If interested, contact Associate Editor Ellen R. Carr, RN, MSN, AOCN®, at ecarr@ucsd.edu.