

# Reevaluating the Neutropenic Diet: Time to Change

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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?

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Key words: neutropenia; diet; nutrition; food hygiene; food safety; low bacterial diet

Digital Object Identifier: 10.1188/14.CJON.239-241

The neutropenic diet was established as the so-called rules of the road for patients with absolute neutrophil counts less than 1,000 cells/mm<sup>3</sup>. 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).