Reviewer's report

Title: Diet patterns and risk of sepsis in community-dwelling adults: a cohort study

Version: 1 Date: 29 January 2015

Reviewer: Scott Weiss

Reviewer's report:

General comments: The study entitled “Diet patterns and risk of sepsis in community-dwelling adults: a cohort study” investigates the association between five dietary patterns and the incidence of sepsis in adults #45 years of age. This is a secondary analysis of a population-based study that was designed to investigate risk factors for stroke, with particular regard to racial differences. Overall, this study is very well written and provides an intriguing suggestion that dietary consumption may impact the host response to infection. I do believe that this study would be of general interest to a wide variety of primary and specialty physicians, given the role for nutrition throughout medical practice, and that this study brings to light a potential important and modifiable risk factor. However, there are several concerns to address with regards to the detail presented about the diet patterns, the selection of covariates in multivariable models, and whether the strength of the statistical findings sufficiently support the authors’ conclusions.

Major Compulsory Revisions:

1. It appears that the diet patterns where identified using factor analysis in a prior study. However, more detail is necessary to understand these patterns for this study. Can the authors elucidate the extent to which each of these diet patterns encompasses the full range of an individual’s overall diet? For example, to what extent does a person with “Alcohol/Salads” pattern live exclusively on alcohol, green leafy vegetables, tomatoes, and salad dressing? Is this a relatively low proportion of one’s overall diet even in quartile 4?

2. Along these lines, it does not appear that there are major differences in energy and nutrient intake between diet patterns in Additional Table 1. Can the authors identify (and statistically test) what they perceive as clinically important differences in energy and nutrient intake between diet patterns?

3. Can the authors elaborate on how they selected covariates for multivariable models? It appears that they may have simply included all of the data available. Were any of the covariates collinear and thus perhaps not helpful to include simultaneously in the model?

4. Some of the variables appear to capture little detail. For example, does dichotomizing lifestyle factors as “none” versus “any” fully capture the variability in exercise between subjects? Similarly, including all comorbidities vs no comorbidities also seems to oversimplify a subject’s medical history. Can the
authors provide additional rationale for how they chose to analyze the covariates in the models?

5. The analysis for effect modification by age, race, sex, and diabetes is well conceived, but it appears that the authors used a fairly low p-value of 0.05 to test for interaction with these variables. Given the insensitive nature of statistical techniques to detect real interactions, a more generous p-value of 0.10 or even 0.20 is often used for this purpose. Can the authors explain their rationale for selecting a p-value of 0.05 to test for effect modification?

6. Typically when an effect modification is noted to be present, as was the case for race and Southern diet pattern, the results of the stratified analysis are presented in lieu of the combined results. The combined results do not apply to either White or Black patients since effect modification was present and so it is not clear to me what the combined results, which were statistically significant, are telling the reader. In addition, neither the HR for Black nor White subjects for the Southern diet pattern reached statistical significance. While the point estimate and trend suggest that this may have been a problem related to sufficient power to detect a real difference within racial groups, the lack of statistical significance makes it challenging for the authors to conclude that a Southern eating pattern was associated with a higher risk of sepsis.

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.