Reviewer's report

**Title:** Predictive Factors of Urinary Tract Infections among the Oldest Old in the General Population. A Population Based Prospective Follow-up Study.

**Version:** 3  **Date:** 15 February 2011

**Reviewer:** Tomas Griebling

**Reviewer's report:**

This manuscript presents the results of a population-based cohort study of 479 subjects aged 86 years at the time of enrollment in the Leiden 85-Plus Study. Subjects were followed from baseline over time (4 years) to determine potential predictors for development of urinary tract infection (UTI). The overall incidence of UTI in this cohort was 11.2 per 100 person-years at risk. Impaired cognitive function, disability of daily living (defined as inability to independently perform at least of 9 activities of daily living on the Gronigen Activity Restriction Scale (GARS), and urinary incontinence were identified as independent predictors of developing UTI in this study.

The study seeks to address an important question regarding risk of development of UTI in the very elderly population. Strengths of the study included it's overall design, use of validated instruments to evaluate predictor variables, and clinical diagnosis of UTI. The authors correctly note that this definition of UTI may also be considered a potential limitation of the study as presented in their Discussion. The paper is well-organized, and the Tables and Figures generally help support the material presented.

Several points do require additional clarification:

**Major Compulsory Revisions**

1) Most of the survey instruments used in this study (MMSE, GDS-15, GARS, PRAFAB-Questionnaire, etc.) were developed and validated in English. Were these administered to subjects in English or Dutch? Have Dutch translations for these instruments been validated? Language validation is typically done using a translation and back-translation methodology. If available, this information should be included in the References.

2) For the variable examining disability (loss of independence of at least one ADL), was this examined as a dichotomous variable? It would be very interesting to see which specific ADL limitation(s) are associated with risk of developing UTI. Although small numbers may prevent complete analysis of some of the nine ADLs, a subanalysis by specific ADL would be most interesting.

3) The term 'prostatism' is outdated and no longer used in clinical or research practice. Does this refer to Lower Urinary Tract Symptoms (LUTS) caused by benign prostatic hyperplasia (BPH)? I would encourage the authors to use
terminology for voiding dysfunction as outlined by the International Continence Society. This information is updated regularly and is typically published in Neurourology & Urodynamics or available through the ICS. The appropriate reference should be cited for the terminology chosen.

4) C-reactive protein (CRP) was used as a measure of ‘general health status’. Has this laboratory test been validated in any way for this variable? If so, this information should be included in the Methods section with citation of the appropriate reference.

5) This study cohort included subjects living in the community as well as subjects living in long-term care facilities. These are very different populations, particularly with regard to potential development of UTI. It would be very helpful to include a stratified analysis of these subjects to see if the predictor variables are different in these two groups.

6) It is noted that 7 subjects died of UTI. How was this determined? Death directly from UTI is unusual, although it may be a contributing factor in some cases. Did these patients develop urosepsis? Were they hospitalized prior to death? Were there other underlying urologic conditions which might contribute (renal obstruction, acute urinary retention, etc.)?

7) In the Results section, it is noted that stroke and elevated CRP (> 5 mg/L) showed significantly higher rates of UTI in women, but not in men. It states the data are not shown. Why are the data excluded from presentation? I would recommend including this information.

8) Were any subjects in this study receiving any form of preventive therapy for UTI. The authors note that there has been data to support the use of several different therapies (low-dose antibiotics, vaginal estrogens, cranberry supplementation, etc.) for prophylaxis. This would be important information which could significantly alter the observed results.

9) Depression was eliminated as a potential predictor variable in the multivariate models because the GDS-15 was not administered to subjects with significant cognitive impairment (MMSE < 19). It appears that this involved 90 subjects. Of the subjects evaluated with the GDS-15, it appears that 58 had depressive symptoms. It would be helpful to show a subanalysis of these subjects by group to see if depression was linked to UTI in the group without severe cognitive impairment.

Minor Essential Revisions

10) In Figure 1, please provide a key to differentiate the two lines. Currently it is listed as ‘green line’ and ‘blue line’, however I only had a black & white print available. Some readers may also not have easy access to color in this Figure. This would improve the ability to interpret results.

11) Please provide an English translation for Reference number 3 in addition to the Dutch. This would be helpful for non-Dutch speakers reading this article.
Discretionary Revisions

12) You might consider also including the Dutch (or original language) titles in addition to the English translation for references 6 and 33.

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests