Reviewer's report

Title: How often is a work-up for Legionella pursued in patients with pneumonia? A retrospective study.

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Reviewer: Bertrand Renaud

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Review of the manuscript # BMC Infectious Diseases
Title: “How often is a work-up for Legionella pursued in patients with pneumonia? A retrospective study.”
Brian Hollenbeck, Irene Dupont, Leonard A. Mermel.

I have been very pleased to review this manuscript about the sensitivity of IDSA/ATS criteria for initiating legionella pneumophila microbiological work-up in the context of pneumonia and about the actual use of such a microbiological work-up in a North American hospital located in New England that is an area of endemic legionella pneumophila infection.

This is a descriptive study limited to a single site. As a result, study findings are quiet limited as they provide descriptive information about a single characteristic, namely sensitivity, of this bunch of criteria. However, this finding might constitute a basis for further investigations aiming to optimize IDSA/ATS criteria and assessing cost-effectiveness value of implementing policies based on IDSA/ATS criteria or alternatively to refine those criteria or proposed additional/other criteria. Therefore, I would suggest to consider this manuscript for publication in the BMC Infectious Diseases journal, however I have several comments that will need to be addressed beforehand.

Major comments
- Actually, there are 2 different and complementary studies reported in the current manuscript, one based on the whole population of patients with community and hospital acquired pneumonia and another one within the subpopulation of patients that were identified with legionella pneumonia. In contrast with the current manuscript structure I suggest to present the whole population of patients with pneumonia first and subsequently the subpopulation of patients with legionella.
- Please specify if chart review was performed in a standardized manner and which investigators were in charge of this review. Additionally, indicate which variables were collected and how authors managed the database.
- This is a retrospective study, at least with regard to data collected in patient charts, therefore I would suggest to specify the number of missing values for each variable collected and how did the authors deal with missing values in analyses.
- Discussion of the result seems excessively subjective, at least in light of actual study findings. Additionally, in my opinion, the discussion raises some confusion about the actual aim of legionella testing. Indeed, is legionella testing aimed to improve process of care at the patient level or to improve overall epidemiological picture of this specific infection in this endemic region. Authors strongly suggest that legionella testing is underuse; based on their findings, I am not convinced. I could be mistaken but it seems to me that the current study was not designed to answer this question. Current findings did not demonstrate that widespread use of legionella testing would be cost–effective. I think that current study aim was more limited and most of all about the sensitivity of IDSA/ATS criteria for legionella testing. Consistently, authors should alter their manuscript.

Minor comments
- Authors should define “community acquired” or “hospital acquired pneumonia”
- Please provide some additional description about the medical softwares that were used for identifying patients with legionella and patients with pneumonia. Indeed, this information will help the reader to understand how patients were actually identified and subsequently included in the current study.
- Please indicate why incarcerated patients were to be excluded.
- Please justify why patients that underwent bronchoscopy were of particular interest with regard to legionella pneumonia diagnostic testing.
- The reader would like to know if there is a pneumonia microbiological work-up policy in use in authors’ hospital.
- At least, unusual patient characteristics are to be defined.
- Description of study population is much too brief; particularly the reader would be interested in getting more details about physical examination and current laboratory and radiographic findings. The authors should provide this information or, alternatively, specify why those patient characteristics were not collected.
- I would suggest to provide at least one severity score, either the PSI or the CURB-65.
- Maybe, it would be of some interest to compare patients with and without IDSA/ATS criteria for legionella testing. Of course, it seems far from the current study aim, but it would have been mostly valuable to compare IDSA/ATS criteria characteristics within the whole population of patients with pneumonia. Indeed, the current study design prevents to assess remaining characteristics of this bunch of criteria.
- Maybe, it would be of some interest to compare patients with and without IDSA/ATS criteria for legionella testing.
- In the table, characteristics are not presented straightforwardly. I suggest to gathered comorbid conditions just at the following of demographics, then physical and laboratory findings. Additionally, as stated above, many variables require to be specifically defined. This is the case for “Abnormal liver function test” and “immunocompromised status”. 

- I would suggest to describe antimicrobial treatment and to present overall hospital length of stay as a surrogate of morbidity.

- Authors indicate “crude mortality”, but did not specify if the crude mortality referred to in-hospital mortality or short term mortality such as 30-day mortality. Please specify.

- With regard to gender, I suggest to keep “male” or “female” as both are about the same characteristic and are complementary.

Level of interest: An article of limited interest

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