Reviewer's report

Title: Non-Hispanic Whites have higher risk for pulmonary impairment from pulmonary tuberculosis.

Version: 1 Date: 29 July 2011

Reviewer: Gerald H. Mazurek

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Minor essential revisions are preceded by “**”. Discretionary revisions are listed without additional designation.

*Line 82: “… treatment for culture-confirmed pulmonary M. Tuberculosis at …” should be “… treatment for culture-confirmed pulmonary tuberculosis at …”

Line 83-84: To clarify consider changing “The population includes all persons with culture-confirmed tuberculosis in Tarrant County” to “The population includes all persons with culture-confirmed tuberculosis in Tarrant County, some of whom also had extra-pulmonary tuberculosis”.

Line 85: “TCH is health authority for …” should be “TCH is the health authority for …”

Line 90: In place of “…were asked to participate in a study of …” consider “…were asked to participate in this study of …”

*Line 95 – 7: The statement “Spirometry was conducted according to ATS guidelines for maneuver, techniques and quality control using the Spirotouch device (Spirotouch Spirometry System 086578; Spacelabs Burdick; Deerfield, WI)” and references are somewhat contradictory. Reference 19 states that “ATS recommendations for diagnostic spirometry must be followed for office spirometry, except for the following seven factors”. If all ATS guidelines for maneuver, technique, and quality control were followed, the authors may wish to delete reference 19. Alternatively, they may wish to indicate which ATS guidelines were not followed. Additionally, they may wish to include the following reference: Miller MR, Hankinson J, Brusasco V, Burgos F, Casaburi R, Coates A, Crapo R, Enright P, van der Grinten CP, Gustafsson P, Jensen R, Johnson DC, MacIntyre N, McKay R, Navajas D, Pedersen OF, Pellegrino R, Viegi G, Wanger J (2005) Standardisation of spirometry. Eur Respir J 26: 319-338.

Of concern is the use of FEV6 in place of FVC by many office spiroeters. The FEV6 is an acceptable surrogate measurement for FVC in most situations when appropriate reference values are used and applied to all populations being compared (which is the case in this study).

*Line 98 – 99: A more typical approach is to perform at least 3 tests, with
additional tests (up to 5 or 8) as tolerated until 3 give consistent results (with
variation of 5% or less between measurements). Were results of subjects without
3 consistent results excluded?

*Line 102-104: “Forced Expiratory Volume in 1 minute (FEV1) >=80%, Forced
Vital Capacity (FVC) >=80% and FEV1/FVC>70% of predicted were considered
normal.” If correct, consider adding: “Other results defined pulmonary
impairment.” Based on the results presented, it appears that both restrictive and
obstructive patterns of impairment were considered.

*Line 104-106: “Impairment was categorized as none, mild (FEV1 values >60%
but <80%), moderate (41% to 59%) or severe (FEV1 values <40%) using an
interpretive algorithm from the AMA 19;20.” This suggests that pulmonary
impairment was defined and graded by the extent of obstruction as measured by
FEV1 and ignores impairment due to restrictive patterns of impairment. Clearly
this was not how the data was interpreted based on information in lines 255 to
256: “we identified some PIAT in over half (52%) of patients and severe PIAT, in
which less than 50% of expected lung volume remains, in almost 1 in 10 patients
(9%).” Additionally, based on results presented in Table 1, the majority of
subjects with pulmonary impairment had a restrictive pattern or a mixed
(restrictive & obstructive) pattern.

Line 113-114: Consider revising to include all the items used to assess
socioeconomic status. For example: “Socioeconomic status was assessed
according to established methods,22;23 and included (1) highest level of
education attained, (2) employment status at diagnosis, (3) self-identified
occupation, and (4) estimate of household income.” In addition to disclosing how
education and income was categorized, consider indicating that “occupational
status was ranked according to prestige” and explain or reference method used.

Line 115-116: Consider changing “Similarly, household income derived from
census-tract ZIP codes of the patient’s home address was …” to “Area-median
household income, derived from census-tract ZIP codes of the patient’s home
address, was …” to match subsequent use in tables. Was income of homeless
persons set to “0”?

Line 117: Change “ranges comparable published data” to “ranges comparable
with published data”.

Line 121: “Time-to-TB-diagnosis” is referred to as “Time-to-TB diagnosis and
treatment” in other places in the document. Using the same designation
throughout the document, setting it off with quotation marks, and shortening it a
bit (e.g. “days to begin TB Treatment”) may improve clarity.

Line 126: Consider revising for clarity to “TB disease type was classified as
“cavitary” when patients had single or multiple cavities visible on regular
posterior-anterior chest radiographs.” If correct consider adding “TB Disease site
was classified as “pulmonary only” or “both pulmonary and extra pulmonary”.

*Line 134-135: The sentence “Impairment, the primary outcome variable, was
dichotomized by combining mild, moderate and severe impairment versus no impairment” suggests that restrictive pulmonary impairment was not considered since (as stated in lines 104-105) only those with FEV1 < 80% of predicted had mild, moderate, or severe impairment. Based on the results presented, it appears that both restrictive and obstructive patterns of impairment were considered. Thus this sentence should be deleted. (Please also see comments for lines 102-104 and 104-106.)

*Line 138: Please indicate what statistical tests were used to assess statistical significance.

Line 156-157: To what “pattern” is the author referring to? Consider revising to “TB disease type and site, and patients’ access to TB care (as estimated from “Time-To-TB-Diagnosis-and-Treatment”) was similar between races (Table 1).”

*Line 164: Should it read “… Figures 2 to 4”?  
*Line 165: Did the authors compare PIAT frequent and severity among Whites versus non-Whites, or Whites compared to each or the other racial groups? The accompany figure is interesting but does not clarify this issue.

*Line 166: Should it read “… Figures 2”?

*Line 167-169: Should it read “… Figures 4”? Base on Figure 4, among ever-smokers the p-value for the comparison of proportions with impairment among racial groups was 0.006, and among never-smokers it was 0.001.

Line 170: Consider disclosing data on employment, income, occupation, and education in Table 1. The conclusion that the data is similar to other US TB patients can be discussed later.

Line 175 Consider adding “… when the highest level of education attained was used as a proxy for socioeconomic status.”

Line 176 - 179: “(inter-quartile range [IQR])” appears in an unusual position in the sentence. Consider revising to “The median “time to beginning TB treatment” for non-impaired persons was 62 days (interquartile range [IQR] was 12 - 110); 93 days for mildly impaired persons (IQR 61 - 110), 138 days for moderately impaired subjects (IQR 32 - 271), and 37 days for severely impaired subjects (IQR 12 -60).”

Line 183: Table 2 indicates that smoking volume was also associated.

*Line 186-187: “Socioeconomic status, (table 2) occupation, and employment status (data not shown) were not associated with PIAT.” This is confusing since prior statements indicate that “education was used as a proxy for socioeconomic status” and that “education, employment status, and occupation were used to assess socioeconomic status.

*Line 190-191: Considered adding a sentence indicating that racial group and
foreign birth were correlated and indicate the correlation coefficient. Consider indicating the benefit of using 2 models. Avoid using “country of birth” when referring to “foreign birth”. For example “Since racial group and foreign birth were correlated, and to avoid confounding, separate multivariate regression models …”

*Line 199-200: “Onset of age-related lung function decline starts is variable (19 - 21); however, for this study cohort onset of impairment was related to time of acquiring tuberculosis.” The word “starts” should probably be deleted. It is not apparent how data presented in this study supports the first or second part of this sentence.

*Line 224 – 225: Correct typographical error by changing “… access, medical …” to “… access to medical …”. Avoid using “country of birth” when referring to “foreign birth”.

*Line 223: Correct typographical error by changing “…for each additional increase in age …” to “…for each additional year increase in age …”

Line 262: If “SES” is to be used for “socioeconomic status” it should be defined with the first use of the term.

*Table 1: The title should probably be “Table 1. Demographic and clinical characteristics of 317 patients with pulmonary tuberculosis included in analysis”. Three others were enrolled but not included in the analysis. “(%)” in the second row should probably be deleted. The row labels can include “, n (%)” for rows indicating counts. Others should be “Mean Age (SD)”, “Mean FVC % of Predicted (SD)”, “Mean FEV1 % of Predicted (SD)”, “Mean FEV1/FVC % (SD)”, “Mean BMI (SD)”, “Mean Years of Biomass Some Exposure (SD)”, “Mean Pack-years Smoking Volume (SD)” and “Median Days to Begin TB Treatment (IQR)”

Consider deleting rows with “Clinical Impairment” and its subcategories. These were not defined in Methods section and can be confused with pulmonary impairment.

*“Years of Biomass Smoke Exposure (SD)” should follow immediately after “Biomass Smoke Exposure, n (%). “Pack-years Smoking Volume (SD)” should follow immediately after “Never-Smokers”. Either “Ever-Smokers” or “Never-Smokers” can be deleted to conserve space (if needed).

Add a row for “Pulmonary Impairment, n (%)” and indicate the number and percent for each racial/ethnic group. Indent “Restrictive”, “Obstructive”, and “Mixed” to indicate the percentages listed are of those with impairment.

Add rows to show data on employment status, education, occupation, household income,

*Define “SD”, “IQR”, “FEV1”, “FVC” in footnotes.

Table 2: Consider changing “Access-to-TB-diagnosis and treatment time to
diagnosis and treatment (days)” to “Days to Begin TB Treatment”

Table 3: Consider changing title to “Predictors for pulmonary impairment in 69 White, 85 Black, 82 Asian and 81 Hispanic patients with pulmonary tuberculosis”

*Inclusion of the “Omnibus Tests of Model Coefficients” adds more confusion than clarity, and could be deleted. Alternatively, the table could be simplified by: (1) adding 2 rows labeled “Cox & Snell R-Square” and what presumably is the “Chi-square Statistics Significance”, and (2) moving the “R2” and “p” values to these rows at the end of the table.

**“∧”, “OR”, and “CI” are in footnotes but not in table title or table. Apparently “∧” should be “a”.

*Replace the second row of the table with “OR (95%CIs)” below each race/ethnic group.

Table 4: Consider changing the title to “Predictors for pulmonary impairment in 144 US-born patients with pulmonary tuberculosis”

Figure 1: Consider adding a footnote to indicate that “3 other” were not included in analysis.

*Figure 2: Consider removing the label “Non-White” and associated bar to avoid suggestion that “Whites” group was compared to “Non-Whites” as a whole.

*Figure 3: The figure and title do not match. Consider changing the title to “Comparisons of the frequency and severity of pulmonary impairment among patient with different socioeconomic status.” Define categories according to educational level attained. Consider removing space between first and second group. Change “…does not varies with increase …” to “…does not vary with increase …”

*Figure 5: The figure title should be revised to do match the figure. For the Panel B, x-axis label, change “… moderate/severe…” to “… moderate or severe…”

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.