Peer Review File

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Reviewer A

Comment 1: To avoid 'health equity tourism' it is crucial for the authors to locate this work in a framework that addresses the social determinants of health. There is no theoretical framework which underpins the narrative review.
Reply 1: We praise the reviewer for bringing this central issue seen with many reviews. We hope to clarify areas of controversy for improvement when devising LCS trials. We have included this as a statement to serve as a framework for our narrative review.
Changes in the text: Statement made on Page 3, Line 73-76

Comment 2: It is also important for a paper of such a nature to clearly define what the authors mean by the term health disparity. The words health disparity and health inequity are used interchangeably at times in the manuscript - however authors do not offer what they mean by either term.
Reply 2: We agree with the reviewer about the need to clarify the definitions of disparity and inequity. We have added a statement "Within the context of this narrative review, health disparity must be explicitly differentiated from health inequity, given that ambiguity in these definitions may confound interpretation and future interventions. Health disparities, in this context will refer to the status of unequal health potential whereas health inequity is a difference in individuals' opportunity to attain the highest level of health" to clarify this
Changes in the text: Statement provided on Page 4, Line 100-104 and Reference provided on Page 16, Line 382-383

Comment 3: The word health equity is also missing from the 'keywords' searched list - this is a major flaw in the study design - and would need a revisit and repeat search of articles with this search term included. The authors at some point need to explain why they limited search terms to just race, ethnicity and socioeconomic status?
Reply 3: We thank the reviewer for noticing this issue, and have added health equity as an additional keyword. We have also provided a statement as to maintaining a focused search criteria for the very broad field of health disparities research in regards to lung cancer screening
Changes in the text: Keyword added and additional statement on Page 3, Line 82 – Page 4, Line 85

Comment 4: What about the other social determinants of health?
Reply 4: We agree with the reviewer that several social determinants of health contribute to disparities in lung cancer care. To maintain a structural focus to our already broad review, we have chosen to focus on race, ethnicity, SES, with an extension towards some strategies towards health equity practices.

Changes in the text: None

Comment 5: There is also a conflation between lung screening and reduced disparities - for example, just increasing eligibility criteria cannot improve health inequities - I urge the authors to consider what other conditions must be in place for this to happen?
Reply 5: We thank the reviewer for highlighting this. We have provided a statement in the conclusion to address the need for awareness and implantation in LCS practice.
Changes in the text: Statement on Page 14, Line 327-330

Reviewer B

Comment 1: Please cite the reference of the description of "Historically, cancer screening guidelines are drawn from clinical trials that largely underrepresent minorities and women.".
Reply 1: We thank the reviewer for highlighting the need for this citation, which we have included in the revised manuscript.
Changes in the text: Reference added on Page 16, Line 379-380

Comment 2: Please cite the reference of the description of "The United States National Lung Screening Trial (NLST) included current and former heavy smokers who were 55-74 years in age, which subsequently resulted in the US Preventative Services Task Force (USPSTF) recommendation for annual screening with LDCT for this population.".
Reply 2: We thank the reviewer for highlighting the need for this citation. This reference was used in the introduction, and we have provided this reference once again in the revised manuscript.
Changes in the text: Reference added on Page 4, Line 93

Comment 3: Please cite the reference of the description of "Similar inclusion criteria were utilized in the Nederlands-Leuvens Longkanker Screenings Onderzoek (NELSON) trial, with screening practices aimed towards this demographic since.".
Response 23 We thank the reviewer for highlighting the need for this citation. This reference was used in the introduction, and we have provided this reference once again in the revised manuscript.
Changes in the text: Reference added on Page 4, Line 95

Comment 4: Please cite the reference of the description of "This may partly contribute to lower screening rates, increased diagnosis at later-stage disease, and lower rates of surgical resection for early-stage disease observed in lower SES communities.".
Reply 4: We thank the reviewer for bringing this to our attention. The reference for the above statement is provided in the preceding sentence. We have reworded the statement to included the reference of interest.
Changes in the text: Statement reworded to include the reference of interest on Page 7, Line 180 – Page 8, Line 183

Comment 5: Please cite the reference of the description of “Older individuals on Medicaid were also reported to have a higher incidence of lung cancer, in comparison to those with private insurance”.
Reply 5: We thank the reviewer for highlighting the need for this reference. The reference is the same as that for the preceding sentence, and we have reworded the statement for more clarity in the revised manuscript.

Changes in the text: statement reworded on Page 9, Line 216

Comment 6: The editorial office of Current Challenges in Thoracic Surgery shows the Reference Style, “For reports with up to three authors, all the author names should be listed. However, if a report has more than three authors, the first three authors should be listed followed by “et al.””, but the following references are not following the Reference Style.
1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, et al. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68(6):394-424.
44. Williams CD, Salama JK, Moghanaki D, Karas TZ, Kelley MJ. Impact of Race on Treatment and Survival among U.S. Veterans with Early-Stage Lung Cancer. Journal of Thoracic Oncology. 2016;11(10):1672-1681.
Reply 6: We thank the author for noticing the discrepancy in citation formatting. This has been edited in the revised manuscript.
Changes in the text: Page 16, Line 354-355 and Page 19, Line 512-514

Reviewer C

Comment 1: Lung cancer is the most prevalent malignancy and most common cause of cancer-related death worldwide in the introduction should be reworded, as technically lung cancer is the second most common malignancy but the most common cause of death. please rephrase
Reply 1: We thank the reviewer for noticing this discrepancy. It has been reworded in the revised manuscript.
Changes in the text: Page 3, Line 61

Comment 2: Line 93, do you have a reference for this: The lack of diversity in these landmark trials manifests as a health disparity. For instance, Black and African American men are diagnosed with lung cancer at earlier ages and with lesser smoking histories
Reply 2: We have included this reference in the revised manuscript.
Changes in the text: Page 5, Line 109

Comment 3: While expansion of LSC screening - typo change to "LCS"
Reply 3: We thank the reviewer for noticing this typo. It has been fixed in the revised

manuscript.
Changes in the text: Typo fixed on Page 6, Line 152

Comment 4: Faith-based outreach has been successful in delivering the message of screening through a 272 patient-trusted, widely available source of information. Is there a reference for this?
Reply 4: We thank the reviewer for noticing the need for a reference for this. We have experienced this through our networks efforts, though have provided a reference to further assert this point.
Changes in the text: Reference provided on Page 19, Line 516-517

Comment 5: It may also be prudent for healthcare groups to form partnerships with occupation-based health plans (i.e. – law enforcement, firefighters, etc.) for high-risk professions to deliver appropriate screening. - MGH in Boston is doing this with Boston Firefighters, just fyi.
Reply 5: We thank the reviewer for mentioning this. We agree that it is an important step towards promoting screening

Reviewer D

This manuscript is an important and timely review of lung cancer screening (LCS) and an original concept in its consideration of future developments, which will impact LCS. I recommend publication with the following suggestions/revisions addressed:

Comment 1: Section 1 appropriately discusses expanding screening criteria; however, the manuscript does not address an equally, if not more important issue – the unacceptably low rate of LCS among currently eligible candidates. Estimates are that only 3-15% of individuals meeting USPSTF criteria are actually screened. Can the authors address the ways in which this critical issue will be addressed in the future?
Reply 1: We agree with the reviewer about this issue, and have addressed it in a statement in Section 1, with extension in further sections.
Changes in the text: Statement on Page 6, Line 136-139

Comment 2: Section 1 suggests the importance of expanding the criteria for LCS. The authors should discuss how this will be balanced against an increased rate of overdiagnosis / false positive studies and subsequent "unnecessary" interventions. This represents the major barrier to expanding the screening eligibility criteria and is not sufficiently addressed in the manuscript.
Reply 2: We agree that the benefits of LCS must be balanced with the harms. Though this is not the intent of our review, we acknowledge the need to mention this tangible concern, and have provided a statement in the revised manuscript.
Changes in the text: Statement on Page 5, Line 114-116.

Comment 3: In section 1 the authors discuss risk prediction models in the context of

expanding LCS to never-smokers. Unfortunately, there is no further discussion of the role for improving risk prediction models more generally and their inclusion in LCS protocols. This is an active area of research and will almost certainly be an important component of successful expansion of screening criteria. The review would be strengthened by a more comprehensive discussion of risk prediction models in LCS.
Reply 3: We thank the author for bringing this up, and have provided a more cohesive suggestion in Section 1.
Changes in the text: Page 10, Line 241-243

Comment 4: In section 3 the authors refer to "regimen of screening". This is an unconventional terminology in this context. I would urge the authors to consider substituting "regimen" for screening "protocol".
Reply 4: We thank the reviewer for bringing this up, though have not found in the manuscript where a "regimen of screening" is referred to.
Changes in the text: None

Comment 5: The conclusion focuses on treatment of discovered cancers. Clearly important, but it seems to miss the major message of the manuscript. Treatment of lung cancer is only addressed in section 6. The conclusion should better encapsulate the central message of improving screening utilization, optimization
Reply 5: We agree that a stronger concluding statement is needed to justify the message of the manuscript, and have added this into the revised manuscript.
Changes in the text: Statement on Page 14, Line 337-342