Reviewer's report

Title: Underutilization and disparities in access to EGFR testing among Medicare patients with lung cancer from 2010-2013

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Reviewer: Kate Eddens

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Manuscript number: BCAN-D-17-01044
Title: Underutilization and disparities in access to EGFR testing among Medicare patients with lung cancer from 2010-2013

Overview of Manuscript: This paper presents a retrospective study of 2010-2013 Medicare claims to identify clinical, demographic, and geographic predictors of EGFR and KRAS testing among Medicare beneficiaries with lung cancer. The paper describes findings indicating that there are racial, socioeconomic, and geographic disparities in EGFR and KRAS over and above the bias for risk, and that overall testing is underutilized.

Overall evaluation: As precision medicine becomes a growing focus within health care delivery, this paper provides a necessary investigation of how inequities in EGFR and KRAS testing may inadvertently contribute to differential lung cancer outcomes. The stated objectives of the study are significant and relevant: "There were four objectives of this study: (1) Identify Medicare patients with newly diagnosed lung cancer who underwent molecular and proteomic testing. (2) Compare the proportion of patients tested to the expected rate of testing based on population-level statistics reported in cancer-registry data. (3) Identify patient-level and regional variations in access to testing; and (4) Evaluate whether patient-level disparities in access to diagnostic procedures compound disparities in access to EGFR testing."
These findings will contribute to an important evidence base for eliminating lung cancer disparities.

However, the manuscript would be improved by clarity in writing and presentation. For example, some of the description of the inclusion process -- claims volume for testing and proportion of patients tested among newly diagnosed patients - is difficult to muddle through and may be better represented as a flow chart rather than a table. I don't have a specific recommendation, but the authors may try a few different ways of representing this information and running it past someone unfamiliar with the subject matter to make sure it's easy to understand at a glance. Similarly, more succinct and well-organized results and discussion sections that follow directly the stated objectives would help readability. Finally, the paper would benefit from a compelling conclusion that drives the point home that there are disparities here that exist above and beyond what is expected due to racial differences in mutation prevalence.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.
Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.
Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.
Yes

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