Reviewer’s report

Title: The global impact and cost-effectiveness of a melioidosis vaccine

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Reviewer: Antoinette van Asselt

Reviewer’s report:

dr Luangasanatip and co-authors have performed a very comprehensive analysis to assess the potential cost-effectiveness of melioidosis vaccination in multiple geographies around the world. Methods necessarily take up most of the paper but are clearly described. Results and discussion are concise. Altogether, the analysis convinces on the importance and viability of a vaccine for melioidosis, and it reads very well. I have a couple of mostly minor concerns that may be addressed to improve the paper:

- What is difficult to derive from the methods and supplemental materials is how many environmentally suitable areas there were in each geography, or what percentage of a geography was environmentally suitable. As the areas are quite small (5x5 km), as a reader I am curious whether they are clustered or could also be more scattered. This is important information, not necessarily for cost-effectiveness per se, but for implementation. As the vaccination strategies are all targeted towards the environmentally suitable areas, within a geography only those people that live in the suitable areas would need to be vaccinated. How would that be done in practice? It would be helpful if something on the dispersion of the areas and practical implementation (or possible limitations this would imply) would be added to methods and/or discussion.

- page 8 line 7/8: 'geography-specific life-time cohort with age structure model was developed' - please clarify, particularly on what is meant by the 'with age structure'

- page 8 line 8/9: 'the population age 46 was vaccinated and followed up until death with a single cohort' - figure 1 seems to show that also age 47, 48 etc are vaccinated, but not sure whether that is what the figure means to say. Please clarify what the vaccination strategy entails precisely: to annually vaccinate all at age 46, or to vaccinate all over age 45 at the same time?

- page 10, lines 12-16: proportion and risk of death for each of the melioidosis conditions was derived from expert opinion, and then also overall risks of death due to melioidosis were obtained from the ratio of death to cases predicted each year in the global burden study. What exactly is predicted in the global burden study, only the cases or also deaths? If both cases and deaths are reported in global burden study, how are these then combined with the expert values? This part is slightly confusing.

-page 13, line 4-6 reads that 457 people aged over 45 are living in environmentally suitable areas. Then, in lines 14-15 it says that if everyone over 45 years living in an environmentally suitable area was vaccinated, this would be 15.18 million people per year. This again raises some confusion on whether only those aged 46 would be vaccinated every year or that all over 45
would be vaccinated at once. And subsequently, the potential market size estimated in line 19, is this then annual market size? Bit difficult to disentangle.

- page 13 lines 4 vs 7- how did we go from 83 geographies to 61 geographies?

- The discussion section may need a bit of getting back to some assumptions that were made, such as equal life expectancy for all (page 7 line 24). Just as a reminder for the reader.

- page 14, line 10 - just 'cases' would do, no need to specify that these are human cases - it looks a bit odd

- table 1: LOS for acute without complication (13.47) is higher than for acute with complication (10.67). Is that correct?

- language checking would be useful, I think for instance that 'people age over 45' should be 'people aged over 45' (this is in the paper multiple times but there are also minor other language issue)

- supplementary materials: appendix G (a), ICERs compared to next best strategies, why are these all without vac 1 - as vac 2 was the least expensive strategy in SAF (looking at figure 2c) and maybe also in EAP (even LAC?)

- also what is called SSA in appendix G is SAF in the paper

- supplementary materials appendix G (b) ICERs compared to base-case -> what is base-case here, it is probably vac 1 but it would be better to call it vac 1 then

**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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