Author's response to reviews

Title: Limiting worker exposure to Highly Pathogenic Avian Influenza A (H5N1): a repeat survey at a rendering plant processing infected poultry carcasses in the UK.

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Author's response to reviews: see over
Dear Sir,

MS: 6224366524813779

Submission – manuscript revisions: Limiting worker exposure to Highly Pathogenic Avian Influenza A (H5N1): a repeat survey at a rendering plant processing infected poultry carcasses in the UK. Coetzee N, Edeghere O, Afza M, Duggal HV

Thank you for your email of 16 May 2011, and for the comments from four reviewers. We have made a number of changes (marked in blue highlight on the revised manuscript) to the original document that we re-submit with this letter. In addition, we have detailed our motivation and responses to each of the comments made by reviewers in the following paragraphs (ordered by reviewer):

Reviewer #1 (P Rabinowitz)

Major revisions:
1) We have clarified the section regarding the “total plant population remaining unchanged”.
   - The total workforce complement remained unchanged, i.e. the total number of posts and worker-hours per category. Individuals would rotate/move through the set number of posts per category: page 13 first paragraph, first sentence: – the full workforce complement (by category and person-hours worked) at the plant remained largely unchanged, there were seasonal workers employed during the two incidents.
   - We explain why statistical tests are not suitable (page 13 first paragraph). Because of the nature of the population (see bullet above) we could not fully assume that the study population represents paired groups with observations taken from the same individuals during the two incidents. This assumption is required to undertake appropriate statistical tests such as a McNemars test. The heterogeneous nature of the study population (paired and unpaired) therefore did not allow us to link the observations recorded during the two incidents to specific individuals – and so to identify discordant pairs. By contrast, to calculate a p-value for the difference between the groups based on the assumption that the individuals in the two groups were different (even though the roles remained unchanged), would be statistically inaccurate as these two groups were not completely different groups (evidence of paired samples) and this will result in a bias of the p value towards the null (i.e. no difference). For these reasons we have not undertaken statistical analysis – as pointed out in the revised manuscript.
2) Individual jobs were assessed for influenza risk by ‘direct observation’ – this has now been added to the text as follows:

- Page 6, last paragraph, first sentence: inserted words “used direct observation to assess”.
- Page 7, third paragraph, second sentence: inserted – “by direct observation”

We would like to note, that assigning risk categories on the basis of occupational roles/tasks is not unusual in practice, and certainly a similar approach has been utilised in the USA to support planning arrangements for the pandemic (see US dept of labour Occupational Safety and Health Administration (OSHA) guidance on preparing workplaces for the influenza pandemic.

3) ‘... it should be stated that for all types of workers, task based targeted approaches can be used’:

- Page 11, last paragraph: We have added a statement at the end of the paragraph stating that the task based approach has application across the poultry industry.

4) ‘... mention the need for more task based influenza exposure research’.

- Page 13, second paragraph: Have inserted addition to sentence: “Work to measure task based H5N1 exposure risk and biological outcomes.....”

Minor revisions:
We have added a reference to the study by McQuiston et al – and this reference has now been included:

- Page 5, first sentence. “The transportation of infected carcasses for off-farm rendering has been implicated in avian influenza transmission between commercial poultry farms”.

Discretionary revisions:
- We have adopted the use of “task based exposure assessment” throughout the paper.

Reviewer #2 (Giri Rajaratnam)

‘... why workers in categories C & D were provided an intervention and whether the intervention included both PPE and medication’:

- Page 7, second paragraph under ‘Human health risk assessment’ heading: For incident I we have already stated that “All staff entering restriction zones (irrespective of their occupational category) were assessed as having uniform exposure risk without considering differences in individual occupational functions”. We think this statement is clear.
- Page 7, third paragraph: For incident II risks were categorised according to ‘task based exposure assessment’ – and the four risk categories (A to D) were identified and interventions tailored --- as per Table 1. This makes it clear which protective interventions were applied to each category.
- Page 10, first paragraph: We inserted an explanation why seven category D workers received antivirals (but not PPE). We inserted here that the category C workers received both antivirals and PPE during incident II. We believe this answers the reviewers question for clarification.

Reviewer #3 (Nicholas Phin)

Discretionary revisions:
We do not agree with this statement. The aim of the paper is clearly stated in the last paragraph of the ‘background’. We clearly state that it is “to inform future public health practice and targeted prophylactic antiviral prescribing”, and we describe our experience in “refining the exposure risk assessment for workers”. The paper clearly proposes the use of a task based exposure assessment – based on ‘occupational’ category and likelihood of exposure.

Major compulsory revisions:

Reviewer’s first comment (paragraph 1): We agree that a “key operational objective is the individual risk assessment of workers based on their actual or potential risk of exposure”. This is the approach we adopted in our paper – and have described our pragmatic approach to ‘task based exposure assessment’ for rendering plant workers in particular. It should be noted that the reviewer is not correct when he states “HPA guidance does specifically mention disposal site operators”. We have again reviewed HPA guidance, and have confirmed that it does not detail the approach to follow for rendering/disposal plant workers. It is because of this absence of specific practical advice regarding rendering site operators that we have written and submitted our paper: to inform future practice.

Reviewer’s second comment (paragraph 2): We agree that antiviral prophylaxis is not the main intervention. Accordingly we have modified the text of our paper:

- Page 4, first paragraph under ‘Background’: “Pre-exposure prophylaxis serves as an important intervention...”. Pre-exposure prophylaxis is not the only intervention – and hence we have changed this sentence.

Reviewer’s third comment (paragraph 3): We do not disagree that a ‘hierarchy of exposure risk’ is speculative. We clearly make the point in the discussion that further research is needed to support out suggestions. Our paper simply proposes a practical method of assessing worker exposure potential – using a “task based exposure assessment” – which is a sound and reasonable occupational health approach.

Reviewer’s fourth comment (paragraph 4): We do think that table 1 provides a practical approach to dealing with a wide range of rendering occupational categories – each of whom have different tasks each of which carry a different degree of exposure to potentially infectious material. We have not at any stage claimed that table 1 is based on research evidence. We do believe that table 1 will provide the reader with insight into work practices (“tasks”) at a modern rendering plant, and give a practical approach to managing exposure risk in future similar outbreaks.

Reviewer’s fifth comment (paragraph 5): We agree that a more rigorous application of risk assessment in category D workers (Table 2) resulted in the greatest reduction in antiviral use. This is stated in our discussion section.

‘... why those with no direct/indirect/close contact were offered antiviral prophylaxis’: We have expanded our discussion regarding this point – see page 10, first paragraph under discussion: “Due to a communication error, seven category D workers did receive antiviral prophylaxis (but not PPE) at the onset of incident II”.

Reviewer’s sixth comment (paragraph 6): We do not disagree with this statement, and have noted in our discussion that there is a need for further work to underpin (validate) the development of future risk assessment regarding rendering workers. However, in our description of the work tasks at the rendering plant, we explain that mainly category A (and to a lesser extent category B) workers have contact with infected material. This is because the rendering process is almost entirely automated – and only the raw material operators/“shunter” drivers will handle carcases. Maintenance personnel (category B) may be called to repair the production line and would then have contact machinery that crushes/processes the carcases.

Reviewer’s seventh comment (paragraph 7): Agree.
Reviewer’s eighth comment (paragraph 8): We have responded to these concluding remarks in the above paragraphs.

Reviewer #4 (Zafar Iqbal)

‘... how they obtained reporting data from GPs on influenza’
- Page 8, end of first paragraph: We have inserted a sentence here explaining that we wrote to all GPs asking them to report (telephone) influenza-like symptoms to the study team.
- Discussion, Page 12, second paragraph: We have added a comment there explaining that it is possible mild cases could have been missed, but we do not believe that there would have been under-ascertainment of true cases by GPs serving this workforce.

My contact details as corresponding author are given above. My email address is: nic.coetzee@hpa.org.uk. I look forward to your future comments.

Yours sincerely

Dr Nic Coetzee
Consultant in Communicable Disease Control