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Authors' reply to CEA letter (CEA-2016-0379)

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EDITOR — Erbas et al have raised some concerns with regard to the analysis of the effects of air pollutants including pollen, on asthma hospital admissions in Adelaide [1], and suggested directions for future research.

We have been aware of, and acknowledged in the paper, some limitations of the study. The detailed statistical analysis of asthma cases can be complex as mentioned by Erbas et al, with diagnosis in the very young children being difficult and hospital re-admission often occurring. However, we were unable to identify re-admissions with daily aggregated data. For this reason, we could not rule out the possibility of misclassification of control days in the case-crossover (CCO) analysis, which would occur if a case was re-admitted for asthma within the 28 control day stratum. According to nation-wide data for asthma hospital re-admissions, only a small proportion (<5%) of individuals having additional hospital re-admissions within 28 days would violate the assumption for CCO analyses using the time-stratified referent selection strategy (CCO-TS) with a stratum length of 28 days [2].

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In addition, Erbas et al also raised the fact that no P-values were reported for the interaction term in the models with exposure by season interactions. For the seasonal analysis, we examined the effects of air pollutants by stratifying cool and warm seasons using CCO analysis. As a necessary consequence of this approach no interaction terms between season and exposure were included in the models.

The primary aims of the paper were to investigate the effects of a range of air pollutants adjusted for total number of pollen and weather variables on asthma hospitalisations, and to compare the analytical methods between time-series analysis and CCO analysis using real data. Unfortunately an in-depth analysis of pollen was beyond the primary scope of the study. However, we agree that this work would be interesting to further examine in more detail, particularly the effects of different types of pollen on asthma hospital admissions stratified to identify high risk groups.

References

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2. AIHW. Time trends and geographical variation in re-admissions for asthma in Australia. Cat no ACM 21 Canberra: AIHW 2011.