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Mr Jim Dodds
Director
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Dear Mr Dodd

Review of Report:
The Wagerup and Surround Community Health Survey May 2008

At your request I have undertaken a scientific peer review of the technical report of above title published by the Telethon Institute for Child Health Research. As with all previous involvement in health-related matters in the Wagerup surrounds, I have conducted this peer review on an honorary and independent basis.

Consistent with a high standard of propriety, I wish to declare that the Survey Research Centre that performed the fieldwork was located, at the time of the survey, within the School of Population Health, where I am a professor, at The University of Western Australia. However, I had no direct relationship with the Survey Research Centre at the time of the survey and the Survey Research Centre has since then moved to Edith Cowan University. I also wish to declare that I have shared joint responsibility with the Telethon Institute for Child Health Research for a number of unrelated research projects. Finally, I was the PhD supervisor of Dr David Lawrence, who now works at the Centre for Developmental Health at the Telethon Institute for Child Health Research, albeit that Dr Lawrence graduated in 2001 and my contact with him since that time has been minimal.

By way of a note, in addition to reviewing the survey report, I have read the following published article: Donohue AM, Cullen MR. Air emission from Wagerup alumina refinery and community symptoms: an environmental case study. *J Occup Environ Med* 2007; 49: 1027-39.

General Comments

The most important limitations of this report are not directly those of the fieldwork provider nor the analyst, but limitations inherent in the context in which the community health survey took place. The survey data consisted of self-reports of symptoms and illness history by members of the public. Thresholds for positive self-reports, especially of symptoms, have a strong subjective element, which is affected by prevailing environmental and social conditions surrounding the respondent. Some residents of towns in the vicinity of the Wagerup refinery have been embroiled for many years in controversies surrounding the refinery and its health effects. For this reason, comparisons of the prevalence of symptoms such as headache, dyspnoea, eye, throat or skin irritation, fatigue, weakness, dizziness and nausea between these communities and the remainder of Western Australia cannot be interpreted as objective comparisons. Rather they are largely subjective comparisons and likely to be heavily affected by local environmental and social conditions. Possibly, nose bleeds can be viewed as a more robustly reported symptom, given that the criterion of positivity of a nose bleed is arguably less susceptible to threshold effects. However, given that a nose bleed may vary from a reddish smear on a handkerchief inserted in a nostril to the free-flowing haemorrhage of fresh blood, there is still room for subjectivity in reporting.

This is not to say that the geographical comparisons contained in the report are of no value. To the contrary, they show that the residents of the Wagerup surrounds reported much higher levels of symptoms than what is typical in the remainder of Western Australia. For nose bleeds, the reported prevalence was over three-fold higher. This provides a useful baseline for future health surveys in the Wagerup area.

Given the inherent limitations of the survey context, the methodology employed has been defensible and quite strong in some respects. Use of computer-assisted telephone interviews was destined to yield a relatively low response fraction, with the acknowledged short-fall in representativeness of the survey participants. It is likely that those with symptoms would have had a greater inclination to participate in the survey. A system of face-to-face household interviews would have achieved a better response with the anticipation of higher quality data. However, personal interviews would have increased the cost of the survey and would have rendered any comparisons with pre-existing telephone interview data from the remainder of the state invalid. It will be important that future health surveys in the Wagerup surrounds are conducted using the same telephone interview methods as this present one, if valid temporal comparisons are to occur. Should the Government also wish to improve the quality of survey data in the future by implementing a personal interview method, this should be undertaken as a follow-up to the 'standard' telephone interview, so that a valid temporal contrast remains possible.

A strength of the fieldwork methods, as performed, was that the same interview procedure to that of the statewide WA Health and Wellbeing Surveillance System (HWSS) was undertaken. My reading of the report is that it was fortuitous that the initial proposal to use the electoral roll as a sampling frame was frustrated, as this ensured that no departure from the HWSS methodology occurred. A strength of the analysis was that state-of-the-art quantitative methods were applied to adjust, to the extent possible, for differences in age, sex, and other socio-demographic factors between different groups compared in the survey report.

In summary, my view is that within the limitations inherent in the context of the survey and the use of telephone interviews needed to achieve comparability with statewide data, the fieldwork and analytic methods forming the basis for this report are of a high scientific standard.

Specific Comments

- Equivalent response data for the statewide HWSS to those reported for this survey on p.11 would enable to reader to form a view about any effects of differential response fractions achieved by the two surveys.
- On p.13, it would be helpful to mention the widths and range of the age groups used in direct standardisation (eg, "five-year age groups to 85+ years"). Additional documentation of the methods will assist a different analyst of a future survey to employ the same methods for comparison purposes.
- Similarly, on p.14, it would be helpful to provide more information about the form in which each potential confounder was placed in the logistic regression models. For example, was age entered as a continuous covariate and was it modeled for non-linearity? For many other variables, additional information such as "(as four categories with three binary indicators)" would be helpful.
- I recommend that the types of cancer history reported by residents of Cookernup be listed in the report, if available. I suspect, however, that no supplementary probing questions were included in the telephone interview as to the types of cancer involved. I agree that clusters like this are expected in data sets with multiple small area comparison. I note that the Cancer Registry data are non-confirmatory if there is nothing unusual about the profile of cancer types (ie, the cancers involved are mostly the ones that are common in the Australian population – non-melanoma skin, colorectal, lung, breast, prostate, melanoma, upper aerodigestive tract, cervix and ovary) then I would not be concerned. If clusters are made up of predominantly one cancer type or myeloproliferative malignancy, or contain multiple instances of an unusual cancer, there may be grounds for further investigation. Even then, there are often historical explanations for unusual clusters, such as cases of mesothelioma drawn together by commonality in occupational histories within a community.
- Given that this report is likely to become a reference for future surveys, it is important that the wording of the survey is included as an appendix. This is especially relevant for full interpretation of the list of symptoms contained on p.36, as the actual wording of the questions will define what is meant by that symptom. It may be that the actual survey consisted of no more than the same list of symptom words to which the respondent answered 'yes' or 'no'. Regardless, the detail needs to be explicit.
- The 'length of time at current address' question, covered on pp.64-65, was unfortunately not structured in a way that allowed estimation of the time spent living in the Wagerup surrounds. I agree with the analyst that this has reduced the utility of that data item to the point where it is of little value. This question item should be revised in any future survey.

I trust that these comments will help add to the scientific strength of the report.

Yours sincerely

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3 June 2008