

Report of Expert Advisory Group (EAG) on Management of potential cancer cluster investigations, Department of Health and Human Services, Victoria.

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Member: Associate Professor Paul Wright BSc (Hons) PhD, FIUPAC, FACTRA; Associate Professor in Toxicology, School of Health and Biomedical Sciences, RMIT University; President, Australasian College of Toxicology and Risk Assessment.

We have reviewed the Bellarine Peninsula Cancer Incidence Report: update of Professor Roger Milne, Head, Cancer Epidemiology Division of the Cancer Council Victoria. This update extended analysis of Victorian Cancer Registry data contained in his earlier report dated October 17, 2019. Our comments on this recent work, together with some observations that might assist the community when considering it, follow below:

Additional features of the new report are inclusion of cancer incidence data for the periods 1982 to 2000 and 2017 to 2019; and inclusion of data on the incidence of prostate cancer. Thus, the data presented cover the longest reporting period possible since the Registry commenced in 1982 and data for 2020 are not yet available.

The report pertains to that part of the Bellarine Peninsula defined in Figure 1 and the list of Level 1 Statistical Areas, which we will refer to as Barwon Heads.

Standardised Incidence Ratios (SIRs) are presented for each of 10 selected cancer types for the period 1982-2019 (with 1982–2000 and 2001–2019 also presented separately), and for all cancer types combined for all ages (with the age group 10-34 years also presented separately). We understand that the types of cancer selected were based upon expressions of community concern rather than any epidemiological or toxicological hypotheses of the investigator as to causation. We judge this to be an appropriate approach to addressing community concerns about the local incidence of cancer.

SIRs quantify the extent to which local incidence deviates from what it would be if it was the same as it is for the State as a whole (the 'expected' rate). The issue in such studies is to decide which deviations from expectation are material, and which are not. As the Table in the report shows, for the period 1982-2019 seven of the cancer types had SIRs below 1.0, (i.e., were less than expected) and three were more than expected.

Appropriately and in accordance with the conventions of inferential statistics, Professor Milne has calculated the 95% Confidence Intervals ("95% CI") around each SIR. If the range of the Confidence Interval for a given SIR includes 1.0, it is considered not to be 'statistically significant' and therefore a difference between the local and state-wide rates are judged to be likely due to chance variation.

Only for breast cancer for the period 1982-2019 was the SIR significantly above 1.0. The SIR was 1.24 (95% CI 1.01-1.50), meaning the calculated incidence of breast cancer in Barwon Heads was 24% above the rate of the State as a whole. The SIR for the period 1982-2000 is almost the same as for the period 2001-2019. This suggests that exposure to any exogenous or endogenous factor accounting for the excess has been stable before and during these periods.

The results suggest that women living in Barwon Heads are slightly more likely to develop breast cancer than women in Victoria overall, but they do not explain why. Women living in this area may have relatively more of the known risk factors associated with this disease. Apart from age and sex, the Registry (like all population-based cancer registries) does not record known risk factors, so the study was unable to control statistically for them at the individual level.

However, other information sources, such as the Census, may provide information at a population level from which exposure to risk factors may be inferred (1). According to Cancer Australia (2) there is 'convincing evidence' in the research literature that 'high socio-economic status' is a risk factor for breast cancer. Based on answers people provided to Census questions about their socio-economic status the 'suburb' of Barwon Heads-Connewarre-Breamlea in the City of Greater Geelong has the highest socio-economic status in Greater Geelong. In fact, it is in the top 5% nationally. On this basis, one might expect there to be relatively more breast cancer in the Barwon Heads area than in most other places.

Of course, living in a high socio-economic status area does not itself directly lead to breast cancer. Rather, it suggests higher prevalence in the population of certain breast cancer risk factors that are implicated in causation of the disease. Some breast cancer risk factors are inherent to individuals (e.g., some inherited gene abnormalities), but others are behavioural and subject to personal choice. Community members interested in finding more information about these risk factors can be referred to the following resources: Breast Cancer Risk factors; a review of the evidence (2); a complementary web-based resource (3); and a personalised risk estimator that also provides advice about reducing breast cancer risk (4).

In light of previously-expressed community concerns about dieldrin and DDT, we note that Cancer Australia does not list dieldrin as a risk factor for breast cancer among the 105 considered in its 2018 systematic review, and in respect of DDT concluded that there is "evidence of no association" (2).

The EAG considers that the results presented in the report do not suggest that current or former environmental exposures of the community are related to the moderately greater observed incidence of breast cancer in Barwon Heads.

The EAG concludes that Professor Milne's report is of a high standard; has responded adequately to the extended brief arising from the request of the Senate Community Affairs References Committee Inquiry into the Bellarine Cancer Cluster; and exhausts the options available for the use of Cancer Registry data in this matter.

REFERENCES

1. www.abs.gov.au/websitedbs/censushome.nsf/home/seifa
2. Breast Cancer Risk factors; a review of the evidence, Cancer Australia, 2018
3. <https://www.breastcancerriskfactors.gov.au/>
4. <https://www.petermac.org/iprevent>

David Hill, Chair

April 9, 2021