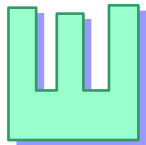


COMMITTEE ON MEDICAL ASPECTS OF RADIATION IN THE ENVIRONMENT

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ATE/NS

18 August 2006



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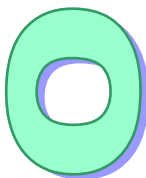


Dear Dr Busby

Following receipt of your letter of 9 November 2005, COMARE has reviewed the study by WCISU on Childhood leukaemia near the Menai Straits, North Wales 2000-2003 (1), produced in 2005 in response to a Green Audit report (2).



In line with its standing as an independent advisory committee, COMARE took the statements made in your letter very seriously and required WCISU to perform a complete re-examination of their report, with particular reference to the criticisms raised. This included both repeating their own analysis and attempting to replicate the Green Audit analysis in an effort to clarify the matter and has involved some months of work by the Unit. Their review, your letter of 5 November 2005, the letter of 17 May 2006 from Mr Bramhall and the Green Audit Occasional Paper 2005/3 were circulated to the full Committee ahead of its meeting on 21 June 2006. The full committee examined the papers in detail and spent considerable time at the meeting debating the issues.



The re-examination by WCISU resulted in agreement with Green Audit's comments that the ward composition of Areas of Residence (AOR) used by WCISU were incorrect, referring to Table 1b in the 2005 WCISU report (1). The error had originally resulted from a discrepancy in the 1991 wards used for the analysis of childhood leukaemia, ages 0-4, for the period of 1982-1990 and provided to Green Audit by the Welsh Cancer Registry (WCR). Without initial access to the WCR data, WCISU wrongly assumed that the analysed data used the standard mapping version for AORs, which has larger areas defined in terms of 1991 wards than those used by Green Audit. The mapping version used by WCISU was in use elsewhere in the NHS at that time, in addition to postcode mapping, which became standard practice in cancer registration from 1986 onwards. WCISU have subsequently amended Table 1b of their report to reflect this correction. Whilst this has resulted in increased relative risks, none of the amended results are statistically significant and neither affect the report's conclusions nor uphold Green Audit's claims.



The Green Audit report (2) is based on tabulated data extracts received from WCR in 1995 (for 1974-1989) and in 1996 (for 1974-2000). No copies of the original extract of data released to Green Audit were kept by WCR, but Green Audit released a section of the 1995 extract, covering the years 1984 and 1985, to COMARE in October 2005. Prior to this release, an aggregated version of data 1974-1989 had been exchanged with Green Audit in January 2000. WCISU has now made a detailed comparison between all of the data available from these historic sources, helping to establish the reason for the discrepancy between the two analyses.

The 1991 wards were only used in analysis for the first section of the WCISU report (1) and the subsequent amendment affected only Table 1b. The conclusions of the report as a whole remain unaffected. The nature of the AORs and their populations used in the first section of the analysis is irrelevant to the remaining results and conclusions, which are based on WCISU's own postcoded data mapped to census wards and using modern GIS techniques, and therefore do not carry the same errors. Furthermore, all childhood cancers are now validated from notes and are cross-checked with clinicians.

The exchange of aggregated data with Green Audit in 2000 highlighted the use of additional information in the Green Audit analyses, which was included as 'all leukaemias'. These additional data are repeated in all the extracted years (1974-1989) from the WCR data and across all age groups. The WCISU analysis also highlighted that these additional 'all leukaemias' cover a wider part of Wales, including the former Gwent HA and were not confined to mid and north Wales as stated by Green Audit (3). The inclusion of the additional 'all leukaemias' by Green Audit would have the effect of inflating the leukaemia counts. WCISU have demonstrated that Green Audit have included these erroneous subtotals in a number of their analyses, effectively doubling the overall leukaemia count. As a result of the reordering of the subtotals, the rates in some parts of Wales could have effectively trebled. This error could be interpreted as clusters due to the false data included for some small areas of rural Wales.

The trends proposed by Green Audit in their analyses could not be reproduced by WCISU for childhood leukaemias, brain cancers or total malignancies in Wales. The Committee is aware also that the Irish National Cancer Registry could not replicate the findings of Green Audit for the coast of Ireland, looking at a range of cancers (4).

The data obtained from WCR by Green Audit are referred to as small area cancer data (3). However WCISU have previously shown that allocation of such data by AOR renders it unsuitable for small area analysis (5), bringing into question the form of data which Green Audit received. This conclusion was formed in response to an issue raised by yourself and Dr Howard on the definition of the obsolete Office for Population Censuses and Surveys (OPCS) AORs (6), conflicting with postcode mapped areas used by WCISU to study the apparent cancer excess associated with a cement works in Mold (7). The current WCISU analysis of the historic WCR data concluded that the Green Audit analysis was conducted from a process of data dredging and post-hoc analysis. Some of the key positive results from the Green Audit analysis involve very small counts, which raises significant issues. These could have been resolved by displaying extra confidence levels, however Green Audit chose to rely on p-values (8). The estimation of relative risks under these circumstances has been shown to be very unstable (9). The use of AOR coded data and inappropriate analysis methods can result in the generation of spurious clusters. The practice of using postcode mapping (employed by both WCISU and the Small Area Health Statistics Unit (SAHSU)) is the appropriate methodology for the current knowledge status (5).

The error found in Table 1b of the WCISU report (1), highlighted by Green Audit, has now been corrected. This correction resulted in an increase in relative risk but not in statistical significance. The conclusions of the whole report still remain valid as the remaining analyses were conducted with the appropriate methodology and postcode mapped data. Following this complete review of the report, COMARE does not believe that any further errors exist.

At the conclusion of the discussion, COMARE members present agreed unanimously that they supported the conclusions reached by WCISU, while regretting that the error in Table 1b had not been discovered earlier. The Committee also agreed unanimously that it regarded this as its final view on the matter.

With best wishes.

Yours sincerely

A T Elliott
Chairman

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