



Scientific Advisory Committee on Nutrition

**4<sup>th</sup> MEETING**

**3 April 2006, Conference Room 2, Aviation House**

**125 Kingsway, London, WC2B 6NH**

**Chairman:** Professor Alan Jackson  
**Members:** Dr Anthony Williams  
Professor Chris Riddoch  
Professor Marinos Elia  
Professor Christine Williams  
Professor Joe Millward  
Professor Ian MacDonald  
Dr Anita Thomas

**Secretariat:** Dr Alison Tedstone (FSA)  
Dr Peter Sanderson (DH)  
Dr Sheela Reedy (DH)  
Ms Gillian Swan (FSA)  
Mr James Riley (FSA)  
Ms Emma Peacock (FSA)

**Apologies:** Professor Prakesh Shetty  
Ms Stella Walsh  
Professor Andrew Prentice

**Chairs' introduction and welcome**

1. The Chair welcomed Members to the fourth meeting of the SACN Working Group on Energy Requirements. The Chair also welcomed Dr Kirsten Rennie from the University of Ulster, who had been invited to give a presentation on the approach adopted in the US to form the Institute of Medicine (IOM) energy requirements.

**Minutes from previous meeting (2 December 2005) - SACNenergy/05/min03**

2. Members were invited to comment on the minutes of the previous meeting. The following changes were requested:
3. Paragraph 13 - The words 'at least 5 a day' in paragraph 13 to be changed to 'At Least 5 a week'.
4. Paragraph 13 – Insert the word 'therapeutic' prior to the word intervention in the second sentence of paragraph 13.
5. Paragraph 17 – The first sentence in paragraph 17 should read 'few studies have looked at physical activity and obesity'.
6. Paragraph 18 – The words 'of a similar magnitude of those' in paragraph 18 to be changed to ' of a similar magnitude to those'.
7. Paragraph 21 – The last sentence of paragraph 21 should be amended to read 'It was estimated that an increment in PAL of 0.2 for an adult approximated an energy expenditure of 2000kcal a week'.
8. The minutes were agreed as a correct record of the 3rd meeting of SACN Energy Requirements Working Group, pending the above changes.

**Action: Secretariat****Presentation by Dr Rennie**

9. Dr Kirsten Rennie gave a presentation on the approach adopted in the US to define the IOM energy requirements. The presentation covered the following topics: choice of total energy expenditure data to include in prediction datasets; method of estimating energy requirements in adults; comparison with FAO/WHO energy requirements; requirements through the life course; limitations of the IOM energy requirements; and information on UK doubly labelled water (DLW) datasets.
10. Members noted that the recommendations for children were based on descriptive physical activity data; whereas, the adult data was based on prescriptive physical activity levels (PAL). The Working Group questioned how a PAL of 1.6-1.9 was established and whether it could be linked to health outcome data. The Working Group noted that PAL levels used in prescriptive recommendations should be based on health outcome.
11. The difficulty in mapping DLW data onto behaviour patterns was noted: it is

difficult to assign to a particular activity group and recommended physical activity levels are based on epidemiological studies where physical activity was assessed using self-reporting.

12. It was noted that volunteers for DLW experiments may not be representative of the general population, as individuals that were most likely to volunteer could be active individuals, with a higher PAL.
13. Members noted that total energy expenditure was a function of two variables, BMR and PAL, in the WHO/FAO and previous UK equation for adults whereas in this model total energy expenditure level is fixed term function of height and based on body weight and physical activity. It was agreed that the models were very different and it would need to be decided, which model would give a more accurate answer for total energy expenditure given a fixed level of PAL.
14. It was noted that the Working Group would need to characterize the reference range of the population and consider this in the context of relevant health outcomes.
15. BMR and energy expenditure were discussed. It was noted that how these interrelate had to be considered.
16. It was noted that studies have been done in healthy people and the burden of illness should be considered. It was noted that in the NDNS many children have an elevated CRP level and around 10% of children are asthmatic, which could affect their requirement.
17. Members discussed the IOM recommendation for adults. It was noted that the validity of the DLW data needed to be considered, e.g. during weight loss.
18. It was established that defining a reference range for adults using weight range and lifestyle would not capture all groups in the population. Therefore a reference range for the whole population would initially be set and then other population groups that were important would be considered.
19. Members questioned whether it was necessary to know the energy intake of a breast fed infant. Estimating the energy content of breast milk was not representative of what the infant receives, as infants were capable of regulating their energy intake. It was noted that some expert committees had not set requirements for infants. It was agreed that there were a number of factors that would need consideration when setting a requirement, e.g. avoiding their prescriptive application to breast-feeding mothers.
20. Members agreed that there was limited evidence available on adolescents, which was difficult to interpret. It was noted, however, that more data had become available since COMA reviewed the DRVs in 1991.

21. Members discussed the IOM recommendation for pregnant and lactating women noting that there was a mistake in the IOM report, as it should be 20 and 34 weeks not 20 and 24 weeks, as they were the mid point of each trimester.
22. Members discussed that the accumulation of weight and adiposity was mobilized differently during lactation in older women compared to adolescent girls. The approach used in the IOM report assumed that it was the same, whereas the evidence suggested that the accumulation was different in these two groups.
23. It was agreed that both the WHO/FAO and the IOM report separated pregnancy and lactation as different physiological states, whereas lactation was a continuum of pregnancy.
24. Members discussed obese and underweight individuals, agreeing that the WHO/FAO report goes into more detail regarding undernutrition than the IOM report.
25. Members discussed the differences between the FAO/WHO report and the IOM, noting that there was a large body of data missing from the IOM report, which could have been incorporated.
26. Members agreed that a scoping exercise should be carried out looking at the available DLW data to see what is available.

**Action: Secretariat**

27. The Chair thanked Dr Kirsten Rennie for her presentation.

**Agenda Item – 5**

28. The Chair welcomed Robert Anderson, an economist from the Department of Health to the meeting.
29. Robert Anderson introduced the paper, explaining that in order to meet targets, specifically childhood obesity, methods for quantifying the impact of different policies on the target were required. Members were informed that the Department of Health had developed a dose-response model for which Members were requested to comment on its methodology and its application.
30. Members agreed that it was an interesting approach and in principle it could achieve results, although this could not be done by using one equation. Members agreed the equation would require further refinement to take into account the gender difference in fat and lean tissue deposition.

31. Members stated that there were a series of assumptions to the equations, which would need to be examined.
32. Members suggested minor changes to the paper and agreed to consider the paper again subsequently.

**Action: Secretariat**

**Agenda Item 4**

33. The Secretariat introduced the paper, explaining that following the Members' discussions of paper SACN/energy/05/09 presented at the September 2005 Energy Requirements meeting, Members had requested further information to help clarify the energy balance data in the NDNS.
34. A comparison between physical activity levels assessed in the NDNS 2000/01 with levels assessed in the Health Survey for England 2003 (HSE) was tabled at the meeting for Members to discuss.
35. Members noted the difference in methodologies used in the NDNS and the HSE . Although the HSE report described the frequency and intensity of each activity for each participant, the total time spent was not included, so PAL values could not be derived.
36. Members noted that the proportion of people meeting 5 a week or more was similar between the HSE and NDNS data, whereas the proportion with the lowest activity levels was higher in the HSE than in the NDNS. Possible reasons for this difference are that the NDNS activity record overestimates activity levels especially in people who are inactive, and the HSE has a higher cut off for inclusion of periods of physical activity (30 minutes, compared with 10 minutes in NDNS). ,
37. Members discussed that it had previously been suggested that the PAL in the UK was 1.4-1.5; however, the HSE and NDNS data reported it to be 1.6-1.7, which had been previously thought to be unachievable by the UK population. This PAL was also similar to the FAO/WHO PAL value of 1.75.
38. Members agreed that the PAL used in the NDNS was representative of the general population and that dietary intake data may have given rise to the PAL value of 1.4. Both the HSE and NDNS, however, report that at least 20% of the population have less than one exercise session per week. It was noted that a comparison of mean PAL values shows no change over the past 10 years, despite an increase in the number of people overweight or obese. Therefore, it was suggested that the problem arises in the extremes of the population distribution, rather than around the mean. The Working Group requested that graph 1a/b be replotted to reflect this.

**Action Secretariat**

**Agenda Item 6**

39. Members agreed further information on the data available on the factorial approach and the DLW approach in the UK and Europe was required before the Working group could decide which to adopt for the report. It was important to consider carefully factors of each approach, as the FAO/WHO report used old data, whereas there is a lack of data available used in the IOM report.

**Action: Secretariat**

40. The Chair closed the meeting and thanked the Members for attending. It was noted that the next meeting was scheduled for September, the date to be confirmed.