



**7<sup>th</sup> MEETING**

**7 December 2007, Room 2, Aviation House  
125 Kingsway, London, WC2B 6NH**

**DRAFT MINUTES**

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

**Secretariat:** Dr Alison Tedstone (FSA)  
Dr Peter Sanderson (DH)  
Ms Rachel Coomber (DH)  
Ms Sakhi Dodhia (FSA)  
Mr Andrew James (FSA)  
Dr Clifton Gay (FSA)

**Apologies:**  
Professor Andrew Prentice  
Dr Sheela Reddy (DH)  
Ms Emma Peacock (FSA)

**Chairs' introduction and welcome**

1. The Chair welcomed Members to the seventh meeting of the SACN Working Group on Energy Requirements.
2. Apologies were received from Professor Andrew Prentice, Dr Sheela Reddy (DH) and Ms Emma Peacock.

**Minutes from previous meeting (7 September 2007) - SACNenergy/07/min01**

3. Members were invited to comment on the minutes of the previous Working Group meeting. It was noted that there were a couple of action points arising from the last meeting.
4. Members were informed that since the previous meeting, the Secretariat had contacted Tim Cole regarding an update on the BMR analysis. Tim Cole had informed the Secretariat that proposals to the MRC had been submitted, including an analysis of the Oxford Brookes BMR data, and that MRC had agreed funding for 3 years from October 2008. Tim Cole therefore plans to do a reanalysis in due course, but not immediately and not within the timeframe for this Group's report. After discussion around this reanalysis, it was agreed that the Working Group need to be clear what Tim Cole had been asked to do and to decide whether this is fundamental to the Group's work.

**Action: Secretariat**

5. Members were reminded that at the last Energy meeting in September, there was some discussion about weight loss in pregnancy and the impact of this on energy requirements for pregnant women. Members had requested that SMCN discuss the potential adoption of the 1990 IOM recommendations on maternal weight gain. Members were informed that SMCN had noted that these recommendations were based on assumptions with no empirical basis and SMCN had agreed that, at this time, there was no definitive answer to whether these should be adopted in the UK.
6. Members agreed that the first bullet point in paragraph 35 did not reflect what the Group had suggested about fitness and that this point should be removed.

**Action: Secretariat**

7. Pending above corrections, the minutes were agreed as a correct record of the 6th meeting of the SACN Energy Requirements Working Group.

**Agenda Item 3****Doubly labelled water dataset (SACNenergy/07/05)**

8. The Chair noted that at the last meeting, the Working Group had been presented with the DLW studies dataset for children, adults and older adults (aged 60 plus) and that Members had asked the Secretariat to reanalyse the data against discussion and comments from the meeting.

9. Members were informed that following the last meeting, the Secretariat had met with Professors Andrew Prentice and Ian Macdonald to go through the work with the DLW dataset and discuss the way forward in producing regression equations.
10. The Chair noted that two equations had been produced for the three age groups: children, adults 19-59 and adults aged 60 years and over. The Chair also noted that certain population subgroups had been excluded from the dataset including countries not relevant to the UK, those with BMI higher than 40, those with a clear disease state, elite athletes and Native Americans and Pacific Islanders.
11. Members were informed that average weights from the National Diet and Nutrition Survey (NDNS) were entered into the regression equations to produce values for TEE; these figures were compared to values from the COMA Dietary Reference Values report, FAO/WHO/UNU report and the DRI report. Professor Joe Millward had also calculated average PAL values for both adults and children from the three DLW datasets and these were tabled in a separate document at the meeting.
12. Professor Ian Macdonald introduced the paper and talked through the work that had been undertaken. Members were asked to discuss the proposed equations for predicting energy expenditure and to raise any differences in opinion about the approach used to arrive at these equations.
13. Members were content with the methodology (paragraphs 45-51) used to arrive at the predictive equations.
14. Members noted that height and weight are clearly correlated with TEE (Figure 8), but that weight has a more linear relationship with TEE and would thus be a more suitable predictor. It was agreed that there is a need to test for an additional trend (Figure 3) for weight and height interaction. It was noted that these figures were not corrected for weight/height.

**Action: Secretariat**

15. Members discussed and agreed that further analysis should investigate and discuss the obvious factors that account for the potential levels of variation, including the sense of relative magnitude/size of studies.

**Action: Secretariat**

16. There was discussion around including/excluding >90 year olds from the dataset (Figure 6 and 7). It was noted that excluding this group alters the relationship between age and weight with respect to TEE. . Members expressed concern that removing this group might restrict the projection of the predictive equation into this age group. It was agreed that further investigation and discussion around the possibility of including or excluding the >90 years old is required, with exploration into splitting the age group further, specifically by 65-80 years, 80-90 years, and then that of >90 years.

**Action: Secretariat**

17. Members agreed that excluding data would reduce the value of datasets and where possible, data should be included - weighting factors for individual studies should then be decided and incorporated into the regression models, stating any assumptions made.

**Action: Secretariat**

18. Members suggested that plotting the NDNS total energy expenditure DLW points with the DLW dataset points from this analysis would be useful. Dr Alison Tedstone explained that NDNS datasets had not been included in this analysis so far as the NDNS series had not been peer reviewed.

**Action: Secretariat**

19. In addition, members suggested the following:

- Check Figures 9 & 12 (children): Figure 9 is plotted from 20kg whilst Figure 12 is plotted from 10kg.
- Look to split the children age group further specifically by those > 30kg and < 30kg or by 10 year intervals.
- Table 3-6: Include detail in the descriptive statistics tables as that described in the WHO/FAO tables.
- Include more comprehensive descriptive statistics.

**Action: Secretariat**

20. The Chair thanked the Secretariat and members who had put work into the analysis.

**Agenda Item 4****Energy report chapters (SACNenergy/07/06)**

21. The Chair introduced two chapters for information: the Introduction and a chapter on Physical Activity, which the Secretariat had revised in light of members' comments at the last meeting. The Chair also introduced the first draft of a chapter on Dietary Determinants of Weight Gain and members were asked to focus on this chapter for discussion (pages 81 -106).

*Dietary Determinants of Weight Gain*

22. Dr Peter Sanderson introduced the chapter, explaining that it was partly based on the background papers for the Foresight report on "*Tackling Obesities: Future Choices*".
23. Members were invited to offer general comments on the chapter before it was

discussed in detail. Comments included the following:

- *Dietary Regulation of Body Weight* would be a more appropriate title for the chapter.
- There is currently no recognition of micronutrients in the diet and their role in the metabolism of macronutrients - this should be incorporated into the chapter.
- Cross-referencing with other chapters would help set the context.
- A list of definitions is required, preferably at the beginning.
- Need to be clear of the approach and framework against which evidence is structured.
- An explicit statement at the beginning to outline the exploration of the chapter is required, rather than structural reorganisation.
- Need a clear statement addressing the mismatch between energy requirements and actual intakes.

**Action: Secretariat**

24. There was also a detailed discussion on each section of the chapter and the main drafting points were as follows:

*Appetite Control & Energy Balance*

- Pg. 81, Section 206, Line 5-6: Delete “which incorporate significant redundancy” – currently suggests each pathway incorporates multiple redundancy.
- Pg. 81, Section 208, Line 1-2: Clarify “A state of negative energy balance appears to be defended more strongly than one of positive energy balance”.
- Pg. 81, Section 208, Line 4: Clarify what is meant by the term “small” in this context.
- Pg. 81/82, Section 208/209: Replace term “storage” with “retention”.

*Substrate Utilisation & Energy Balance*

- Pg. 82, Section 211, Line 1: Replace “selection” with “available”.
- Pg. 82, Section 212, Line 1-2: Delete “50% carbohydrate (half used in the brain)”.
- Pg. 82, Section 212: Tighten up paragraph to make a general statement without specific reference to figures and percentages.
- Pg. 83, Section 217, Line 1: Clarify “underfeeding” – this term is too general and could convey the wrong meaning.
- Pg. 85, Section 223, Line 1-2: Clearly define “short term regulation of fat balance has a lower priority than that of carbohydrates, protein and alcohol”.
- Pg. 85, Section 226, Line 1: Clarify “spontaneous long term weight changes” and include references to support the sentence.
- Pg. 85, Section 226, Line 4-5: Clarify “A reduced ability to adapt to a greater fat oxidation rate”.

*Methodological Constraints*

- Pg. 85, Section 228, Line 1: Replace “determining” with “linking”.
- Pg. 86, Section 230, Line 1-4: Clearly state what Quantitative Methods are used and recognise that different methods are designed for different purposes.
- Pg. 86, Section 231, Line 1: Delete “most” and change sentence to read “In dietary surveys, energy intake tends to be under-reported...”.

*The National Diet & Nutrition Survey reported Energy Intakes*

- Pg. 87, Table 1 legend, Line 1: Delete “EAR”- as EAR values are estimated assuming average body weight with PAL of 1.4- this is inappropriate for younger age groups.
- Pg. 87, Section 236, Line 3: To remove “suggests”.
- Pg. 87, Section 236, Line 4: To remove “requirements” and replace with “expenditure”.
- Pg. 87, Section 239, Line 4: To insert a note explaining the term “modified Schofield Equations”.
- Pg. 89, Section 241: To insert contribution by Joe Millward (if the contribution is to be used PAL of 1.8 should be stated and any discrepancies about it should be clear).

*Macronutrient Composition*

- Quantify the duration of short term and long term studies (days/weeks/years).
- Useful to have a statement which captures nutrient density and alcohol density.
- Suggested term of use for Energy Density: Metabolised energy per g/food.
- Pg. 90, Section 244, Line 4-5: Clarify what is meant by “comparable intensity intervention”.
- Pg. 90, Section 246 Line 3: Quantify “small”.
- Pg. 90, Section 246 Line 4: Suggested contribution by J. Millward. (Report from Australian dieticians who reduced their fat intake, but reported an increase in their body weight, without changing their energy expenditure).
- Pg. 90, Section 247 Line 3: State that the following sentence “While some studies show an inverse association with weight gain, many others show no associations, particularly in children” is concerned with the proportion of carbohydrate.
- Pg. 91, Section 249 Line 3: Replace “fast food” with “convenience foods”.
- Pg. 92, Section 255 End: Suggested contribution by Joe Millward (Protein intake and obesity).

*Specific Foods*

- Pg. 92-93, Section 257 Specific Foods: Members discussed whether this section should be excluded as the term “specific foods” is very broad and incorporates foods other than nuts. It was suggested that rather than an exhaustive list, examples could be given in this section.
- Calcium is a nutrient and should be excluded from this section.

#### *Dietary Patterns*

- Pg. 93, Section 259: Members discussed the option of considering other temporal dietary patterns such as meal frequency, meal patterns and multi-factorial dietary interactions. The inclusion of current habitual dietary patterns from 0-15 years ago in comparison to dietary patterns of those 40-50 years ago should be looked at. Possible action: Compare the dietary trend data from the National Food Survey over a period in which obesity incidence increased, e.g. 1970s to 2000s. .

#### *Conclusion*

- Pg. 93 Section 262 & 263, Conclusions: Restructure the conclusions, as there is currently no correlation with the main body of evidence, and ensure the conclusions can be interpreted effectively.
- To compare the trend data of Diet and Household Surveys e.g. NDNS and National Food Survey.

#### **Action: Secretariat**

25. It was agreed that the chapter required some editing and that there is a need to be clear about what sentences are trying to convey, to avoid misinterpretation. The Chair noted that Professor Joe Millward had submitted comments to the Secretariat via correspondence, and members were requested to submit any additional comments, also offering alternative language suggestions, in a similar way.

#### *Outline of report*

26. The Chair noted that the Energy Requirements chapters had not been drafted since the methodology for these had not yet been agreed.

27. The Working Group was asked to comment on the current outline of the report.

28. Members noted that energy requirements would not be recommended for illness and that changing the chapter title ‘Energy requirements for illness’ to ‘Discussion of energy in ill health’ would be more appropriate.

#### **Action: Secretariat**

29. Pending the above change, members agreed the current outline of the report.

**Agenda Item 5****Future work plan**

30. The Chair invited members to discuss how this work should be carried forward. It was agreed that the Secretariat would make changes to existing chapters and draft the remaining chapters, to move towards a complete draft for the June 2008 SACN main meeting.

**Action: Secretariat**

31. The Chair asked members' views on referencing work by E.T. Poehlman that had been scientifically discredited. Members agreed that it would be valuable to write to the UK Panel for Research Integrity in Health and Biomedical Sciences, seeking their advice on work published by these authors.

**Action: Secretariat**

32. Metabolised Energy: Members agreed that net metabolisable energy should be referred to, as identified by the Atwater factors. Members agreed to help Secretariat to draft an appropriate paragraph.

**Action: Members and Secretariat**

**Agenda Item 6****AOB**

33. In the introduction chapter, the section on obesity (page 10 and 11) should include a table on weight gain, e.g. from the Framingham cohort, as well as trends in obesity; this figure should include distribution data, e.g. top and bottom quintiles, as well as the mean.
34. The Chair closed the meeting and thanked the Members for attending. It was noted that the Secretariat were trawling for further meeting dates in February/March 2008.