



Scientific Advisory Committee on Nutrition

6th MEETING

Carbohydrates Working Group

**29th January 2010, Room 2, Aviation House
125 Kingsway, London, WC2B 6NH**

FINAL MINUTES

Chair:	Professor Ian Macdonald
SACN Members:	Professor Annie Anderson Professor Tim Key Dr David Mela Mrs Christine Gratus Professor Alan Jackson Professor Angus Walls
Other attendees:	Dr Peter Sanderson (agenda items 5-7 only) Ms Alison Eastwood, CRD York (via telephone agenda item 3 only) Dr Victoria Burley, University of Leeds (agenda item 3 only) Dr Darren Greenwood, University of Leeds (agenda item 3 only) Mr Andrew James (FSA) (agenda item 1-3 only)
Secretariat:	Dr Elaine Stone (FSA) Mrs Vicki Pyne (FSA) Dr Sheela Reddy (DH)

Observers:

Dr Alison Tedstone (FSA)

Ms Anne Milne (FSAS)

Ms Rachel Stratton (FSA)

Agenda item 1 – Chair’s introduction and welcome

1. The Chair welcomed members to the sixth meeting of the SACN Carbohydrates Working Group.
2. Apologies were received from Professor Ian Johnson. The Chair welcomed Professor Angus Walls who was co opted onto the working group following his appointment to SACN in December 2009.
3. The Chair welcomed Rachel Stratton from the FSA and informed members that she is observing the meeting as part of a policy project within her PhD. Members agreed that they were happy for her to observe the meeting as long as information would not be attributed to specific members.
4. Rachel Stratton gave a brief overview of the purpose of her policy project.
5. The Chair asked the group whether there were any changes to their declaration of interest. Angus Walls confirmed that his declarations had not changed since his application to join SACN.

Agenda item 2 – Minutes of 5th meeting September 2009 (SACN/CHO/09/min/03)

6. Members were invited to comment on the minutes of the fifth Carbohydrates Working Group meeting and it was suggested that on page 2, paragraph 6, 4th line, that alternative wording is used instead of “outstanding”. Subject to this change, the minutes were agreed as an accurate record of the meeting.

Action: Secretariat

Agenda item 2 – Matters arising (SACN/Carbohydrates/10/01)

7. The Chair introduced matters arising.

SACN/CHO/09/02 – Carbohydrates glossary

8. The glossary will be revisited by the Working Group once members have had sight of the reviews.

SACN/CHO/09/03 – Carbohydrates and colorectal health

9. Progress on the carbohydrates and colorectal health review will be discussed under agenda item 5.

SACN/Carbohydrates/09/05- Carbohydrates glossary

10. The Englyst definition of fibre has been added to the glossary.

Agenda item 6- Future work programme

11. The scoping of systematic reviews in terms of carbohydrate intake and dental health will be discussed under agenda item 4.

Agenda item 7- AOB

12. The effect of carbohydrate on calcium absorption has been added to the colorectal health review, which will be discussed under agenda item 5.

Agenda item 3- Progress report on carbohydrate and cardiometabolic health (SACN Carbohydrates/10/02

13. Dr Victoria Burley (VB) and Dr Darren Greenwood joined the meeting to introduce the progress report on Carbohydrates and cardio-metabolic health.

14. The Chair invited members for general comments on the above paper.

15. Members enquired whether the Working Group will receive the reasons for inclusion or

exclusion of specific papers and if the Access database will be made available as per scope of work. VB informed members that they will be provided with all the papers and the Reference Manager database containing information on why papers have been included or excluded. The Access database will be provided together with the final report.

16. VB explained that trials with multiple interventions where the effects of carbohydrate cannot be distinguished from the other interventions (i.e. they are not of a multifactorial design) will be excluded.
17. Members discussed this point and expressed concern that this would potentially eliminate some useful lifestyle intervention studies. Although it was mentioned that if the effect of the carbohydrate component cannot be differentiated from the effect of other dietary components then this would be difficult to analyse.
18. It was highlighted that these types of studies would be eliminated at exclusion step 10 and therefore, they would not be lost.
19. The Chair agreed that the team should follow the process as described in the study criteria flow diagram and then the Working Group will look at the studies that have been excluded at step 10 and agree a course of action.

Action: Working Group

20. The Chair invited members to comment on the paper section by section.
21. Under guidelines for article relevancy it states that studies published before 1990 will be excluded, as evidence before this point would have been considered by COMA. However, there was concern that this approach could potentially omit a large body of evidence, especially if a relationship was well established at that time.
22. It was also highlighted that the COMA reports were not systematic reviews.
23. VB highlighted that they would be including some narrative about what evidence has been included in the COMA report.

Action: Victoria Burley

24. A member asked what the rationale was for performing hand searches and why those

specific journals have been chosen. It was explained that this was done because some articles are not properly key worded and journals that appeared the most frequently in the search results were chosen for this process. The team are also backing this up by looking at the reference lists of meta-analyses in the field. The purpose of this exercise is to ascertain whether any papers have been missed during the database searches.

25. A member asked about how the animal studies were going to be used. It was explained that searches for these studies would be run and downloaded in case there was insufficient evidence available from human studies and they would provide supporting evidence on a plausible mechanism.
26. It was highlighted that two large FSA funded trials regarding wholegrain need to be included in the review, however they are not yet published and have therefore missed the search cut off dates for this review.
27. The Chair agreed that some narrative on these two studies could be added to the report or alternatively they could be included in an updated search closer to publication to avoid biasing the report.
28. It was suggested that the report should acknowledge studies that have been published after the Leeds team have completed their review or are being conducted at the time of writing the report. The Chair requested that the Secretariat keep abreast of on-going trials through clinicaltrials.gov (<http://www.clinicaltrials.gov>). The Secretariat also agreed to consider commissioning an update of the review closer to publication.

Action: Secretariat

29. Members expressed concern about studies containing Oriental, African or Asian subjects being excluded from the review, as these sub-groups appear in the UK population.
30. VB explained the rationale for this was because the diets consumed in these continents are vastly different from those consumed in the UK and, therefore, may not be applicable to the population.
31. Members agreed that all studies of this nature should be included at this stage and then the decision can be made by the Working Group as to whether they will go forwards for

consideration at a later date. However, the Chair requested that Victoria Burley contact the Working Group via the Secretariat if this course of action results in an unmanageable number of papers being identified.

Action: Victoria Burley

32. The rationale for excluding studies based on ill health was questioned. The progress report states that a study will be excluded if more than 10% of the participants are not healthy, but VB highlighted that further discussions had taken place and this figure has been increased to 20%.

33. A member informed the group that in the UK population up to 20% of those who are more than 60 years of age will be receiving statins. At present it is not known whether diet modulates the effects of statins.

34. The Chair recommended that the Leeds team discuss the 20% figure and what it represents.

35. In terms of illness thresholds, the Working Group highlighted there is a mismatch between the values given for cardiovascular disease (CVD) and those provided for diabetes. The diabetes thresholds represent values which indicate disease, i.e. it is a clinical definition, whereas the CVD values are targets to achieve in order to reduce disease risk. Therefore, it was recommended that VB identifies the clinical thresholds for CVD and uses these as their reference point for inclusion/exclusion of studies.

Action: Victoria Burley

36. A member highlighted that one of the reasons for exclusion, “The study is clearly not relevant to our scope...” sounds a little vague and sought clarification that the team are clear by what this means. VB confirmed that the team are clear on what this exclusion criterion represents.

37. Under weight loss trials, although weight will be the primary outcome other endpoints may be also measured such as blood lipids which should also be recorded under B “Any other relevant outcomes”.

38. A member expressed concern that by only including weight loss trials with a follow-up of one year or more, relevant data may not be captured and the outcome may reflect

compliance rather than primary efficacy.

39. It was highlighted that the definition of weight loss needs to be clear.

40. There was discussion around the inclusion of studies with a duration of three days or more in interventions that measure energy intake. The Chair concluded that this inclusion criterion should remain in order to confirm that the observed effects seen are sustained and, thus likely to have an impact on public health. If this approach yields very limited data, then the Working Group will look at those studies omitted at exclusion step 12.

41. The Chair enquired whether the timeline provided was still up to date, VB estimated that they were approximately a month behind due to delays in signing off the protocol and the volume of studies identified. The Chair suggested that the team should liaise with the Secretariat on revising the timeline.

Action: Victoria Burley and Secretariat

42. Victoria Burley demonstrated the Access database to the Working Group. The Chair thanked the Leeds team for their participation in the meeting and commented that the discussions had been extremely helpful in progressing the work.

Dr Victoria Burley and Dr Darren Greenwood left the meeting

Dr Peter Sanderson joined the meeting

**Agenda item 4- Scoping exercise for carbohydrates and dental health
(SACN/Carbohydrates/10/03)**

43. Vicki Pyne introduced the paper regarding systematic reviews on sugars and dental caries. Members were informed that the Burt et al 2001 paper assessed the evidence in relation to sugars and Anderson et al 2009 looked at sucrose only.

44. Before discussion of the two systematic reviews commenced, Prof Angus Walls provided the Working Group with a background to dental health and diet.

45. Dental health falls into three categories: (1) oral mucosal health which can be influenced by micronutrient status or other problems such as malignancies, (2) dental erosion which occurs at a pH<2, leading to the dissolution of calcium phosphate whereby remineralisation has a more limited potential to occur. Carbonated soft drinks are thought to be associated with this outcome. (3) Dental caries, this represents a complex outcome- in children dental caries are easier to detect because the surface being examined comprises of the tooth itself. However across the age range of the population, teeth will be increasingly filled, and decay occurring around these edges of fillings is more difficult to identify often requiring a radiograph for accurate diagnosis but ethical or practical considerations commonly exclude the use of radiographs in epidemiological studies. Decay in relation to restoration is difficult to study especially in older adults. Root dentine is very similar to bone and comprises of 99.3% calcium phosphate, but root caries is not uniformly defined and complex to both record and analyse. It is also thought that diet may have an indirect relationship with periodontal disease through the potential for anti-oxidant status to influence an inflammatory disease process.

46. The Chair invited members to comment on the Burt et al 2001 review. Concerns were expressed over the quality of the evidence reviewed with the majority of studies being of cross sectional design.

47. Although the search terms were comprehensive in relation to types of sugars, there was concern regarding the exclusion criterion, “Studies in countries with no widespread fluoride exposure”. It was highlighted that this is difficult to identify due to the large

regional variation and use of manufactured products containing fluoride and there is no information in the review on how the authors established whether countries have mass fluoride exposure.

48. The inclusion/exclusion criteria should include whether a validated measure of sugar intake has been stated. It was also not clear why the authors excluded secondary analyses or studies investigating early childhood caries.
49. There was concern over the use of the search term “sportsdrinks”. Also there was no rationale or explained methodology of the scoring system used for the application of quality criteria and the results were very briefly explained. Therefore, members agreed that the Burt et al 2001 review is not of sufficient quality to be used as a starting point for the dental health review.
50. Members discussed the Anderson et al 2009 review. It was felt that its scope was too narrow because only the evidence relating to sucrose was reviewed and the Working Group would want to assess the possible effects of all carbohydrates on dental health. This paper only includes studies in people aged between 4-35 years and uses dental caries as an endpoint, however the SACN dental health review needs to look at a range of outcomes and across a wider age range.
51. It was highlighted that it is also important to distinguish between frequency and quantity of intake. In addition exposures such as milled flour and sweetened beverages, and the social patterning of dental caries should be included in the review.
52. The Chair recommended that the carbohydrate search terms used in the cardiometabolic health review should be used as a minimum.
53. In terms of taking the dental health work forward, members were informed that there is expertise available in the UK e.g. Cochrane Oral Health group is based in Manchester and works with a number of dental schools. Other academic groups have also been involved in reviews of oral health outcomes e.g. York. The Chair highlighted that it is important to ensure that there is nutritional expertise within the dental groups who may potentially apply to carry out this work. It was agreed that this review should be commissioned through open competition.

Action: Secretariat

Agenda item 5 – Draft paper on Carbohydrates and colorectal health (SACN/Carbohydrates/10/04).

54. Dr Peter Sanderson (PS) brought three papers to the meeting and started by introducing the carbohydrate and colorectal health search terms paper.

55. The Chair asked members for comments on the above paper.

56. Members enquired whether any hand searching of reference lists had been conducted. PS informed the Working Group that this had been done.

57. It was recommended that on page 4 under search details, information is included on how hand searching was performed.

58. Members agreed that the search terms for the cardio metabolic health review should be included in the colorectal health review.

Action: Peter Sanderson

59. Next PS introduced the carbohydrate and colorectal health- normal aspects paper (SACN/Carbohydrate/10/05).

60. The Chair asked members for comments on the above paper.

61. Members recommended that background information on colonic function and whether certain processes are deemed beneficial should be included at the beginning of the report.

62. Page 3, paragraph 4, 6th line change “fermented” to “fermentable”.

63. It was suggested that information from the NDNS of carbohydrate/carbohydrate containing foods consumed in the UK should be added to the review.

Action: Peter Sanderson

64. A member enquired whether information on guar gum is included in the papers cited in paragraph 24 and, if this is the case, has it been captured in the report? PS agreed to check this.

Action: Peter Sanderson

65. A more detailed explanation of what Table 1 represents is required.
66. A table and/ or paragraph to highlight how the AOAC and Englyst methods for determining fibre can either yield different or the same values. This issue should be borne in mind when considering studies that use the broad term of fibre rather than individual components.
67. An explanation regarding the information contained within the risk of bias tables needs to be provided.
68. In terms of the forest plots, units of measurement and dose estimates should be added, and the confidence intervals should be rounded down to less than 4 decimal places.
69. Members requested that the meta-analyses are sent to the Statistics department at the Agency for review. The best way to deal with the multiple data points arising from Cummings et al 1996 should also be discussed with them.

Action: Secretariat

70. In the results sections of the paper include information on the range of carbohydrate dose used in the trials.
71. Metabolic activity occurs in the ascending colon and what is observed in the faecal output provides only a small snapshot of this and, therefore, limits what we can say about what is occurring in the GI tract. This point needs to be captured in the report.
72. Members provided detailed comments on this paper:
- The increase in faecal weight in response to non-digestible oligosaccharides is shown to be approx 17g in Figure 5, however the range of intakes is between 10 and 30g. Therefore, it is important to ascertain the average intake of non-digestible oligosaccharides (NDOs), in order to work out whether the effect is a 1:1 ratio between intake and output or whether there is an increase in faecal bulking.
 - In Figures 5 and 6 include information on which NDOs were being studied.
 - Include the P value within the forest plot itself.

- It should be made clear that fermentable carbohydrates includes every component and searches will be carried out for all types of sugar.

Action: Peter Sanderson

- In table 13 include information on short chain fatty acids

- It was acknowledged that the majority of the evidence on SCFA and colorectal health was from animal and in vitro studies but it was agreed that some narrative based on the available evidence on butyrate and its potential effects needs to be included in the report.

Action: Peter Sanderson

- In relation to paragraph 84, results from breastfed infants who are acting as controls needs to be included.
- Insert some introductory text about the balance of bacteria in the colon and their beneficial effect and what would be the potential benefit of changing that balance.
- In terms of faecal bacteria in infants, the aim of adding certain carbohydrates to formula is to produce stools which are similar to breastfed infants.
- A member suggested looking at the European guidelines on breast milk substitutes to capture a form of words which will explain the rationale for this. A member highlighted the fact that the differences observed between the calcium and magnesium absorption studies could be due to the carriers used to deliver the isotope, therefore it is important to look at the methods employed before synthesising the data.

Action: Peter Sanderson

73. It was suggested that the information surrounding infant feeding should also go to SMCN for their input. It was agreed that the Working Group should assist with the synthesis of the infant data.

Action: Working Group

74. Due to a full agenda there was insufficient time to discuss the third paper, the Chair agreed that members should feedback their comments on the clinical aspects paper (SACN/Carbohydrates/10/06) by correspondence before the April meeting to enable further discussion at this meeting. Members highlighted a couple of general points- the report needs to acknowledge that diarrhoea relates to processes occurring in the small intestine rather than the colon. The statement regarding poor diet needs to be amended.

75. PS informed members the World Cancer Research Fund update on colorectal cancer for

2009 will not be complete until March 2010 and, therefore, access to their database is required to obtain the latest data. The Secretariat agreed to contact the WCRF regarding this issue.

Action: Secretariat

Agenda item 6- Future Work Programme

76. Work will continue on both the colorectal health and cardiometabolic health review with further discussions taking place at the April meeting.

77. It was agreed that discussions should take place regarding search terms for the dental health review and that the outcome of these should be circulated ahead of the meeting in April with a view to commissioning a systematic review.

Action: Secretariat, Ian MacDonald and Angus Walls

78. The Chair raised the issue interpretation of data from the systematic reviews and that the Working Group needs to agree on how this should be done. It was agreed that the Secretariat could draft the interpretation sections with input from relevant members of the Working Group.

Agenda item 7- AOB

79. No issues were discussed under this agenda item.

Date of next meeting

80. The date of the next meeting is scheduled for 19th April 2010.

81. The Chair closed the meeting and thanked members for their attendance.

Meeting close