



Scientific Advisory Committee on Nutrition

7th MEETING

Carbohydrates Working Group

19th April 2010, Room 204-207B, Aviation House
125 Kingsway, London, WC2B 6NH

FINAL MINUTES

Chair:

Professor Ian Macdonald

SACN Members:

Professor Annie Anderson

Professor Tim Key

Professor Alan Jackson

Professor Angus Walls (agenda item 1 only)

Professor Ian Johnson

Other attendees:

Dr Peter Sanderson (agenda items 5-6 only)

Ms Alison Eastwood, CRD York (via telephone agenda item 4 only)

Dr Victoria Burley, University of Leeds (agenda item 4 only)

Dr Charlotte Evans, University of Leeds (agenda item 4 only)

Mr Andrew James (FSA) (agenda item 5 only)

Secretariat:

Dr Elaine Stone (FSA)

Mrs Vicki Pyne (FSA)

Ms Emma Peacock (FSA) (agenda item 1-4 only)

Mrs Rachel Marklew (DH)

Observers:

Ms Rachel Stratton (FSA) (agenda item 1-2)

Agenda item 1 – Chair’s introduction and welcome

1. The Chair welcomed members to the seventh meeting of the SACN Carbohydrates Working Group.
2. Apologies were received from Dr David Mela, Professor Ian Young and Mrs Christine Gratus. Professor Angus Walls gave his apologies, but due to a pre-existing meeting, he was only able to attend for Agenda item 1.
3. The Chair asked the group whether there were any changes to their declaration of interest. None were given.

Agenda item 2 – Carbohydrates and oral health review (SACN/Carbohydrates/10/07)

4. Vicki Pyne informed members that a bid to commission the oral health review is being considered as part of the research prioritisation process at the Agency. The Secretariat proposed that the term of reference for this part of the work was widened to include all carbohydrates and a range of oral health outcomes e.g. dental caries, oral cancer, periodontal disease etc, rather than just focusing on dental health. It was agreed that the work would be commissioned through open competition and tender. A specification document which would be sent to potential applicants was presented to members.
5. The Chair asked members whether they were happy for the scope of the dental/oral health review to be widened.
6. Some concern was expressed that if the scope is broadened it will include other dietary factors that are linked with oral health, but are not related to carbohydrates. The Secretariat reminded the group that the exposures were limited to carbohydrates.
7. The Chair highlighted that there is some evidence for fruit and vegetable intake being linked with a reduced risk of oral cancer, therefore it is important not to just focus on dental health. Also it was felt that the review should encompass all carbohydrates.
8. The Working Group was informed by a member that finely milled flour and starch are

important exposures that need to be included, especially in relation to dental caries.

9. It was suggested that if the Working Group specify that they are focussing on carbohydrates and oral health, then by definition, it addresses any area of confusion.
10. A member suggested that it should be made explicit that the review is not looking at the acid component of soft drinks, but specifically the carbohydrate content.
11. It was agreed that periodontal disease should be included as an outcome, but studies should only be included if the primary exposure involves carbohydrate.
12. A member highlighted the fact that COMA only reported on evidence surrounding dental caries and sugars, therefore the review would need to cover evidence that was published before COMA reported in 1989 and including other types of carbohydrates.
13. The Chair asked the Working Group for comments on the proposed search terms and specification document for the oral health review.
14. It was suggested that milk, dairy products, breastmilk/breastfeeding and probiotic drinks should be added to the list of dietary sources of carbohydrate. It was agreed that carbohydrate containing beverages should replace the term sugar sweetened beverages. For characteristics of carbohydrate or carbohydrate containing food, frequency vs. quantity and timing of consumption (i.e. when was the food eaten in relation to tooth brushing or sleeping), viscosity (viscoelasticity), stickiness/oral residence time need to be added.

Action: Secretariat

15. The Working Group made the following comments on the specification document:

- Section 4.2.4, Types of evidence, 4th line- treatment should be used instead of management.
- Section 4.2.7, Display of the evidence- should read, “The evidence must be displayed in SACN style tables and meta-analysis included, where appropriate.”
- Section 5.2b- salivary function should be added as a confounding factor.
- A statement needs to be added that the Working Group will be looking at dietary patterns.
- Annex 1 oral health endpoints should be kept under general headings and listed alphabetically.
- Section 6 Timeline- it should be stated that a draft version of the review must be submitted and that interim presentations are required.

Action: Secretariat

16. It was highlighted that information on oral health from the NDNS rolling programme will need to be included in the report.

17. The Chair asked the Working Group whether the proposed budget for the oral health review is appropriate.

18. It was agreed that a budget range would be given e.g. £150-200k.

19. A member suggested that applicants should be asked to demonstrate that they have the necessary tools already in place to conduct the review so that time and resources would not need to be spent on this. He also asked whether it would be feasible for those that are already performing the cardiometabolic health review to share their systems.

20. The Secretariat agreed to explore this with the Leeds team, if required.

Action: Secretariat

Angus Walls left the meeting

Agenda item 3 – Minutes of 6th meeting January 2010 (SACN Carbohydrates/10/mins01)

21. Members were invited to comment on the minutes of the 6th meeting of the Carbohydrates Working Group.
22. The discussion regarding the duration of weight loss trials to be included in the review needs to be captured in the previous minutes.
23. A member reiterated that by limiting weight loss outcomes to studies with one year follow-up, relevant data may be lost and in addition there is a risk of emphasising compliance rather than primary efficacy. It is likely that very few studies will have objective evidence for continuity of the desired exposures for this long period of time.
24. Members discussed the inclusion criterion for weight loss trials and concluded that a duration of one year or more follow up should remain to ensure that the weight loss observed is sustained.
25. Subject to the above change, the minutes were agreed as an accurate record of the meeting.
26. A member enquired whether the exclusion criteria for the cardiometabolic health review is fully consistent with those used for the colorectal health review and will the same criteria be applied to oral health review? As with the carbohydrate definitions, statistical and design quality criteria should preferably be aligned across the different sections of the report.
27. A member noted that in appendix 3 of the cardiometabolic health review update, under ‘Characteristics of carbohydrates’ it is important that such studies are only included where the variation in GI/GL etc is solely or clearly attributable to a defined carbohydrate portion of the food or diet. GI/GL are defined primarily by their effect on blood glucose and not composition of the diet. Unless these can be linked directly to evidence on a defined carbohydrate exposure, excluding these studies would be consistent with the next page where other diets are excluded ‘...where the effects of carbohydrates cannot be separated out’.

Agenda item 3 – Matters arising (SACN/Carbohydrates/10/08)

28. The Chair introduced the matters arising.

SACN/CHO/10/02 – Carbohydrates and cardiometabolic health

29. Studies that have been excluded at step 10 (multi-component interventions) will be discussed under agenda item 4.

30. The timeline for completing this work has been revised.

SACN/CHO/10/03 – Carbohydrates and oral health

31. The commissioning of the oral health review and proposed search terms will be discussed under agenda item 2.

SACN/Carbohydrates/10/04- Carbohydrates and colorectal health

32. The forest plots were sent to the Statistics Branch at the Agency and Andrew James will feed back his comments to the Working Group under agenda item 5.

33. Member's comments on the clinical aspects paper will be discussed under Agenda item 5.

34. The Secretariat has obtained permission from the World Cancer Research Fund (WCRF) for access to their database regarding information on carbohydrate exposures and colorectal cancer.

Agenda item 4- Progress report on carbohydrates and cardiometabolic health (SACN Carbohydrates/10/09)

35. Dr Victoria Burley (VB) and Dr Charlotte Evans joined the meeting to introduce the progress report on carbohydrates and cardio-metabolic health.
36. VB informed members that at the current time 93% of papers had been assessed by two reviewers. So far there are 386 studies that have been included and there are 32 papers which remain on order from the British Library.
37. The Working Group were asked whether the inclusion criterion for cohort studies of a minimum of three years follow up should apply for children, as not many studies had been identified to date.
38. A member suggested that if the effect of carbohydrate is being assessed on longer term consequences then the existing cut off should be kept. It was agreed that the process should be referred to SMCN.
39. VB stated that the majority of studies investigating satiety that had been excluded used a preload design and asked if the criterion of only including interventions in this area if they have been conducted over ≥ 3 days should remain. The Chair informed the Leeds team that following previous discussions members had agreed that this study duration was appropriate for the satiety and energy intake outcomes.
40. A member commented that justification for the exclusion of energy intake/satiety studies should be expressed in a way that reflects a judgement on the lower quality or value of the evidence, rather than on the level of workload. In this case it can also be used by the Working Group in research recommendations; i.e. that studies of satiety should be carried out for longer periods and include measures of food intake.
41. Members were informed that 127 trials have already been included that look at outcomes other than weight loss, but VB noted that there were a lot of flow mediated dilation studies that had been excluded because they were of shorter duration, therefore, it is possible that some outcomes maybe missed.

42. VB highlighted to members that to date 25 weight loss trials have been included and members agreed that the intervention and follow up duration periods were adequate for this purpose.
43. Members discussed studies that have been excluded on the basis of not having an appropriate control arm. The Chair suggested that studies investigating energy balance rather than energy restriction should be included.
44. A member suggested a possible way to evaluate multi-component interventions is to see if a difference in outcome can be observed when the amount of carbohydrate (as a proportion of total energy) is altered.
45. VB informed members that this will mean the inclusion of a lot more studies because fat reduction trials will also include changing the amount of carbohydrate in the diet.
46. A member highlighted that if these trials represent the opportunity to assess good quality data then they should be included.
47. VB estimated that there have been 30 studies that have been excluded for this reason (code 9).
48. The Chair agreed that these studies should be included, but at the data extraction stage they should be divided between energy restricted diets and those diets that meet normal requirements. Therefore, the Howard et al (2006) paper, that has been given as an example in the progress report, should be included as part of the review.

Action: Victoria Burley

49. VB highlighted to members that to date only 12 studies have been identified which have been performed in potentially non-relevant populations, therefore the inclusion of these types of studies should not pose a problem. The Chair stated that the benefit of this approach is that if findings are similar across populations it is possible to infer that they are more generalisable.
50. The lipid thresholds have been changed to reflect being at increased risk of high cholesterol levels or heart disease.

51. A member drew the Working Group's attention to the fact that the American Heart Association thresholds represent the definition for ill health of individuals, but for the review they will be applied to populations. However, it was agreed that if a consistent approach is taken to applying the thresholds and that it is clearly highlighted in the review, then this should suffice.

52. The HDL cut off values specified for men are higher than women, therefore VB agreed to double check the figures presented.

Action: Victoria Burley

53. The Chair asked members for their views on the proposal by Leeds that studies using Latin Square and counterbalanced sequence allocations should be excluded if the authors have not stated whether random allocation has been performed.

54. A member suggested that the team assume randomisation had been performed, unless there is evidence to the contrary. It is possible that investigators perceive randomisation as such a common practice that they may have failed to state it. Perhaps the absence of explicitly tested order effects would overcome the proposed rejection of Latin-square and counter-balanced designs?

55. Other members considered that if researchers had randomised participants it is likely they would state this in a paper due to the emphasis put on publishing work in peer reviewed journals.

56. The Chair informed VB that the Agency statistician had agreed with the proposed exclusion of the above studies. Therefore, members concluded that this was an appropriate course of action.

57. The upper age limit for inclusion has been omitted so that studies would not be excluded if they recruited participants over 80 years of age who were healthy at baseline. Members agreed with the adoption of this approach.

58. The Chair asked members if they had any further comments.

59. A member highlighted that milk had not been included in the search terms for the review. VB stated that lactose had been included as a search term so studies investigating

carbohydrate in milk products should be captured.

60. VB informed members that they are anticipating sending a draft report to the Working Group by the end of October 2010. Data extraction has already commenced and will firstly be performed for all cohort studies.

Dr Victoria Burley and Dr Charlotte Evans left the meeting

Dr Peter Sanderson joined the meeting

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

61. Dr Peter Sanderson (PS) introduced the carbohydrates and colorectal health clinical aspects paper.
62. The constipation trials have been divided between institutionalised patients and outpatients. Commonly the outcome measure for the former was a reduction in laxative use.
63. There was no obvious reason that could be identified for the observed differences because variance data had not been given.
64. A member suggested that this observation could be due to the fact that institutionalised patients are likely to be consuming different background diets compared to outpatients.
65. PS noted that overall the constipation trials do not tend to be of high quality.
66. A member noted that there were three other papers that were published based on the study described by Anderson et al 1985. PS agreed to identify these and add any additional information where necessary.

Action: Peter Sanderson

67. The Chair commented that in the risk of bias tables using the term “Yes” to denote a low risk of bias and “No” to describe a high risk of bias was counterintuitive and suggested that these were changed to be more explanatory.

Action: Peter Sanderson

68. A member stated that the Working Group needs to be cautious not to over interpret the data arising from the constipation trials particularly as studies have measured specific outcomes, but have not subsequently reported their findings e.g. Mantle et al 1992.

69. A member enquired whether the trials using physiological outcomes such as transit times also included use of laxatives. PS agreed to check this information.

Action: Peter Sanderson

70. The diarrhoea trials have been divided between those being conducted in developing and developed countries.

71. A member highlighted that the WHO oral rehydration solutions (ORS) being used to deliver the intervention will also contain glucose, which could be exerting an effect on the outcome. Therefore, this needs to be captured in the report.

Action: Peter Sanderson

72. A member explained that in infancy there is increased fluid generation in the small intestine and there is a dependence on a competent colon to reabsorb the excess water. Therefore, the occurrence of diarrhoea depends on the relationship between the small and large intestine. Whereas the effects of oral rehydration therapy is a small intestine effect.

73. Paragraph 38 needs to include some information on the fact that ORS are specially formulated and that the carbohydrate component plays a specific role. The question that is being asked is can the ORS be improved by adding fermentable carbohydrate in order to help the bowel repair itself?

74. A member highlighted that the studies in Table 8 have different rationales for why they have been conducted and it would be useful to explain this to the reader.

75. The Chair recommended that studies investigating post infectious IBS are separated from other studies.
76. PS informed the group that in the IBS trials the placebo appears to be having an effect on the outcome. The analysis has been conducted on those that completed the trial rather than performing an intention to treat analysis.
77. Concern was expressed that an intention to treat analysis had not been performed as this provides information on what is realistically achievable on a population level. Therefore, members requested that this analysis is included and if the findings are different from the analysis of the completers, then a statement on this should be included in the review.
78. PS asked the Working Group if this analysis should also be performed for the normal colorectal function review and members agreed that this would be appropriate.
79. It was suggested that the wording in Table 11 is changed to “symptoms improved on placebo arm”.

Action: Peter Sanderson

Agenda item 5 – Draft paper on Carbohydrates and colorectal cancer (SACN/Carbohydrates/10/11).

80. PS introduced the carbohydrate and colorectal cancer paper. Terms which have not been covered by the WCRF review, such as resistant starch and non-digestible oligosaccharides, have been included.
81. Members made the following comments:
- There was concern over the inclusion of the Burns et al 2008 paper because the subjects have a hereditary disease which predisposes them to colorectal cancer and limits their generalisability to the population. It was suggested a statement should be made about the study not being sufficiently powered due to the low number of resulting cancers. The timeframe of the study also needs to be checked and reported consistently.

- In paragraph 16 the reference should read Burns.
- In table 5, p 12- For Michaud et al 2005 the confidence interval crosses one, but a significant finding is stated, therefore this result needs to be checked.
- A member suggested that that it should be stated upfront that for GI and GL only cohort studies are being included.
- A member recommended adding the number of cases and controls to the forest plots so they are consistent with the IBS trial data.

Action: Peter Sanderson

Agenda item 5 – Draft paper on carbohydrates and normal function (SACN/Carbohydrates/10/12).

82. PS introduced the draft paper on carbohydrates and normal function.

83. Members had the following comments:

- Information on the role of nitrogen balance in increasing faecal mass needs to be included. The Waterlow review has captured this issue and could be used as a reference. It was agreed that this information should be sent to PS.

Action: Alan Jackson

- Para 28, p8- take out information from the NDNS for 2000/01 for total carbohydrate, sugar and non-starch polysaccharides intakes and put a drafting note to include the most up to date information from the NDNS rolling programme.
- It would be useful to quantitate the amount of fibre required to get a corresponding increase in faecal output. For example, if a 1g increase in stool mass results from 1 g of carbohydrate consumed, the component would not be defined as fibre.
- Table 2, the effect of different fibre sources on increasing stool weight is highly heterogeneous, therefore it should be stated upfront that effects observed with different components are set against a background of variable responses.
- An analysis should be performed to ascertain whether substances have the same

physiological effect as NSP.

- Paragraph 58, a table would be useful to illustrate the differences between the AOAC and Englyst method of determining fibre. The dietary surveys branch at the Agency should be able to provide this information.

Action: Secretariat

- Figure 2, page 39- there are four entries for Cummings 1996 which need to be checked.
- The ratio between resistant starch and faecal weight is quite low even at high doses. Information on the method used to determine resistant starch and the definition used needs to be included. Also the doses of resistant starch should be checked.
- Figure 3 and 4, p47- change the forest plots so that the control data are stated first, followed by intervention.

Action: Peter Sanderson

Agenda item 6- Future Work Programme

84. Once the draft reviews are submitted the Secretariat will draft the conclusions/recommendations with input from the Working Group.

85. It was suggested that two Working Group members are allocated to each term of reference (ToR). The Chair and Elaine Stone will decide which members to assign to which ToR.

Action: Elaine Stone

Agenda item 7- AOB

86. No issues was raised under this Agenda item.

Date of next meeting

87. The date of the next meeting is scheduled for 3rd September 2010.

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

Meeting close

DRAFT