

July 24, 2019

Barbara Schneeman, PhD
Chair, 2020 Dietary Guidelines Advisory Committee
c/o Eve Stoodly, PhD
Designated Federal Officer
Center for Nutrition Policy and Promotion
Food and Nutrition Service
U.S. Department of Agriculture
3101 Park Center Drive, Room 1034
Alexandria, VA 22301

Dear Dr. Schneeman and Members of the 2020 Dietary Guidelines Advisory Committee:

The American Institute for Cancer Research (AICR) presents these comments to support the work of the Dietary Guidelines Advisory Committee (DGAC) as it reviews the evidence related to diet and health and develops its scientific report to inform the development of the *2020-2025 Dietary Guidelines for Americans* (DGA).

AICR is the leading authority in the U.S. on the links between diet, weight, and physical activity, and cancer prevention and survival. Our mission is to champion the latest and most authoritative scientific research from around the world on cancer prevention and survival through these lifestyle factors to help people make informed choices to reduce their cancer risk.

AICR is the U.S. charity in the World Cancer Research Fund network (WCRF). Together we work to fund, gather, and comprehensively analyze global scientific research on the roles of diet, weight, and physical activity in cancer risk and publish expert reports. The Continuous Update Project (CUP) is the WCRF network's ongoing program to do this work that underpins current cancer prevention recommendations and policy priorities. It is a trusted, authoritative scientific resource used by experts worldwide.

The CUP has produced a series of reports on specific cancer sites over the last 10 years and most recently AICR/WCRF published our latest Expert Report in May 2018, *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*. This report includes our Cancer Prevention Recommendations, which provide individuals with a blueprint for healthy living to reduce their risk of cancer. AICR uses these recommendations as the scientific basis for our work, which includes education, health information campaigns, behavioral change programs, and public policy advocacy.

In the following sections we will address these topics and detail the latest global evidence with respect to some of the DGAC's specific scientific questions:

- i. The process for the DGAC
- ii. How research on the connection between diet and cancer is relevant to and can inform the work of the DGAC

- iii. The current status of existing research and AICR's Cancer Prevention Recommendations
- iv. Dietary patterns and cancer
- v. Alcohol consumption and cancer
- vi. Dietary fat and cancer
- vii. Dietary patterns and body weight
- viii. Beverage consumption and body weight
- ix. Added sugars and body weight
- x. Breastfeeding and cancer

In developing these comments, AICR consulted with several of the leading experts on diet and cancer, including:

Kimberly Robien, PhD, RD, CSO, FAND. Associate Professor, Exercise and Nutrition Sciences, The George Washington University.

Susan E. Steck, PhD, MPH, RD. Professor, Epidemiology and Biostatistics, Arnold School of Public Health, University of South Carolina.

Fred Tabung, PhD, MSPH. Assistant Professor, College of Medicine, The Ohio State University.

Fang Fang Zhang, PhD. Associate Professor, Friedman School of Nutrition, Tufts University School of Medicine.

We hope that you will consider these comments and research as you review the evidence and develop your scientific report to inform the *2020-2025 Dietary Guidelines for Americans*.

Executive Summary

Most importantly, AICR strongly recommends that the DGAC make full use of existing high-quality systematic reviews and meta-analyses conducted by researchers and organizations outside of the federal government, in addition to any conducted by government researchers. A determination to explicitly exclude the use of high-quality, scientifically-sound external systematic reviews and meta-analyses will reduce the efficiency and effectiveness of the DGAC process. AICR supports other changes to the process intended to improve transparency and recommends that the DGAC provide additional information regarding DGAC members' conflicts of interest in the final report.

AICR/WCRF's recent Expert Report, *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*¹, Continuous Update Project (CUP) reports, and their associated systematic literature reviews (SLRs) are particularly important resources for the DGAC to use in reviewing the evidence regarding the relationship between dietary patterns, alcohol consumption, and dietary fat, and cancer risk. The WCRF/AICR CUP is unique in its comprehensive approach and methodological rigor, using *a priori* criteria for its search strategies, validated and tested research protocols, literature scans for other quality meta-analyses and pooled data studies, research conducted by an independent team, external peer review, and conclusions and recommendations developed by an independent, multi-disciplinary

¹ World Cancer Research Fund/American Institute for Cancer Research. *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*. Continuous Update Project Expert Report 2018. Available at dietandcancerreport.org.

international expert panel. We ask that the DGAC consider this methodology when designing its own evidence review methodology. Furthermore, the rigorous and transparent application of the CUP process for the Expert Reports and CUP Reports should give the Committee confidence in using AICR's research to inform its own conclusions and recommendations.

With respect to the relationship between dietary patterns and cancer risk, overall, evidence summarized in WCRF/AICR's recent expert report, *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*², indicates that a dietary pattern that is high in whole grains, fruit and non-starchy vegetables, low in fast foods (highly processed foods high in fat, starches, or sugars), low in red and processed meats, avoids sugar-sweetened beverages, and includes little or no alcohol consumption provides the most prudent approach to lowering risk of cancer.

With respect to alcohol consumption and cancer risk, systematic literature reviews conducted as part of WCRF/ AICR's CUP have found strong evidence that consumption of alcoholic drinks increases the risk of six types of cancer³. While the amount of alcohol needed to increase cancer risk varies by cancer type, less than one small glass of alcohol per day significantly increases risk for cancers of the breast (both pre- and post-menopausal), esophagus, and mouth/pharynx/larynx⁴. Therefore, based on the totality of the evidence, we strongly suggest that the DGAC recommend that for cancer prevention, it's best not to drink alcohol.

Regarding dietary fat and cancer risk, there is no strong evidence that dietary fat is directly linked to any individual type of cancer. Therefore, based on the available evidence, we do not recommend that the DGAC make recommendations regarding amount or type of dietary fat based on its relationship to cancer risk.

Given that overweight and obesity increase the risk for 12 types of cancer⁵, AICR's comments also address research questions regarding the relationship between body weight and dietary patterns, beverage consumption, and added sugar consumption. Based on data in AICR's recent CUP report *Diet, nutrition and physical activity: Energy balance and body fatness*, the DGAC should acknowledge "probable" evidence that a Mediterranean type dietary pattern and foods containing dietary fiber decrease the risk of weight gain, overweight, and obesity, while there is "convincing" evidence that sugar-sweetened drinks and "probable" evidence that a Western type diet and fast foods (high in sugar, fat, and salt) increase the risk of weight gain, overweight, and obesity. Given this evidence, we strongly

² WCRF/AICR. *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*. Continuous Update Project Expert Report 2018. Available at dietandcancerreport.org.

³ WCRF/AICR. Continuous Update Project Expert Report 2018. Alcoholic drinks and the risk of cancer. Available at <https://www.wcrf.org/sites/default/files/Alcoholic-Drinks.pdf>.

⁴ WCRF/AICR. The associations between food, nutrition and physical activity and the risk of breast cancer. Updated 2017. Available at <https://www.wcrf.org/sites/default/files/breast-cancer-slr.pdf>, p. 967, 994, 1022; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of mouth, pharynx and larynx cancer. Updated 2016. Available at <https://www.wcrf.org/sites/default/files/Mouth-pharynx-larynx-cancer-slr.pdf>, p. 67; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of oesophageal cancer. Updated 2015. Available at <https://www.wcrf.org/sites/default/files/oesophageal-cancer-slr.pdf>, p. 119, 149, 157, 164.

⁵ WCRF/AICR. Continuous Update Project Expert Report 2018. *Diet, nutrition and physical activity: Energy balance and body fatness*. Available at <https://www.aicr.org/continuous-update-project/reports/energy-balance-report.pdf>, p. 5.

suggest that the DGAC recommend following a Mediterranean type dietary pattern and eating sufficient dietary fiber to reduce the risk of overweight and obesity in adults. Consumption of a Western type diet high in added sugars, meats, and dietary fats; fast foods high in added sugars, starches, and fats; and sugar-sweetened drinks should be discouraged, as they promote excess energy intake.

In addition, AICR strongly supports the provision of a recommendation that new mothers should breastfeed their baby, if they can, as breastfeeding can offer cancer protection for both the mother and the child⁶.

The remainder of our comment letter provides additional detail regarding the conclusions and recommendations highlighted above.

Use of Existing Research in the DGAC Update Process

As described in more detail in a separate comment letter, which has been signed by 35 organizations, **AICR strongly recommends that the DGAC continue to make full use of existing high-quality systematic reviews and meta-analyses conducted by researchers and organizations outside of the federal government, in addition to any conducted by government researchers.** We believe that a determination to explicitly exclude the use of high-quality, scientifically-sound external systematic reviews and meta-analyses will reduce the efficiency and effectiveness of the DGAC process.

Several of the proposed DGAC research questions have been recently addressed by existing high-quality reviews and meta-analyses, and these reports provide important information concerning the relevant dose-response relationships needed to support the development of these important guidelines. In particular, as we will describe in more detail in our section on alcohol and cancer risk (page 13 of this letter), meta-analyses on the relationship between alcohol consumption and cancer risk show that alcohol increases the risk of six different types of cancer. However, the level of consumption associated with significantly increased risk differs substantially between these cancer types. While only heavy drinking increases the risk of a number of cancers, any alcohol consumption significantly raises the risk of both breast and esophageal cancers. Because the Nutrition Evidence Systematic Review (NESR) does not conduct meta-analyses, these dose-response patterns may not be apparent if the evidence is only assessed using systematic literature reviews conducted by NESR.

We believe that a decision to exclude the use of existing high-quality systematic reviews and meta-analyses would be an unnecessary and inefficient departure from the evidence review process used by the 2015 DGAC, which utilized existing high-quality external systematic reviews, meta-analyses, or reports to answer nearly half (45%) of its research questions⁷. The 2015 DGAC utilized Nutrition Evidence Library (NEL; NESR's predecessor) systematic reviews to answer only 27% percent of its questions⁸. In fact, the 2017 report from the National Academies of Sciences, Engineering, and Medicine (NASEM) on the optimal process for developing the Dietary Guidelines states, "use of existing systematic reviews, meta-analyses, and authoritative reports from leading organizations is generally

⁶ WCRF/AICR. Continuous Update Project Expert Report 2018. Lactation and the risk of cancer. Available at <https://www.wcrf.org/sites/default/files/Lactation.pdf>; WCRF/AICR. Energy balance and body fatness, p. 83-88.

⁷ Dietary Guidelines Advisory Committee. *Scientific Report of the 2015 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Health and Human Services and the Secretary of Agriculture*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC, 2015. Available at <https://health.gov/dietaryguidelines/2015-scientific-report/PDFs/Scientific-Report-of-the-2015-Dietary-Guidelines-Advisory-Committee.pdf>. p. 32.

⁸ Ibid.

appropriate and encouraged by this National Academies committee, with the understanding that they ought to be relevant, timely, and of high quality”⁹. Although the NASEM notes, “existing systematic reviews may not use the same inclusion and exclusion criteria, may be out of date, or have different outcomes,”¹⁰ in the situations where existing systematic reviews and meta-analyses are high-quality, relevant, and timely, we strongly believe that they should be utilized. **AICR/WCRF’s CUP systematic literature reviews on alcohol and cancer meets these criteria**¹¹. Given the scale of the task for the DGAC, the finite capacity of the NESR team, and the short timeframe to address more than 80 research questions, NESR should utilize the full body of existing science and focus its time and resources most efficiently—on updates to existing high-quality systematic reviews and development of new ones on topics for which they do not already exist.

Additional Comments Regarding the DGAC Process

AICR supports several other changes to the DGAC process, particularly changes to the DGAC process that are intended to improve transparency. These include making systematic reviews and analyses publicly available online and using a peer review process before they are finalized. We also appreciate that the DGAC meeting dates and status updates are posted publicly online and that there will be an additional opportunity for public comments.

With respect to conflicts of interest, we are disappointed that the U.S. Department of Agriculture (USDA) did not more fully incorporate NASEM’s recommendations regarding managing conflicts of interest¹². Therefore, we recommend that the DGAC provide additional information regarding DGAC members’ conflicts of interest in the final report, as is the case with peer-reviewed publications. This information should have already been made publicly available with the announcement of the DGAC.

AICR’s Research Methodology and Cancer Prevention Recommendations

The WCRF/AICR CUP is unique in its comprehensive approach and methodological rigor. Each systematic literature review is conducted according to *a priori* criteria concerning search strategies, inclusion and exclusion, and data abstraction; these detailed protocols were tested and validated for reproducibility before implementation. Criteria for the conduct and updating of meta-analyses, for all relevant exposures, are integrated into the CUP SLR process. CUP reports also include literature scans for other

⁹ NASEM. *Redesigning the Process for Establishing the Dietary Guidelines for Americans*. Washington, DC: The National Academies Press, 2017. <https://doi.org/10.17226/24883>. p. 171.

¹⁰ Ibid, p. 82.

¹¹ WCRF/AICR. The associations between food, nutrition and physical activity and the risk of mouth, pharynx and larynx cancer. Updated 2016. Available at <https://www.wcrf.org/sites/default/files/Mouth-pharynx-larynx-cancer-slr.pdf>, p. 67; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of oesophageal cancer. Updated 2015. Available at <https://www.wcrf.org/sites/default/files/oesophageal-cancer-slr.pdf>, p. 119, 149, 157, 164; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of liver cancer. Updated 2015. Available at <https://www.wcrf.org/sites/default/files/liver-cancer-slr.pdf>, p. 68, 85; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of colorectal cancer. Updated 2017. Available at <https://www.wcrf.org/sites/default/files/colorectal-cancer-slr.pdf> p. 639, 848; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of breast cancer. Updated 2017. Available at <https://www.wcrf.org/sites/default/files/breast-cancer-slr.pdf>, p. 967, 994, 1022; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of stomach cancer. Updated 2015. Available at <https://www.wcrf.org/sites/default/files/stomach-cancer-slr.pdf>, p. 337, 369, 378, 387.

¹² NASEM. *Optimizing the Process for Establishing the Dietary Guidelines for Americans: The Selection Process*. Washington, DC: The National Academies Press, 2017. doi: <https://doi.org/10.17226/24637>.

meta-analyses and pooled data studies. An independent research team conducts the SLRs and meta-analyses. Each SLR report is externally peer-reviewed, and the conclusions are drawn during in-person meetings of an independent, multidisciplinary, international expert panel. This process involves more than 100 scientists worldwide

We ask that the DGAC consider this methodology when designing its own evidence review methodology. Furthermore, the rigorous and transparent application of the CUP process for the Expert Report and CUP Reports should give the Committee confidence in using AICR's research to inform its own conclusions and recommendations. AICR's Cancer Prevention Recommendations, outlined below, are derived from these systematic reviews and meta-analyses of epidemiological evidence, supported by experimental evidence from human and animal studies. The best evidence that diet and nutrition can modify the risk of cancer comes from an integration of epidemiological and other study designs, supported by evidence of plausible biological mechanisms. Consequently, comprehensive evidence was collected in the form of 17 SLRs on cancer prevention, which systematically analyzed individual studies and pooling studies. The CUP panel interpreted the evidence from these reviews and analyses in the context of available experimental evidence to assess biological plausibility, according to the pre-determined criteria for judging the evidence. In addition, since 12 of the 17 cancers reviewed are linked to greater body fatness, a separate review on the determinants of body fat was conducted as a review of published reviews. The CUP panel of independent experts made recommendations when they judged that a particular exposure was "convincingly" or "probably" causally linked to cancer risk. All materials, including protocols, SLRs, and reports are available to access free at www.dietandcancerreport.org.

Based on its comprehensive review of the evidence, AICR's 10 Cancer Prevention Recommendations are:

1. Be a healthy weight
2. Be physically active
3. Eat a diet rich in whole grains, vegetables, fruits and beans
4. Limit consumption of "fast foods" and other processed foods high in fat, starches, or sugars
5. Limit consumption of red and processed meat
6. Limit consumption of sugar-sweetened drinks
7. Limit alcohol consumption
8. Do not use supplements for cancer prevention
9. For mothers: breastfeed your baby, if you can
10. After a cancer diagnosis: follow our recommendations, if you can

Given the level of scientific rigor and comprehensiveness of the reviews and meta-analyses conducted by WCRF/AICR, we urge the DGAC to consider the WCRF/AICR CUP and Expert Report that are directly relevant to the specific questions that have been posed.

Dietary Patterns Subgroup

What is the relationship between dietary patterns consumed at each stage of life and risk of certain types of cancer?

Sources of Evidence and Types of Cancer

In responding to this research question, we urge the DGAC to make full use of the SLRs and reports of the WCRF/AICR CUP, which regularly review the research regarding dietary patterns and components that may define dietary patterns and their impact on cancer risk. As noted previously, the WCRF/AICR CUP is unique in its comprehensive approach and methodological rigor. All materials, including protocols, SLRs, and reports are available to access free at www.dietandcancerreport.org. The CUP reports provide high quality evidence for the components of dietary patterns and cancer risk. We also recommend that the DGAC utilize additional, existing up-to-date, high-quality systematic reviews and meta-analyses.

In reviewing the evidence regarding the relationship between dietary patterns and cancer risk, we suggest that the DGAC consider the following types of cancer related directly to specific dietary patterns or components of dietary patterns: breast, colorectal, endometrial, aerodigestive, liver, endometrium, stomach, esophagus, and mouth, pharynx, and larynx. Additionally, obesity is a significant causative factor for some of these cancers as well as cancers of the prostate, pancreas, kidney, gall bladder, ovary, and cervix. Therefore, the grading for dietary patterns (or components that may define a dietary pattern) associated with an increased or decreased risk of weight gain, overweight, or obesity are presented in table 2. It is important to note that obesity is a strong risk factor for 12 types of cancer; therefore, dietary patterns that increase the risk for obesity also increase the risk for obesity-related cancers. We suggest the DGAC restrict its review in responding to this research question to studies conducted in adults, as dietary patterns and obesity are not known to impact the risk for childhood cancers.

Although the protocol for this specific question has not yet been published, other protocols for the reviews of dietary patterns evidence (e.g. <https://www.dietaryguidelines.gov/dietary-patterns-and-body-weight>) have defined a dietary pattern as: “*For this question, dietary patterns is defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed.*” We support the use of this definition for the question on dietary patterns and cancer, as well.

Research Conclusions

In the three decades that AICR has been conducting comprehensive reviews and analysis of the impact of diet on cancer risk, there has been a transition within the relevant fields of research from a reductionist, nutrient-focused approach to an approach that considers the broader composition of diet and the patterns of overall intake. This transition has occurred largely because the effects attributed to individual food items or nutrients, based on earlier research from mostly case-control studies that were particularly susceptible to recall bias, were not replicated when these exposures were assessed in more rigorous prospective study designs. AICR/WCRF have recently assessed the totality of the evidence linking dietary patterns with several types of cancer from prospective cohorts and randomized controlled trials. **Overall, evidence summarized in AICR and WCRF’s recent Expert Report, *Diet,***

***Nutrition, Physical Activity and Cancer: a Global Perspective*¹³, indicates that a dietary pattern that is high in whole grains, fruit and non-starchy vegetables, low in fast foods (that are high in fat, starches or sugars), low in red and processed meat, avoids sugar-sweetened beverages, and includes little or no alcohol consumption provides the most prudent approach to lowering risk of cancer.**

The nature, quantity, and proportion of different foods and drinks in diets and the frequency with which they are consumed, constitute dietary patterns. The impact of diet and nutrition on health is generally determined by dietary patterns coupled with physical activity and other factors rather than individual foods and drinks or specific dietary constituents. However, dietary patterns are difficult to characterize, and are rarely a focus of epidemiological and experimental investigations. Specific foods and dietary components are more commonly addressed. The specific evidence relating to dietary patterns that have been defined by the instruments used for dietary data collection are summarized below.

Table 2 summarizes the dietary patterns and components of dietary patterns for which the CUP Expert Panel judged the evidence for a causative contribution to cancer risk to be strong (“convincing” or “probable”). Several of these dietary patterns/components affect multiple types of cancer and impact some of the most common types of cancer with which Americans are diagnosed. In particular, colorectal cancer, the second most commonly diagnosed cancer in the U.S. with > 145,000 cases diagnosed in 2019, is impacted by several dietary patterns/components¹⁴.

Recommendations to DGAC

Consistent with AICR/WCRF’s Cancer Prevention Recommendations that are based on a comprehensive systematic review, meta-analyses and judgement of the evidence, we strongly recommend that the DGAC guidelines advise consuming a diet rich in whole grains, vegetables, fruits, and beans and that limits consumption of “fast foods” and other processed foods high in fat, starches, or sugars, red meats and processed meats, and sugar-sweetened drinks. As noted above, this type of diet has been shown to increase the risk of colorectum, esophagus, mouth, pharynx and larynx, liver, breast (both pre- and post-menopausal), liver, stomach, and endometrium cancers.

It is particularly important that the DGAC acknowledge the importance of limiting red meats, such as beef, lamb, and pork, and processed meats. Even small amounts of processed meat eaten regularly (0.5 ounces/day) increases the risk of colorectal cancer; also, eating more than 18 ounces of red meat per week increases the risk of colorectal cancer. The International Agency for Research on Cancer (IARC), part of the World Health Organization (WHO), has classified processed meat as a Group 1 carcinogen, meaning it is carcinogenic to humans, based on sufficient evidence in humans that the consumption of processed meat causes colorectal cancer. Red meat is classified as a Group 2A carcinogen, meaning it is probably carcinogenic to humans, based on limited evidence that the consumption of red meat causes cancer in humans and strong mechanistic evidence supporting a carcinogenic effect¹⁵. The 2015 DGAC concluded that: “The overall body of evidence examined by the 2015 DGAC identifies that a healthy dietary pattern is higher in vegetables, fruits, whole grains, low- or non-fat dairy, seafood, legumes, and

¹³ WCRF/AICR. *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*. Continuous Update Project Expert Report 2018. Available at dietandcancerreport.org.

¹⁴ American Cancer Society. “Key statistics for colorectal cancer.” Cancer.org. <https://www.cancer.org/cancer/colon-rectal-cancer/about/key-statistics.html> (Accessed on July 18, 2019).

¹⁵ IARC. *IARC Monograph: Red Meat and Processed Meat*. Volume 114. 2018. Available at <https://monographs.iarc.fr/wp-content/uploads/2018/06/mono114.pdf>.

nuts; moderate in alcohol (among adults); **lower in red and processed meat**; and low in sugar-sweetened foods and drinks and refined grains¹⁶.” It further recommended: “Thus, the U.S. population should be encouraged and guided to consume dietary patterns that are rich in vegetables, fruit, whole grains, seafood, legumes, and nuts; moderate in low- and non-fat dairy products and alcohol (among adults); **lower in red and processed meat**; and low in sugar-sweetened foods and beverages and refined grains¹⁷.” The 2015 DGAC acknowledged that these characteristics align with AICR’s recommendations. We strongly urge the 2020 DGAC to make similar conclusions and recommendations as they pertain to red and processed meats.

We also urge the DGAC to make a clear recommendation that for cancer prevention it is important to increase the consumption of whole grains and other high-fiber foods, and fruit and non-starchy vegetables, in place of refined grains. The DGAC should also recommend reducing consumption of fast foods (that are high in fat, starches, or sugars), avoiding sugar-sweetened beverages, and consuming little or no alcohol to lower risk of cancer.

The following table summarizes the dietary patterns and components of dietary patterns for which the CUP Expert Panel judged the evidence for a causative contribution to cancer risk to be strong (“convincing” or “probable”).

¹⁶ DGAC 2015, p. 2–3.

¹⁷ Ibid, p. 3.

Table 1

	WCRF/AICR GRADING	DECREASE RISK	INCREASE RISK	CANCER SITE
DIETARY PATTERNS <i>(including dietary components that may define a dietary pattern)</i>	CONVINCING		Processed Meat Alcohol	Colorectum ¹⁸ Esophagus ¹⁹ Mouth, Pharynx & Larynx ²⁰ Liver ²¹ Colorectum ²² Breast (post-menopause) ²³
STRONG EVIDENCE				

¹⁸ WCRF/AICR. Continuous Update Project Expert Report 2018. Diet, nutrition, physical activity and colorectal cancer. Available at <https://www.aicr.org/continuous-update-project/reports/colorectal-cancer-2017-report.pdf>, p. 32-40; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of colorectal cancer. Revised 2017. Available at <https://www.wcrf.org/sites/default/files/colorectal-cancer-slr.pdf>, p. 289-334.

¹⁹ WCRF/AICR. Diet, nutrition, physical activity and oesophageal cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/oesophageal-cancer-cup-report.pdf>, p. 26-32; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of oesophageal cancer. Revised 2015. Available at <https://www.wcrf.org/sites/default/files/oesophageal-cancer-slr.pdf> p. 119-164.

²⁰ WCRF/AICR. Diet, nutrition, physical activity and mouth, pharynx & larynx cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/mouth-pharynx-larynx-cancer.pdf> p. 27-39; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of mouth, pharynx and larynx cancer. Revised 2016. Available at <https://www.wcrf.org/sites/default/files/Mouth-pharynx-larynx-cancer-slr.pdf> p. 67-94.

²¹ WCRF/AICR. Diet, nutrition, physical activity and liver cancer. Updated 2018. Available at <https://www.aicr.org/assets/docs/pdf/reports/cup-report-liver-cancer.pdf>, p. 22-27; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of mouth, pharynx and larynx cancer. Revised 2015. Available at <https://www.wcrf.org/sites/default/files/liver-cancer-slr.pdf>, p. 68-85.

²² WCRF/AICR. Diet, nutrition, physical activity and colorectal cancer, p. 63-69; WCRF/AICR. Associations between food, nutrition and physical activity and the risk of colorectal cancer, p. 639-675.

²³ WCRF/AICR. Diet, nutrition, physical activity and breast cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/breast-cancer-report-2017.pdf>, p. 34-43; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of breast cancer. Revised 2017. Available at <https://www.wcrf.org/sites/default/files/breast-cancer-slr.pdf>, p. 846-1052.

Table 1 (cont)

		WCRF/AICR GRADING	DECREASE RISK	INCREASE RISK	CANCER SITE
DIETARY PATTERNS <i>(including dietary components that may define a dietary pattern)</i>	STRONG EVIDENCE	PROBABLE		Alcohol	Stomach ²⁴ Breast (pre-menopause) ²⁵
				Alcohol	Colorectum ²⁶ Kidney ²⁷
				Whole grains	Colorectum ²⁸
				Foods containing dietary fiber	Colorectum ²⁹
				Non-starchy vegetables and fruit	Mouth, Pharynx & Larynx ³⁰
				Dairy products	Colorectum ³¹
				Coffee	Liver ³² Endometrium ³³

²⁴ WCRF/AICR. Diet, nutrition, physical activity and stomach cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/stomach-cancer-report.pdf>, p. 30-35; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of stomach cancer. Revised 2015. Available at <https://www.wcrf.org/sites/default/files/stomach-cancer-slr.pdf> p. 337-387.

²⁵ WCRF/AICR. Diet, nutrition, physical activity and breast cancer. p. 34-43; WCRF/AICR. The associations between food, nutrition and physical activity and the risk of breast cancer. p. 846-1052.

²⁶ WCRF/AICR. Diet, nutrition, physical activity and colorectal cancer, p. 32-40.

²⁷ WCRF/AICR. Diet, nutrition, physical activity and kidney cancer. Updated 2018. Available at <https://www.aicr.org/assets/docs/pdf/reports/cup-kidney-report.pdf>, p. 15.

²⁸ WCRF/AICR. Diet, nutrition, physical activity and colorectal cancer, p. 15-18.

²⁹ Ibid, p.18-22.

³⁰ WCRF/AICR. Diet, nutrition, physical activity and mouth, pharynx & larynx cancer, p. 22-30.

³¹ WCRF/AICR. Diet, nutrition, physical activity and colorectal cancer, p. 45-57.

³² WCRF/AICR. Diet, nutrition, physical activity and liver cancer, p. 19-22.

³³ WCRF/AICR. Diet, nutrition, physical activity and endometrial cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/Endometrial-Cancer-2013-Report.pdf>, p. 13-15.

Table 2

		WCRF/AICR GRADING	DECREASE RISK OF WEIGHT GAIN, OVERWEIGHT AND OBESITY	INCREASE RISK OF WEIGHT GAIN, OVERWEIGHT AND OBESITY
DIETARY PATTERNS <i>(including dietary components that may define a dietary pattern)</i>	STRONG EVIDENCE	CONVINCING		Sugar-sweetened drinks ³⁴
		PROBABLE	Foods containing fiber ³⁷ Mediterranean type dietary pattern ³⁸ Having been breast fed ³⁹	Fast Foods ³⁵ Western-type diet ³⁶

³⁴ World Cancer Research Fund/American Institute for Cancer Research. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness. Available at <https://www.aicr.org/continuous-update-project/reports/energy-balance-report.pdf>, p. 44-49.

³⁵ Ibid, p. 49–55.

³⁶ Ibid, p. 55–65.

³⁷ Ibid, p. 35–37.

³⁸ Ibid, p. 37–41.

³⁹ Ibid, p. 83–88.

Beverages and Added Sugars Subgroup

What is the relationship between alcohol consumption and risk of certain types of cancer?

Sources of Evidence and Types of Cancer

In responding to this research question, we strongly recommend that the DGAC utilize existing up-to-date, high-quality systematic reviews and meta-analyses and make conclusions based on the totality of the evidence linking alcohol consumption with several types of cancer. In particular, AICR/WCRF's recent Third Expert Report *Diet, Nutrition, Physical Activity, and Cancer: a Global Perspective*⁴⁰ and the Continuous Update Project (CUP) reports on the link between diet, nutrition, physical activity, and cancers of the mouth/pharynx/larynx, esophagus, liver, colorectum, breast (both pre- and post-menopausal), and stomach contains high-quality reviews and meta-analyses on the impact of alcohol consumption and dietary patterns that are timely, of high quality, and directly relevant to the [specific questions](#) posed by the DGAC. An additional resource the DGAC should consider is a recent analysis by Islami and colleagues at the American Cancer Society providing estimates of the proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors, including alcohol consumption⁴¹. These resources specifically address the corresponding question posed to the DGAC; therefore, duplicating new systematic reviews on this topic, when high-quality systematic reviews have already been conducted by the leading experts in the field and published within the last two years, may not be the best use of the finite resources of the DGAC/NESR.

In answering this research question, we suggest that the DGAC review the research on the link between alcohol consumption and the following seven types of cancer: (1) mouth/pharynx/larynx, (2) esophagus, (3) liver, (4) colorectum, (5) breast, (6) stomach, and (7) kidney.

Research Conclusions

In total, research shows that 4.8 percent of cancer cases and 4.3 percent of cancer deaths in men and 6.4 percent of cancer cases and 3.6 percent of cancer deaths in women are due to alcohol consumption, the third leading cancer risk factor in women and the fourth leading risk factor in men⁴². Systematic literature reviews conducted as part of WCRF/AICR's CUP have found strong evidence that consumption of alcoholic drinks increases the risk of mouth/pharynx/larynx, esophagus, liver, colorectum, breast (pre- and post-menopausal), and stomach cancers. While the amount of alcohol needed to increase cancer risk varies by cancer type, less than one small glass of alcohol per day significantly increases risk for cancers of the breast (both pre- and post-menopausal), esophagus, and mouth/pharynx/larynx.

While up to two alcoholic drinks per day decreases the risk of kidney cancer, any potential benefit of moderate alcohol consumption for reducing kidney cancer risk is likely to be more than outweighed by the increased risk for the six types of cancer noted above.

Recommendations to DGAC

⁴⁰ WCRF/ AICR. *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective. Continuous Update Project Expert Report 2018*. Available at dietandcancerreport.org.

⁴¹ Islami F, Sauer AG, Miller K, et al. Proportion and Number of Cancer Cases and Deaths Attributable to Potentially Modifiable Risk Factors in the United States. *CA Cancer J Clin* 2018; 68: 31-54.

⁴² Ibid.

Based on the totality of the evidence, we strongly suggest that the DGAC recommend that for cancer prevention, it's best not to drink alcohol. Given that risk for breast cancer and several other cancer types begins to increase even below the current recommended limits of one drink per day for women and two drinks per day for men, it is imperative that the DGAC acknowledge this increased risk and consider whether the existing recommendation is appropriate. Breast cancer is the leading cause of cancer in women in the US⁴³.

The DGAC recommendation that for cancer prevention it's best not to drink alcohol – at all – is a simple public health message given the high variability in alcohol content in a single drink, that different cancers have different thresholds for increased cancer risk, and some cancer types (e.g., breast) do not have thresholds, meaning that even small/moderate amounts may be harmful. This is particularly important given that a recent survey of 1,004 U.S. adults found that more than 60 percent of respondents did not know that alcohol increases cancer risk⁴⁴. Therefore, including a conclusion and recommendation in the DGAC report regarding alcohol and cancer risk is important for increasing awareness of the alcohol and cancer link. The Committee should also make it clear that alcoholic drinks of all types – including beer, wine, and spirits – increase cancer risk.

⁴³ American Cancer Society. *Cancer Facts & Figures 2019*. Available at <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2019/cancer-facts-and-figures-2019.pdf>. p. 6.

⁴⁴ AICR. Survey: Fewer than half of Americans recognize alcohol, processed meats, other controllable factors affect cancer risk," Feb. 1, 2017, available at: <http://www.aicr.org/press/press-releases/2017/Fewer-than-half-of-Americans-recognize-alcohol-processed-meats-affect-cancer-risk.html>.

The table below provides a summary of the relationship between alcohol consumption and risk of various cancer types.⁴⁵

Table 3

		WCRF/AICR GRADING	DECREASE RISK	INCREASE RISK	CANCER SITE
ALCOHOLIC DRINKS	STRONG EVIDENCE	CONVINCING		Alcohol	Mouth, Pharynx & Larynx ⁴⁶ Esophagus ⁴⁷ Liver ⁴⁸ Colorectum ⁴⁹ Breast (post-menopause) ⁵⁰
		PROBABLE	Alcohol	Alcohol	Stomach ⁵¹ Breast (pre-menopause) ⁵² Kidney

⁴⁵ WCRF/AICR. Continuous Update Project Expert Report 2018. Alcoholic drinks and the risk of cancer. Available at <https://www.wcrf.org/sites/default/files/Alcoholic-Drinks.pdf>.

⁴⁶WCRF/AICR. Diet, nutrition, physical activity, and cancers of the mouth, pharynx, and larynx. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/mouth-pharynx-larynx-cancer.pdf>, p. 27-39.

⁴⁷ WCRF/AICR. Diet, nutrition, physical activity, and oesophageal cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/oesophageal-cancer-cup-report.pdf>, p. 26-32.

⁴⁸ WCRF/AICR. Diet, nutrition, physical activity, and liver cancer. Updated 2018. Available at <https://www.aicr.org/assets/docs/pdf/reports/cup-report-liver-cancer.pdf>, p. 22-27.

⁴⁹ WCRF/AICR. Diet, nutrition, physical activity, and colorectal cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/colorectal-cancer-2017-report.pdf>, p. 63-69.

⁵⁰ WCRF/AICR. Diet, nutrition, physical activity, and breast cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/breast-cancer-report-2017.pdf> p. 34-43.

⁵¹ WCRF/AICR. Diet, nutrition, physical activity, and stomach cancer. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/stomach-cancer-report.pdf>, p. 30-35.

⁵² WCRF/AICR. Breast Cancer, p. 34-43.

In addition to AICR, the American Society for Clinical Oncology (ASCO), the leading association for oncology professionals with nearly 45,000 members⁵³, has issued a position statement acknowledging that a proactive stance to minimizing excessive exposure to alcohol has important implications for cancer prevention⁵⁴. The American Cancer Society also acknowledges alcohol consumption as a risk factor for cancer and recommends that people who drink alcohol limit their consumption, noting that even a few drinks per week may increase breast cancer risk⁵⁵. The American Heart Association and American College of Cardiology also recommend limiting alcohol consumption among adults who drink to no more than two drinks per day for men or one drink per day for women for prevention and treatment of hypertension⁵⁶. For adults who do not drink, the American Heart Association does not recommend to begin drinking for a potential cardiovascular benefit, noting that the benefits of alcohol consumption may also be achieved through other means, such as physical activity and consumption of fruits and vegetables, and that alcohol consumption may be harmful for other reasons, including increased risk of breast cancer⁵⁷.

Dietary Fats and Seafood Subgroup

What is the relationship between types of dietary fat consumed at each stage of life and risk of certain types of cancer?

Sources of Evidence

In responding to this research question, we urge the DGAC to make use of the WCRF/AICR (CUP) reports. All materials, including protocols, systematic literature reviews, and reports are available to access free at www.dietandcancerreport.org. We also urge the DGAC to make full use of other existing high-quality systematic reviews, meta-analyses, and reports conducted by researchers and organizations outside of the federal government.

Research Conclusions

The WCRF/AICR CUP has assessed the totality of the evidence linking dietary fat with several types of cancer. There is no strong evidence that dietary fat is linked directly to an increased risk of any individual type of cancer. However, there is strong evidence that a Western type diet, characterized by high levels of dietary fat, is a probable cause of weight gain, overweight, and obesity, factors that are linked to increased risk of at least 12 types of cancer. There is limited-suggestive evidence that diets high in saturated fats may increase the risk of pancreatic cancer.

⁵³ ASCO. ASCO Overview. Available at <https://www.asco.org/about-asco/asco-overview>. Accessed July 14, 2019.

⁵⁴ LoConte NK, Brewster AM, Kaur JS, et al. Alcohol and Cancer: A Statement of the American Society of Clinical Oncology. *Journal of Clinical Oncology*, 2018 36:1, 83-93.

⁵⁵ American Cancer Society. Cancer Facts & Figures 2019. Available at <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2019/cancer-facts-and-figures-2019.pdf>, p. 6.

⁵⁶ Arnett DK, Blumenthal RS, Albert MA, et al. 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*, 2019.

⁵⁷ American Heart Association. Alcohol and Heart Health. Available at https://www.heart.org/HEARTORG/Conditions/Alcohol-and-Cardiovascular-Disease_UCM_305173_Article.jsp?appName=MobileApp. Accessed July 14, 2019.

Recommendations to DGAC

Based on the available evidence, we do not recommend that the DGAC make recommendations regarding amount or type of dietary fat based on its relationship to cancer risk. However, the DGAC should acknowledge that a Western type diet, high in fats from animal sources, increases the risk for weight gain, overweight, and obesity, which increases cancer risk.

Based on the totality of the evidence, a dietary pattern that is high in whole grains, fruit and non-starchy vegetables, low in fast foods (that are high in fat, starches, or sugars), low in red and processed meats, avoids sugar-sweetened beverages, and includes little or no alcohol consumption provides the most prudent approach to lowering risk of cancer.

Dietary Patterns Subgroup

What is the relationship between dietary patterns consumed at each stage of life and growth, size, body composition, and risk of overweight and obesity?

Sources of Evidence

In responding to this research question, we strongly recommend that the DGAC utilize WCRF/AICR's recent report, Diet, nutrition and physical activity: Energy balance and body fatness⁵⁸, which is part of its Continuous Update Project (CUP). AICR and WCRF commissioned this research because of the importance of a healthy body weight for cancer prevention and survivorship and the benefits of a cancer-protective dietary pattern in achieving and maintaining a healthy body weight as well as reducing the risk for adult weight gain, a risk factor for several obesity-related cancers. Another key resource is the IARC working group report no.10, *Energy Balance and Obesity*⁵⁹, published in 2017. The DGAC should also review other existing high-quality systematic reviews and meta-analyses.

Additional research that the DGAC may want to use in answering this research question includes:

1. *NCI Dietary Patterns Methods Project*: <https://epi.grants.cancer.gov/dietary-patterns>
2. *USDA Nutrition Evidence Systematic Review: Dietary Patterns and Body Weight or Risk of Obesity*: <https://nesr.usda.gov/dietary-patterns-and-body-weight-or-risk-obesity>
3. *Schulze MB et al, Food based dietary patterns and chronic disease prevention, BMJ 2018*

In answering this research question, we suggest that the DGAC review the research on the impact of a Mediterranean type dietary pattern, a Western type dietary pattern, a dietary pattern high in foods containing dietary fiber, a dietary pattern high in fast foods, and a dietary pattern high in sugar-sweetened drinks on body weight⁶⁰. This research focuses on body weight, typically using Body Mass Index (BMI), rather than body composition, where the evidence is more limited. BMI is used as a

⁵⁸ AICR/WCRF. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness. Available at <https://www.aicr.org/continuous-update-project/reports/energy-balance-report.pdf>.

⁵⁹ Romieu I, Dossus L, Willett WC, editors. *Energy balance and obesity*. IARC Working Group Reports, Volume 10. 2017. Available at <https://www.iarc.fr/featured-news/media-centre-iarc-news-energy-balance-and-obesity/#infographics>.

⁶⁰ WCRF/AICR. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness, p. 37-64.

surrogate for adiposity because reliable, objectively-measured body composition data are relatively scarce. Evidence that has included body composition data, when available, should be considered more robust in defining obesity and its relationship with dietary patterns than evidence using BMI alone.

Research Conclusions

WCRF/AICR's recent report, *Diet, nutrition and physical activity: Energy balance and body fatness*⁶¹, judged the evidence to be “convincing” that sugar-sweetened drinks increase the risk of weight gain, overweight, and obesity. In addition, the evidence was judged as “probable” that a Mediterranean type dietary pattern and foods containing dietary fiber decreases the risk of weight gain, overweight, and obesity. The evidence was also judged as “probable” that a Western type diet and fast foods (high in sugar, fat, and salt) increase the risk of weight gain, overweight, and obesity.

The research conclusions regarding the relationship between sugar-sweetened drinks and weight gain, overweight, and obesity are described in the following sections in response to research questions regarding the relationships between 1) beverage consumption and risk of overweight and obesity and 2) added sugars consumption and risk of overweight and obesity.

Recommendations to DGAC

Based on the totality of the evidence, we strongly suggest that the DGAC recommend following a Mediterranean type dietary pattern and eating sufficient dietary fiber to reduce the risk of overweight and obesity in adults. The DGAC should clearly state that a Western type diet, high in added sugars, meats, and dietary fats; fast foods high in added sugars, starches, and fats; and sugar-sweetened drinks should be discouraged, as they promote excess energy intake.

⁶¹ AICR/WCRF. Continuous Update Project Expert Report 2018. *Diet, nutrition and physical activity: Energy balance and body fatness*.

Table 4 below provides a summary of the relationship between diet, physical activity and weight gain, overweight, and obesity in adults and children.

Table 4

		WCRF/AICR GRADING	DECREASE RISK OF WEIGHT GAIN, OVERWEIGHT, AND OBESITY	INCREASE RISK OF WEIGHT GAIN, OVERWEIGHT, AND OBESITY
DIETARY PATTERNS <i>(including dietary components that may define a dietary pattern)</i>	STRONG EVIDENCE	CONVINCING		Sugar-sweetened drinks ⁶²
		PROBABLE	Foods containing fiber ⁶⁵ Mediterranean type dietary pattern ⁶⁶ Having been breast fed ⁶⁷	Fast foods ⁶³ Western type diet ⁶⁴

⁶² WCRF/AICR. Energy balance and body fatness, p. 44-49.

⁶³ Ibid, p. 49-55.

⁶⁴ Ibid, p. 55-65.

⁶⁵ Ibid, p. 35-37.

⁶⁶ Ibid, p. 37-41.

⁶⁷ Ibid, p. 83-88.

Beverages and Added Sugars Subgroup

What is the relationship between beverage consumption and growth, size, body composition, and risk of overweight and obesity?

Sources of Evidence and Link to Risk of Overweight and Obesity

A key resource for the DGAC in responding to this research question should include WCRF/AICR's recent report, *Diet, nutrition and physical activity: Energy balance and body fatness*⁶⁸. AICR and WCRF commissioned this research because of the importance of a healthy body weight for cancer prevention and survivorship. We strongly recommend that the DGAC also use other existing up-to-date, high-quality systematic reviews, and meta-analyses. Conducting new systematic reviews of primary literature on this topic, when high-quality systematic reviews have already been conducted by the leading experts in the field and published within the last two years, may not be the best use of the finite resources of the DGAC/NESR.

In answering this research question, we suggest that the DGAC review the research on the link between sugar-sweetened drinks and body weight found in chapter 7, "Evidence and Judgements: Sugar-Sweetened Drinks"⁶⁹ and in the Systematic Literature Review⁷⁰.

Research Conclusions

Sugar-sweetened drinks are defined as liquids that are sweetened by adding sugars, such as sucrose or high-fructose corn syrup, and sugar naturally present in honey syrups, fruit juices, and fruit juice concentrate. These drinks include, for example, sodas (not sugar-free versions), sports drinks, energy drinks, sweetened waters, and coffee- and tea-based beverages with sugars or syrups added.

A review conducted as part of the WCRF/AICR's CUP has found strong evidence that consumption of sugar-sweetened drinks increases the risk of weight gain, overweight, and obesity. Overall, the evidence for an increased risk of adiposity in both adults and children with increased consumption of sugar-sweetened drinks is strong and consistent⁷¹.

Three published reviews conducted meta-analyses investigating consumption of sugar-sweetened drinks and adiposity in adults⁷². Results from meta-analyses both of randomized controlled trials and prospective cohort studies report significant positive (adverse) relationships of sugar-sweetened drink consumption on changes in weight. Three published reviews conducted meta-analyses investigating consumption of sugar-sweetened drinks and adiposity in children⁷³. Results from meta-analyses both of randomized controlled trials and prospective cohort studies reported positive (adverse) relationships of sugar-sweetened drink consumption on measures of adiposity.

⁶⁸ AICR/WCRF. *Diet, nutrition and physical activity: Energy balance and body fatness*. Updated 2018. Available at <https://www.aicr.org/continuous-update-project/reports/energy-balance-sl.pdf>.

⁶⁹ *Ibid*, p. 44-49.

⁷⁰ *Ibid*, p. 121-139.

⁷¹ *Ibid*.

⁷² *Ibid*, p. 130-139.

⁷³ *Ibid*, p. 121-130.

Recommendations to DGAC

Based on the totality of the evidence, we strongly suggest that the DGAC recommend limiting consumption of sugar-sweetened drinks. Instead, adults and children should drink mostly water and unsweetened drinks to avoid weight gain, overweight, and obesity. In addition, the DGAC should clearly state that fruit juice should not be consumed in large quantities, even with no added sugar, as they are likely to promote weight gain in a similar way to sugar-sweetened drinks. AICR recommends that no more than one serving of fruit or vegetable juice per day count toward daily fruit and vegetable consumption.

The chart below provides a summary of the relationship between sugar-sweetened drinks and risk of weight gain, overweight, and obesity in adults and children.

Table 5

		WCRF/AICR GRADING	DECREASE RISK OF WEIGHT GAIN, OVERWEIGHT, AND OBESITY	INCREASE RISK OF WEIGHT GAIN, OVERWEIGHT, AND OBESITY
BEVERAGE CONSUMPTION	STRONG EVIDENCE	CONVINCING		Sugar-sweetened drinks ⁷⁴
		PROBABLE		

⁷⁴ WCRF/AICR. Energy balance and body fatness, p. 121-139.

Beverages and Added Sugars Subgroup

What is the relationship between added sugars consumption and growth, size, body composition, and risk of overweight and obesity?

Sources of Evidence

In responding to this research question, a key resource should be WCRF/AICR's report, Diet, nutrition and physical activity: Energy balance and body fatness, published in October 2018. AICR and WCRF commissioned this research because of the importance of a healthy body weight for cancer prevention and survivorship. The DGAC should also consider additional, existing up-to-date, high-quality systematic reviews, and conclusions on the topic. These resources specifically address the question posed to the DGAC; therefore, conducting new systematic reviews of primary literature on this topic, when high-quality systematic reviews have already been conducted by the leading experts in the field and recently published, may not be the best use of the finite resources of the DGAC/NESR.

In answering this research question, we suggest that the DGAC review the research on the link between sugar-sweetened drinks and body weight found in chapter 7, "Evidence and Judgements: Sugar-Sweetened Drinks"⁷⁵ and in the Systematic Literature Review⁷⁶. We also suggest that the DGAC review the research on the link between greater consumption of "fast foods" and other processed foods high in fat, starches, or sugars to weight gain, overweight, and obesity, found in *Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*⁷⁷ and Diet, nutrition and physical activity: Energy balance and body fatness⁷⁸.

Research Conclusions

The leading source of added sugars in Americans' diets is sugar-sweetened drinks⁷⁹. Sugar-sweetened drinks are defined as liquids that are sweetened by adding sugars, such as sucrose or high-fructose corn syrup, and sugar naturally present in honey syrups, fruit juices, and fruit juice concentrate. These drinks include, for example, sodas (not sugar-free versions), sports drinks, energy drinks, sweetened waters, and coffee and tea-based beverages with sugars or syrups added.

As described in the prior section on the link between beverage consumption and overweight and obesity, a review conducted as part of the WCRF/AICR's CUP has found strong evidence that consumption of sugar-sweetened drinks increases the risk of weight gain, overweight, and obesity⁸⁰. Overall, the evidence for an increased risk of adiposity in both adults and children with increased

⁷⁵ AICR/WCRF. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness. Available at <https://www.aicr.org/continuous-update-project/reports/energy-balance-report.pdf>, p. 44-49.

⁷⁶ AICR/WCRF. Diet, nutrition and physical activity: Energy balance and body fatness. Updated 2017. Available at <https://www.aicr.org/continuous-update-project/reports/energy-balance-slr.pdf>, p. 121-139.

⁷⁷ AICR/WCRF. Diet, Nutrition, Physical Activity and Cancer: a Global Perspective. Continuous Update Project Expert Report 2018. Available at <https://www.wcrf.org/sites/default/files/Summary-of-Third-Expert-Report-2018.pdf>.

⁷⁸ AICR/WCRF. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness.

⁷⁹ HHS and USDA. Figure 2-10: Food Category Sources of Added Sugars in the U.S. Population Ages 2 and Older. *Dietary Guidelines for Americans, 2015-2020*. Available at <https://health.gov/dietaryguidelines/2015/guidelines/chapter-2/a-closer-look-at-current-intakes-and-recommended-shifts/#figure-2-10-food-category-sources-of-added-sugars-in-the-us-popu>.

⁸⁰ WCRF/AICR. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness, p. 44-49.

consumption of sugar-sweetened drinks was strong and consistent. Three published reviews conducted meta-analyses investigating consumption of sugar-sweetened drinks and adiposity in adults⁸¹. Results from meta-analyses both of randomized controlled trials and prospective cohort studies report significant positive (adverse) relationships of sugar-sweetened drink consumption on changes in weight. Three published reviews conducted meta-analyses investigating consumption of sugar-sweetened drinks and adiposity in children⁸². Results from meta-analyses both of randomized controlled trials and prospective cohort studies reported positive (adverse) relationships of sugar-sweetened drink consumption on measures of adiposity.

⁸¹ WCRF/AICR. Diet, nutrition and physical activity: Energy balance and body fatness, p. 130-139.

⁸² Ibid, p. 121-139.

The chart below provides a summary of the relationship between added sugars and risk of weight gain, overweight, and obesity in adults and children.

Table 6

		WCRF/AICR GRADING	DECREASE RISK OF WEIGHT GAIN, OVERWEIGHT, AND OBESITY	INCREASE RISK OF WEIGHT GAIN, OVERWEIGHT, AND OBESITY
ADDED SUGARS	STRONG EVIDENCE	CONVINCING		Sugar-sweetened drinks ⁸³
		PROBABLE		Fast foods ⁸⁴

⁸³ WCRF/AICR. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness, p. 44-49.

⁸⁴ Ibid, p.49-55.

There is also strong evidence that diets containing greater amounts of “fast foods” and other processed foods high in fat, starches, or sugars, and consuming a Western type diet (characterized by a high amount of free sugars, meat, and fat), are causes of weight gain, overweight and obesity by increasing the risk of excess energy intake relative to expenditure⁸⁵. Greater body fatness is a cause of at least 12 types of cancer.

It is important to note that most of the evidence on fast foods is from studies of foods such as burgers, fried chicken pieces, chips (French fries) but does include high-calorie drinks (containing sugars, such as cola, or fat, such as shakes)⁸⁶. While most foods undergo some form of processing before consumption, more highly processed foods have generally undergone industrial processing and are often higher in energy and lower in micronutrients. These foods include potato products such as chips; products made from white flour such as bread, pasta, and pizza; cakes, pastries, and cookies; and confectionery such as candy.

Recommendations to DGAC

Based on this evidence, we strongly suggest that DGAC recommend limiting consumption of sugar-sweetened drinks. Instead, adults and children should drink mostly water and unsweetened drinks to avoid weight gain, overweight, and obesity. **We also suggest that the DGAC recommend that individuals limit the consumption of processed foods high in sugars, starches, or fats – including fast foods; many pre-prepared dishes, snacks, bakery foods, and desserts; and confectionery (candy).**

Pregnancy and Lactation Subgroup/Birth–24 Months Subgroup

Breastfeeding and Cancer

AICR is pleased that the DGAC will, for the first time, include dietary recommendations for infants and toddlers under 24 months old in the *2020–2025 Dietary Guidelines for Americans*. As the leading experts in the field of lifestyle factors and cancer, AICR strongly supports the provision of a recommendation that new mothers should breastfeed their baby, if they can, as breastfeeding can offer cancer protection for both mother and child. Multiple studies have shown a marked decrease in breast cancer risk for the mother per five-month increase of breastfeeding duration⁸⁷. Although this reduction is modest, it adds to the growing literature that breastfeeding can assist in preventing the development of chronic diseases in women post-partum. Breastfeeding can also help to prevent excess weight gain in the child, which lowers their cancer risk as adults⁸⁸. As stated previously, having overweight or obesity is one of

⁸⁵ WCRF/AICR. Continuous Update Project Expert Report 2018. Body fatness and weight gain and the risk of cancer. Available at https://www.wcrf.org/sites/default/files/Body-fatness-and-weight-gain_0.pdf.

⁸⁶ WCRF/AICR. Continuous Update Project Expert Report 2018. Recommendations and public health and policy implications. Available at <https://www.wcrf.org/sites/default/files/Recommendations.pdf>, p. 27.

⁸⁷ WCRF/AICR. Continuous Update Project Expert Report 2018. Diet, nutrition, physical activity and breast cancer. Available at <https://www.aicr.org/continuous-update-project/reports/breast-cancer-report-2017.pdf>, p. 90–91.

⁸⁸ WCRF/AICR. Continuous Update Project Expert Report 2018. Diet, nutrition and physical activity: Energy balance and body fatness. Available at <https://www.aicr.org/continuous-update-project/reports/energy-balance-report.pdf>, p. 83–88.

the leading causes of preventable cancers. For these reasons, AICR recommends that mothers breastfeed exclusively for the first six months of a child's life.

Conclusion

In conclusion, we thank the DGAC for considering our comments. We welcome the opportunity to serve as a resource to the DGAC as it reviews the evidence and develops its scientific report. If you have any questions or we can provide any additional information, please contact Deirdre McGinley-Gieser, Senior Vice President of Programs, at d.mcginley-gieser@aicr.org or 703-237-0159.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Kelly B. Browning', with a long horizontal flourish extending to the right.

Kelly B. Browning
Chief Executive Officer
American Institute for Cancer Research