Top Ten Things to Know
Low Calorie Sweetened Beverages and Cardiometabolic Health

1. In the US, low-calorie sweetened (LCS) beverages (often referred to as “diet” or “sugar-free” drinks) make-up 32% and 19% of the beverages adults and children report consuming, respectively. Beverage companies are making efforts to reduce sugar in their beverages, as consumer demand for lower calorie options are increasing.

2. The term low calorie sweetener includes six high-intensity (sweetness per gram) FDA-approved sweeteners (saccharin, aspartame, acesulfame-K, sucralose, neotame and advantame) and two additional high-intensity sweeteners (steviol glycosides or Stevia rebaudiana, and monk fruit extract). LCS beverages include those marketed as “diet” or “sugar-free”, including liquids, powdered drink mixes and liquid concentrates, but not beverages sweetened with sugar substitutes such as fruit juice concentrate (e.g., apple or grape) or beverages that contain a mix of added sugars and LCS.

3. Strong evidence links the consumption of sugar-sweetened beverages (SSBs) to weight gain and adverse cardiometabolic health; resulting in some consumers choosing beverages with low-calorie sweeteners (LCS) that have few to no calories as alternatives to SSBs. Thus, there is a need for AHA to clarify the science on the relationships between LCS beverages and cardiometabolic health.

4. Nationally represented surveys in the US, including the National Health and Nutrition Examination Survey (NHANES) show a decrease in reported consumption of SSBs in recent years and a decreasing trend in consumption of LCS beverages is observed in adults. In children and adolescents, however, the observed trends were generally linear.

5. This paper reviews evidence from observational studies and clinical trials assessing the cardiometabolic outcomes of LCS beverages, summarizes the positions of government agencies and other health organizations on LCS beverages pointing to varying evidence need to support, identifies research needs on the effects of LCS beverages on energy balance and cardiometabolic health and offers suggestions for the use of LCS beverages by children and adults.

6. Some observational studies suggest a positive correlation between long-term consumption of LCS beverages with risk of type 2 diabetes and cardiovascular disease including stroke, myocardial infarction and vascular death; though reverse causality (people drinking LCS beverages as a strategy to combat weight loss) and being overweight/obese may be driving factors. Methodological concerns could also impact the more positive association observed between LCS beverages and stroke risk.

7. Evidence from randomized clinical trials (RCTs) on the long-term effects of LCS beverages on clinical outcomes including cardiometabolic diseases and mortality is limited; however, short-term evidence suggests that replacement of SSBs with LCS beverages may help in the management of overweight and obesity, particularly among high risk overweight/obese individuals with harmful levels of abdominal fat.

8. While experimental animal evidence indicates that low calorie sweeteners may have multiple biological effects that alter energy intake and trigger insulin response, the intake patterns in animals do not replicate the day-to-day variation of humans; limiting the applicability of animal evidence to humans.

9. Further research is needed to clarify names and sources of low calorie sweeteners in the US diet, and identify the association of LCS with health outcomes including clinical markers of CVD, and development of risk factors for future cardiovascular disease.

10. Water being the desirable option for all, the Advisory advises against prolonged consumption of LCS beverages in children. (Though in children with diabetes who are consuming a balanced diet and closely monitoring their blood glucose may be able to prevent excessive glucose excursions by substituting LCS beverages for SSB’s when needed.) For adults who are habitually high consumers of SSBs, LCS beverages may be a useful replacement strategy to reduce intakes of SSBs, particularly for individuals habituated to a sweet tasting beverage and for whom water, at least initially, is not a desirable option.