



Current Requirement: Fruit is a required part of the daily CACFP meal pattern.¹ Fruit can be served fresh, frozen, canned, dried, or as 100% fruit juice. For children over 7 months, fruit juice can satisfy the fruit requirement except when milk is served at snack-time as the only other component.

USDA's Proposed Rule: USDA proposed that juice should not be served to children before the age of 1 year.² No prohibitions on juice are included for older children.

Our Recommendation: As recommended by the IOM Committee on CACFP,³ for children 1 year and older, fruit rather than fruit juice should be served at most meals and snacks. Further, only 100% fruit juice with no added sugar ever should be served, and that should be limited to one age-appropriate serving per day.⁴

Rationale: Fruit juice intake, even when it is 100% juice, is a concern. Juice intake has increased overall among children 5 years old and younger compared to 3 decades ago,⁵ with largest increases in Latino and African American children.⁶ Fruit juice may contribute to children's excessive calories from beverages.⁷ Further, 100% fruit juice has several nutritional disadvantages compared to whole fruit:

- 1) juice has little or no dietary fiber;
- 2) prolonged, excessive, or frequent exposure could lead to dental caries, though evidence is inconsistent;^{8,9}
- 3) calories in liquid form provide less satiety, can be consumed more quickly, and may elicit a weaker compensatory response than calories consumed as solid foods.^{10,11}

On the other hand, limited consumption of 100% juice may be justified for several reasons. While U.S. children have slightly increased their whole fruit consumption in recent years, approximately two-thirds of children 2-18 years old still do not consume recommended amounts of fruit.¹² Children's adherence to the fruit intake recommendations is among the lowest of any sector of the US population.¹³ Intake of 100% fruit juice:

- 1) contributes to meeting fruit consumption requirements; approximately 40% of total fruit intake in preschoolers is from fruit juice, and the effect is more pronounced in children of lower socio-economic status;^{14,15}
- 2) has been associated with a better intake of several nutrients which are under-consumed (e.g., vitamins A and C, phosphorus and magnesium),^{16,17}
- 3) has not conclusively been associated with obesity or diabetes in children.^{18,19,20}

An additional 'benefit' of 100% fruit juice in the context of CACFP is that juice may lower costs by 13% as compared with fresh, frozen or canned fruit.²¹

The evidence therefore supports the consumption of 100% fruit juice in moderate amounts. Accordingly, the 2010 Dietary Guidelines recommended no more than half of fruit servings should be from 100% fruit juice.²² The American Academy of Pediatrics¹³ and American Heart Association²³ recommend that 100% fruit juice intake be limited to 4-6 fl oz/day for children 1 to 6 years of age.

¹ Juice or fruit or vegetables are required as part of breakfast and snacks; fruits and/or vegetables (2 or more) are required for lunch and supper.

² USDA FNS Proposed Rules. Child and Adult Care Food Program: Meal pattern Revisions Related to the Healthy, Hunger-Free Kids Act of 2010. January 15, 2015. <http://www.gpo.gov/fdsys/pkg/FR-2015-01-15/pdf/2015-00446.pdf>. Accessed 1/16/15.

³ Murphy SP, Yaktine AL, Sutor CW, Moats S, Editors; Committee to Review Child and Adult Care Food Program Meal Requirements; Institute of Medicine. Child and Adult Care Food Program: Aligning dietary guidance for all. Washington, DC: The National Academies Press. 2011.

⁴ Age appropriate serving size is 2 fl oz for children 1-2 years, 4 fl oz for children 3-12 years.

⁵ Fulgoni VL 3rd, Quann EE. National trends in beverage consumption in children from birth to 5 years: analysis of NHANES across three decades. *Nutr J*. 2012;11:92.

⁶ Beck AL, Patel A, Madsen K. Trends in Sugar-Sweetened Beverage and 100% Fruit Juice Consumption Among California Children. *Academic Pediatrics*. 2013;13:364-70.

⁷ Rader RK, Mullen KB, Sterkel R, et al. Opportunities to reduce children's excessive consumption of calories from beverages. *Clin Pediatr (Phila)*. 2014;53:1047-54.

⁸ American Academy of Pediatrics: Committee on Nutrition. The use and misuse of fruit juice in pediatrics. *Pediatrics*. 2001;107:1210-3.

⁹ Evans EW, Hayes C, Palmer CA, et al. Dietary Intake and Severe Early Childhood Caries in Low-Income, Young Children. *J Acad Nutr Diet*. 2013;113:1057-61.

¹⁰ Mattes R. Fluid calories and energy balance: the good, the bad, and the uncertain. *Physiol Behav*. 2006;89:66-70.

¹¹ Reid M, Hammersley R, Duffy M, et al. Effects on obese women of the sugar sucrose added to the diet over 28 d: a quasi-randomised, single-blind, controlled trial. *Brit J Nutr*. 2014;111:563-70.

¹² Kim SA, Moore LV, Galuska D, et al. Vital signs: fruit and vegetable intake among children - United States, 2003-2010. *MMWR Morb Mortal Wkly Rep*. 2014;63:671-6.

¹³ Haack S, Byker C. Recent population adherence to and knowledge of United States federal nutrition guidelines, 1992-2013: A systematic review. *Nutr Rev*. 2014;72:613-26.

¹⁴ Lorson BA, Melgar-Quinonez HR, Taylor CA. Correlates of fruit and vegetable intakes in US children. *J Am Diet Assoc*. 2009;109:474-8.

¹⁵ Drewnowski A, Rehm C. Socioeconomic gradient in consumption of whole fruit and 100% fruit juice among US children and adults. *Nutr J*. 2015;14:3.

¹⁶ O'Neil CE, Nicklas TA, Zanovec M, et al. Fruit juice consumption is associated with improved nutrient adequacy in children and adolescents: the National Health and Nutrition Examination Survey (NHANES) 2003-2006. *Public Health Nutr*. 2012;15:1871-8.

¹⁷ Meng Y, Sang-Gil L, Ying W, et al. Orange Juice, a Marker of Diet Quality, Contributes to Essential Micronutrient and Antioxidant Intakes in the United States Population. *J Nutr Ed Behav*. 2013;45:340-8.

¹⁸ O'Neil CE, Nicklas TA. A review of the relationship between 100% fruit juice consumption and weight in children and adolescents. *Am J Lifestyle Med*. 2008;2:315-54.

¹⁹ Papandreou D, Andreou E, Heraclides A, Rousso I. Is beverage intake related to overweight and obesity in school children? *Hippokratia*. 2013;17:42-6.

²⁰ Xi B, Li S, Liu Z, et al. Intake of fruit juice and incidence of type 2 diabetes: a systematic review and meta-analysis. *PLoS One*. 2014;9:e93471.

²¹ Monsivais P, Rehm CD. Potential nutritional and economic effects of replacing juice with fruit in the diets of children in the US. *Arch Pediatr Adolesc Med*. 2012;166:459-64.

²² Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans. USDA. 2010.

²³ Gidding SS, Dennison BA, Birch LL, et al. Dietary recommendations for children and adolescents: a guide for practitioners: consensus statement from the American Heart Association. *Circulation*. 2005;112:2061-75.