

## **Encouraging Milk Consumption in Schools**

### **Overview**

Milk and other dairy products can and should be an important part of the school experience. The need to encourage milk and dairy consumption at school is clear, given the documented gap between recommended and actual dairy consumption among children, adolescents and teens and the critical relationship between dairy's nutrient package and health. Studies demonstrate that simple practices can help promote milk consumption in children, and these strategies can be pursued by schools with confidence that they are consistent with good overall health.

### **The Need for Dairy**

The 2005 Dietary Guidelines for Americans underscores the importance of dairy foods as a core part of a healthy diet for people of all ages, including children (USDHHS/USDA, 2005). The Guidelines recommend three cups of milk per day, or an equivalent amount of other dairy products such as yogurt and cheese, for most population groups, with children aged 2 to 8 getting three child-size servings of milk to add up to a total 16 ounces, or 2 cups, per day. Milk is a nutrient dense food that is a "good" or "excellent" source of 9 essential nutrients, including protein, calcium, potassium, phosphorus, vitamins A, D and B12, riboflavin and niacin.

Unfortunately, children's consumption of dairy foods falls short of that currently recommended, and intake of fluid milk has decreased in recent decades. Only 40% of males and 29% of females aged 6 to 11 years and 30% of males and 12% of females aged 12 to 19 meet the number of milk group servings recommended for their age - thereby compromising their intake of calcium and other key nutrients (USDA, 2000). With respect to calcium, a nutrient recognized as particularly important for the development of growing bones (USDHHS, 2004) fewer than 50% of children aged 6 to 8 years and virtually all females aged 9 to 18 have calcium intakes below recommended levels (Suitor and Gleason, 2002).

Milk consumption has been demonstrated to be a marker for better nutritional status among children. Multiple evaluations have demonstrated that children who drink milk have higher intakes of specific nutrients and better overall nutritional status than non-milk drinkers (Ballew et al, 2004; Bowman, 2002; Volek et al, 2003). Clearly, an overriding priority in children's nutrition should be increasing milk consumption overall to meet recommendations.

### **Increasing Milk Consumption at School**

While milk has historically been an anchor of reimbursable school meals, opportunities exist to help close the gap between current and recommended dairy intake - and along with it the nutrients associated with dairy foods - through additional milk offerings in schools. Promoting healthy dairy products - not just in the cafeteria, but also through vending and a la carte sales - is a good way to reduce consumption of low nutrient beverages.

A School Milk Pilot Test (SMPT) sponsored by the National Dairy Council and the School Nutrition Association (formerly American School Food Service Association) involving more than 100,000 elementary and secondary school students found that several enhancements increased overall milk sales by 15% in elementary and 22% in secondary schools. Changes included offering milk in appealing plastic re-sealable containers in various sizes, flavor varieties, multiple merchandising locations (e.g., adding vending and a la carte options) and ice-cold refrigeration. (NDC/ASFSA, 2002)

Findings from this test offer relevant insight that may be applied as school districts develop the wellness policies mandated in the Child Nutrition and WIC Reauthorization Act of 2004.

### **Considerations in Milk Offerings**

The overall purpose of a milk program should be to increase milk consumption among students to adequate levels. This goal can be achieved through offering a variety of flavors, attractive packaging and availability in multiple locations. The Dietary Guidelines states that milk should not be avoided out of concerns about weight gain (USDHHS/USDA, 2005) and multiple studies suggest either an inverse or neutral association between calcium and/or dairy and body fat in children and adolescents (Novotny et al, 2004; Phillips et al, 2003). Further, the Dietary Guidelines recommend low-fat and nonfat dairy foods, but doesn't limit intake to these options. Discretionary calories allow some room for variety in terms of fat and sugar in dairy products as long as nutrient needs are met within recommended caloric intake.

Serving size - The availability of larger serving sizes of milk in vending and a la carte may help many children reach recommended dairy intake levels.

Given the very low percentage of children and adolescents who meet the recommended number of daily milk servings, limitations of milk container size to 8 ounces are not justified from a nutrition or health perspective. To the contrary, as highlighted in the 2005 Dietary Guidelines for Americans, increased consumption should be encouraged rather than discouraged (USDHHS/USDA, 2005). The 2005 Guidelines recommend most children and adults to drink three 8-ounce servings of milk (or equivalent amounts of other dairy products) each day. A 16-ounce bottle of milk sold in vending represents only two of these three servings, and a 12- or 14-ounce bottle even less.

[Flavors](#) - Offering flavored milks improves total milk intake and overall diet quality among children.

In addition to recommending increased consumption of dairy foods, the Dietary Guidelines recognize that sweeteners can make foods like milk more acceptable to those who do not like the plain version: "In some cases, small amounts of sugars added to nutrient-dense foods, such as breakfast cereals and reduced-fat milk products, may increase a person's intake of such foods by enhancing the palatability of these products, thus improving nutrient intake without contributing excessive calories." (USDHHS/USDA, 2005.) Studies demonstrate that children who consume flavored milk have higher calcium intakes (Johnson et al, 2002; Frary et

al, 2004), but similar percent energy from total fat and added sugars compared with children who are non-consumers of flavored milk (Johnson et al, 2002). They also have higher total milk intake and lower soft drink and fruit drink intake but similar fruit juice intake compared with children who do not consume flavored milk. Study authors conclude, "Flavored milks can play a role in changing recent trends in children's sugar-sweetened beverage consumption patterns that have a negative impact on their diet quality. Flavored milks offer a well-accepted, nutritious alternative in the wide array of beverages available to children in the United States" (Johnson et al, 2002).

Flavored milks are as nutritious as unflavored. Both are nutrient dense foods containing nine essential nutrients (e.g., protein, calcium, potassium, phosphorus, vitamins A, D and B12, riboflavin and niacin.) in relation to their energy content. Both types of milk provide 300 mg calcium/8 ounces, or about one-third of a child's daily calcium recommendation. (NDC, [Flavored Milk in Perspective](#)) The main difference between flavored and unflavored milk is the added sugar and the calories associated with that addition (generally about 60 kcal/8 oz. serving) (NDC, "Flavored Milk in Perspective"). As demonstrated in Johnson et al., the additional sugar in flavored milk does not increase sugar intake of flavored milk drinkers overall, likely because flavored milk frequently displaces other low-nutrient sugared beverages (Johnson et al, 2002). "Sugars can improve the palatability of foods and beverages that otherwise might not be consumed. This may explain why the consumption of sweetened dairy foods and beverages and presweetened cereals is positively associated with children's and adolescents' nutrient intake" (Frary et al, 2004).

The [NDC-SNA milk pilot test](#) demonstrated that adding milk flavors in schools increases milk sales (NDC/ASFSA, 2002). Given the nutrient density of flavored milk, coupled with research indicating that flavored milk consumers have higher calcium intake, but similar energy intake from fat and added sugar, schools should carefully consider unnecessarily low limits on total or added sugars that could limit student access to flavored milks and other dairy products like yogurt.

**Fat levels** - Among children and adolescents, studies indicate that the type of milk (i.e., fat level) chosen does not appear to significantly influence BMI. A recent longitudinal study of 8 - 12 year old girls followed until four years post menarche found no association between either consumption of low- or full-fat dairy and either BMI or percentage body fat (Phillips et al, 2003). In addition, analysis of the CSFII 1994-96, 1998 data set indicates that, across male and female children ages 4-18, no differences in BMI are observed between those who drink 2% milk compared with those who choose 1% (lowfat) or nonfat milk (Fulgoni, personal communication). Similar observations were made relative to the NHANES III and 1999-2000 data sets for children 4-18.

In addition, analysis of NHANES III data indicates that children and adolescents (ages 4 - 18) who drink any milk at all—regardless of fat level—have lower serum LDL cholesterol compared with those who consume no milk. Analysis of NHANES 1999-2000 data indicates no differences in LDL cholesterol levels between those children who consume any milk and those

who do not consume milk. In addition, NHANES III and 1999-2000 data indicate that children who drink 2% milk have no differences in serum lipids (total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides) compared to those who drink 1% or nonfat milk. (Fulgoni, personal communication.)

Limiting children's choice to milk varieties not consumed at home may reduce the likelihood they will drink milk at school - leading them to choose a less nutrient-dense beverage instead. Currently, 2% milk is consumed nationwide at about twice the volume of either 1% or nonfat milk (International Dairy Foods Association, 2004).

### **Conclusion**

A variety of types of milk offerings across a range of school venues will help ensure that students obtain maximum nutritional benefits as a result of access to products they prefer. Conversely, any changes that limit dairy choices should be carefully weighed against the potential that such modifications would have a negative impact on a child's total nutrient consumption. Options make it more likely that students will meet Dietary Guidelines recommendations for dairy products and the key nutrients contained within.

### References

Ballew C, S Keuster and C Gillespie. Arch Pediatr Adolesc Med 154:1148, 2000.

Bowman SA. J Am Diet Assn 102:1234, 2002.

Frary CD, RK Johnson and MQ Wang. J Adol Health 34:56, 2004.

Fulgoni V. Personal communication, Unpublished data based on Continuing Survey of Food Intake by Individuals (CSFII) 1994-1996, 1998 and National Health and Nutrition Survey (NHANES)1988-1994, 1999-2000.

International Dairy Foods Association. Dairy Facts, 2004.

Johnson RK, C Frary and MQ Wang; J Am Diet Assn 102:853, 2002.

National Dairy Council and American School Food Service Association. The School Milk Pilot Test. Beverage Marketing Corporation for NDC and ASFSA, 2002.

National Dairy Council. "Flavored Milk in Perspective." Accessed August 12, 2005.

Novotny R, YG Daida, S Acharya et al. J Nutr 134:1905, 2004.

Phillips SM, LG Bandini, H Cyr et al. Int. J Obesity 27:1006, 2003.

Suitor CW and PM Gleason. JADA 102:530, 2002.

USDA, ARS. Pyramid Servings Intake by US Children and Adults: 1994-96, 1998. October 2000.

US Department of Health and Human Services /US Department of Agriculture. Dietary Guidelines for Americans 2005. [www.healthierus.gov/dietaryguidelines](http://www.healthierus.gov/dietaryguidelines)

US Department of Health and Human Services. Bone health and osteoporosis: A report of the Surgeon General . 2004. [www.surgeongeneral.gov/librar](http://www.surgeongeneral.gov/librar)

Volek JS, AL Gomez, TP Scheett et al. J Am Diet Assn 103:1353, 2003.