California Food Guide Chapter

Introduction

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New web-based format

Optimum nutrition throughout the lifecycle plays a central role in health. It begins with healthy prenatal circumstances and sets the stage for healthy senior years. The California Food Guide (CFG) is designed to provide dietitians and other health professionals information relevant to their practice and support the promotion of healthy eating and physical activity.

What's New

New Title: The title has been changed from the *California Daily Food Guide* to *California Food Guide: Fulfilling the Dietary Guidelines for Americans*, to reflect the incorporation of U.S. Department of Agriculture's and Health and Human Services' Dietary Guidelines for Americans 2005 (Dietary Guidelines) as well as the Institute of Medicine's (IOM) Dietary Reference Intakes (DRIs).

New Content: CFG now includes new or expanded chapters addressing: food groups, physical activity, weight management, vegetarianism, food insecurity, cardiovascular disease, diabetes, food contaminants, and specific lifecycle dietary recommendations, such as perinatal nutrition.

New Web-based Format: CFG is now available as a web-based document only, and is copyright-free. With on-line publication, the document will be easier to update and distribute. Although hard copies will not be published, individual or institutional users are encouraged to print and distribute copies as needed. Chapters are available in PDF format and designed to be placed in a three-ring binder.

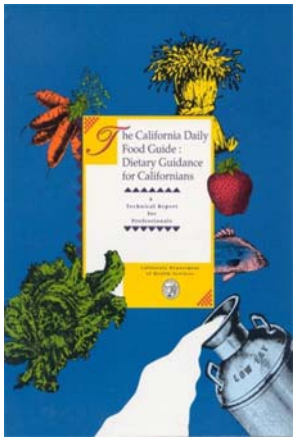
CFG website is available at:

http://www.cafoodguide.ca.gov/

Background

CFG is designed to provide up-to-date dietary and physical activity guidance for health care professionals. It highlights issues related to populations at-risk for nutrient inadequacies, such as low-income communities; racial and ethnic groups; pregnant and lactating women; and other high-risk age groups throughout the lifecycle. The overarching goal of CFG is to help more Californians adopt healthy dietary habits and active lifestyles.

1st Edition



The California Daily Food Guide was initially published in 1990. Since that time there has been significant growth in knowledge related to nutrition and physical activity which has resulted in several revisions to key national guidelines. Federal authorities have placed increased emphasis on the importance of physical activity, in addition to healthy eating, for improving overall health and preventing chronic disease. CFG incorporates the latest information on nutrition and physical activity from a variety of national sources including: the Institute of Medicine's expanded DRIs; the USDA's and Health and Human Services' Dietary Guidelines for Americans 2005; and the USDA's MyPyramid document.[1, 2, 3]

Over the last decade obesity rates have steadily climbed in all age and socioeconomic groups not only in California but also throughout the United States, leading to heightened concern over escalating health care costs resulting from the many obesity-related diseases.[4] Communities, governmental entities, health care organizations, and private industry have recently demonstrated new interest in how dietary and physical activity habits can be improved from both individual and environmental perspectives.

In September 2005, Governor Arnold Schwarzenegger convened the Governor's Summit on Health, Nutrition, and Obesity to coordinate and empower California's initiatives relating to the promotion of healthy eating and lifestyles. At the Summit, Governor Schwarzenegger's Vision for a Healthy California was unveiled. The Governor took action to ensure California's students have access to healthy food and beverages in schools as he signed Senate Bill (SB) 12 and SB 965, by Senator Martha Escutia (D-Montebello). This landmark legislation

gives California's public schools the strongest nutrition standards in the nation, and SB 281, by Senator Abel Maldonado (R- San Luis Obispo), which provides a framework to provide more fresh fruits and vegetables in school meal programs. The Governor also called upon his Cabinet to implement new policies throughout his administration to create an environment that encourages the health and fitness of Californians.[5]

As a result of a legislative mandate (Budget Act of 2005, SB 77), the former California Department of Health Services (CDHS) developed a strategic plan for nutrition, physical activity, and obesity prevention for the state of California that sets the framework for the Governor's Vision for a Healthy California. There are four major goals for the plan:[6]
Goal 1: Ensure state level leadership and coordination that reaches into communities across the state.
Goal 2: Create a statewide public education campaign that frames healthy eating and active living as California living.
Goal 3: Support local assistance grants and implement multi-sectoral policy strategies to create healthy eating and active living community environments.
Goal 4: Create and implement a statewide tracking and evaluation system.

The Critical Role of Healthy Eating and Physical Activity

The World Health Organization's publication, "Diet, Nutrition, and the Prevention of Chronic Disease," states: "Nutrition is coming to the fore as a major modifiable determinant for chronic disease, with scientific evidence increasingly supporting the view that alterations in diet have strong effects, both negative and positive, on health throughout life. Most importantly, dietary factors not only influence present health, but may determine whether an individual will develop diseases such as cancer, cardiovascular disease, and diabetes, later in life."[7]

Mortality data summarized by the Centers for Disease Control and Prevention (CDC) provides evidence that of the top 13 causes of death in America, at least five (coronary artery disease, malignant neoplasms, cerebrovascular disease, diabetes mellitus, and renal disorders), have nutritional and physical activity attributable risks.[8, 9] Moreover, healthy eating habits and regular physical activity have been found to prevent obesity. Obesity is one of the major risk factors associated with heart disease, stroke, and type 2 diabetes mellitus, along with certain types of cancer, and joint disorders.[10]

The costs of obesity are great, not only in terms of morbidity and mortality, but also in terms of dollars. In 2003, obesity-related medical expenditures in the United States were estimated at $75 billion, with approximately one-half of these expenditures financed by Medicaid and Medicare.[11] Furthermore, the economic costs of physical inactivity, obesity, and overweight in California adults estimated that, in the year 2000, these risk factors cost California approximately $21.7 billion a year in direct and indirect medical care; workers' compensation; and lost

productivity. These costs were projected to rise to greater than $28 billion for 2005.[12]

Special Populations

The highest rates of obesity exist among low-income groups.[13] Recent studies have shown that low-cost, energy dense diets that are the most affordable to low-income populations tend to be nutrient deficient.[14] California has one of the most culturally diverse populations of any geographic region of the world, many of whom are newly arrived immigrants, who work at low-income jobs. Consequently, California sees some of the highest rates of not only obesity, but also type 2 diabetes, among high-risk racial and ethnic groups, particularly African Americans, Latinos, and Native American Indians.[15]

Certain segments of the population may be at risk for imbalances in specific nutrient intakes. In October 2005 the USDA published an electronic report on the risks of nutrient intakes in vulnerable subgroups of the American population. Information obtained from the Continuing Survey of Food Intakes by Individuals (CSFII), using data from 1994-96, examined the risks of inadequate nutrient intake in adolescent females; older adults; children and adults at risk of overweight; individuals living in food insufficient households; low-income individuals; and individuals targeted by and participating in food and nutrition assistance programs. The study found inadequate intakes of key micronutrients, especially magnesium, calcium, folate, and vitamin E. It also found that energy intakes less than recommended for some food insecure adults and older adults, too much food energy from fat, and not enough from carbohydrates, along with inadequate intakes of fiber. Nutrient adequacy of diet also was found to deteriorate with age, with seniors being most at risk.[16] The accuracy of this study may have been compromised by under-reporting of dietary intake by adult participants.

The extent to which California's immigrant groups have incorporated the food patterns of their new home depends largely upon their degree of acculturation, length of time in the country, and social status. It has been observed that, through the acculturation process, food choices tend to shift away from the more healthy patterns of the native country and toward consumption of less healthy American foods that are high in fats, refined sugars, and sodium and low in fiber.[17, 18, 19] For this reason, new CFG chapters are devoted to specific racial/ethnic dietary patterns and the impact of modern American diets on dietary intake and health outcomes.

Nutrition education is most effective when presented in the appropriate cultural context, taking into consideration the shared knowledge, traditions, beliefs, and values of the culture. It is essential that educators understand and respect cultural and individual differences in beliefs, practices, and values. In addition, the content of the education programs should incorporate diversity in food

selection, preparation, and handling; meal and snacking patterns; familiar and unfamiliar foods; child feeding practices; and the nutritional and non-nutritional roles that food plays within a culture.

Although many studies have looked at the association of individual foods and nutrients with the development of chronic diseases, fewer studies have examined the effect of overarching dietary patterns. A recent study of U.S. dietary patterns, utilizing data from the National Health Interview Survey and the National Death Index, found that all-cause mortality for men and women could be decreased by 16 percent and 9 percent, respectively, through the high consumption of such foods as fruits, vegetables, low-fat foods, and whole grains.[20]

Cardiovascular disease is the leading cause of death for adults in the United States.[21] There is strong evidence that at least three dietary strategies are effective in preventing coronary heart disease:[22]

1) Consume a diet high in fruits, vegetables, nuts and whole grains, and low in refined grain products.
2) Substitute non-hydrogenated unsaturated fats for saturated fats and *trans* fats.
3) Increase the consumption of omega-3 fatty acids from fish, fish oil supplements, or plant sources.

A dietary pattern consistent with a traditional Mediterranean diet may be beneficial for the prevention of both coronary heart disease and some types of cancer.[23] Although it is still not clear which components of the Mediterranean diet are responsible for positive health effects, evidence suggests that consumption of both olive oil and wine may play beneficial roles with adults.[23]

Characteristics of a Mediterranean diet are:[23]

1) High intake of vegetables, legumes, fruits, nuts, and unrefined cereals.*
2) High intake of olive oil, but low intake of saturated lipids.
3) Moderate intake of dairy products, mostly in the form of cheese or yogurt.
4) Low intake of meat and poultry.
5) Regular but moderate intake of alcohol, primarily in the form of wine and generally with meals.

*Please note the term “High” is not clearly defined in the references cited. These studies were conducted in Greece, using Mediterranean diet reference scores.[24]

Nutrition Throughout the Lifecycle

Perinatal and Maternal Nutrition

The benefits of optimum dietary patterns start in the perinatal period. Maternal nutrition is critical to the healthy development and subsequent well being of the offspring. It is important to ensure that adequate intake of micronutrients, particularly folic acid, iron, and calcium occur in the perinatal period.[25] It is also equally important that expectant mothers get adequate exercise, as medically recommended during pregnancy, and that they breastfeed for at least six months.[26, 27] In 1990 the IOM published guidelines for weight gain in pregnancy.[28] Research has demonstrated that weight gain within the IOM's recommended ranges is associated with better pregnancy outcomes. Maternal obesity is associated with maternal complications such as infertility, gestational diabetes, pregnancy induced hypertension, and cesarean section. Fetal complications include congenital malformations, prematurity, macrosomia, stillbirth, and neonatal death. Low maternal body mass index and poor weight gain during pregnancy can lead to increased risk of preterm delivery and low birthweight.[29]

Breastfeeding, on a sustained basis, is a very important nutrition intervention that a mother can do to improve the immediate and long-term health of her infant. Breast milk contains bioactive substances that optimize the immune system, decrease infections, and promote growth of optimal gut flora. The endogenous qualities of breast milk change over time to meet the specific biological needs of the infant. Furthermore there is growing evidence that some of the major adult chronic diseases, such as cancer, diabetes, and heart disease can be positively impacted by exclusively breastfeeding in the first six months of life.[30]

California currently monitors hospital discharge trend data for rates of "in-hospital exclusive" and "any breastfeeding." Although rates of "any in-hospital breastfeeding initiation" have increased, the rates of "exclusive in-hospital breastfeeding initiation" have declined during the past seven years. Breastfeeding duration rates have also fallen.[31, 32] See Table 1 for trend data for these rates from 1995 to 2004. It is important to realize that in-hospital breastfeeding rates are not the best indicator for correlation with the long-term health benefits associated with breastfeeding. Furthermore large race/ethnic disparities exist for both exclusive breastfeeding initiation and duration.[32]

Table 1: California In-Hospital "Any" vs. "Exclusive" Breastfeeding Initiation Trends as Reported on the Newborn Screening Test Form: 1995-2004*[33]

In-Hospital Rate	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
"Any" Breastfeeding	74.7%	76.4%	78.3%	80.3%	81%	82%	82.9%	83.5%	83.6%	83.9%
"Exclusive" Breastfeeding	42.2%	41.8%	42.8%	43.5%	42.9%	42.6%	42.2%	41.8%	41.2%	40.5%

*There were 536,446 births in 2004 (feeding type was known in 521,559 births, and unknown in 2.8 percent of births).

The American Academy of Pediatrics' recent report on breastfeeding recommends that infants be breastfed exclusively for at least six months and continued breastfeeding occur for at least one year duration.[27] 2004 breastfeeding duration rates in California were 45.1 percent at six months but dropped to 23.4 percent at 12 months. Exclusive breastfeeding rates at six months were only 17.8 percent.[34] Findings indicate that although California breastfeeding initiation trends have improved, there is still a need to improve breastfeeding duration rates for six months to one year.

Childhood and Adolescent Nutrition

The 1999 California Children's Healthy Eating and Exercise Practice Survey found that only one percent of children met all recommendations for diet and nutrition. Only 20 percent ate five or more servings of fruits and vegetables daily. Even so 72 percent ate two or more servings of protein rich foods and 66 percent ate or drank three or more servings of milk products daily.[35] See Tables 2A and 2B.

Table 2A: Proportion of California Children Who Met Minimum Recommendations, 1999[35]

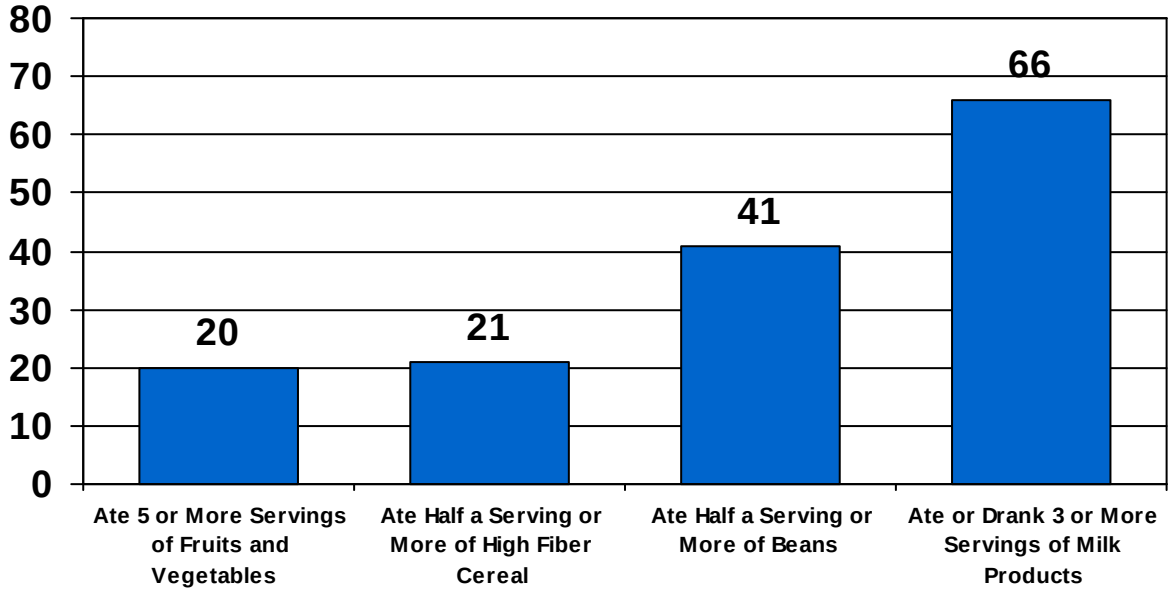
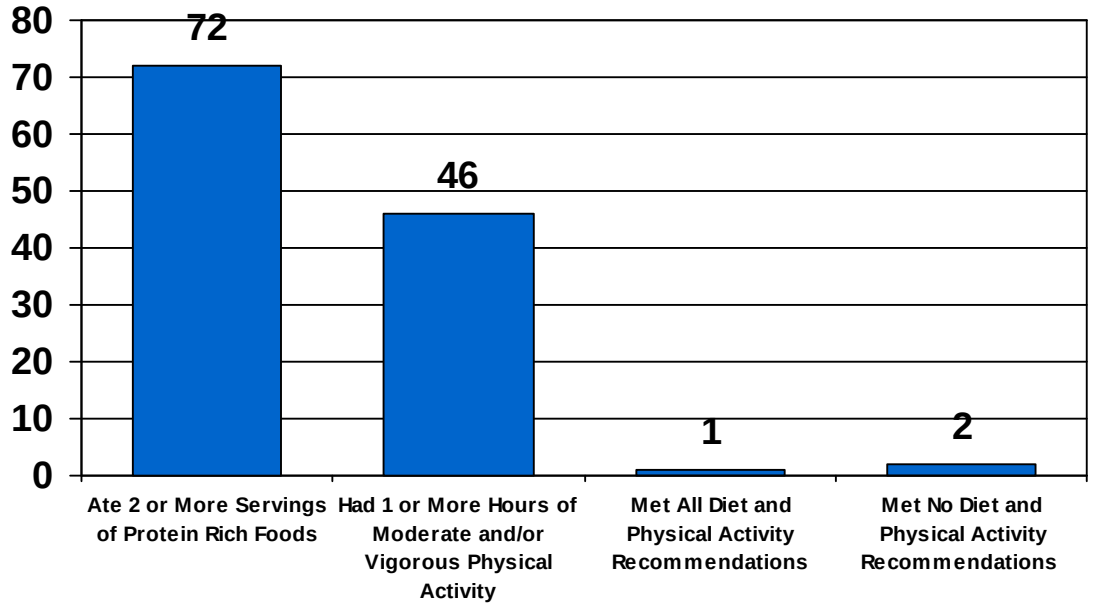
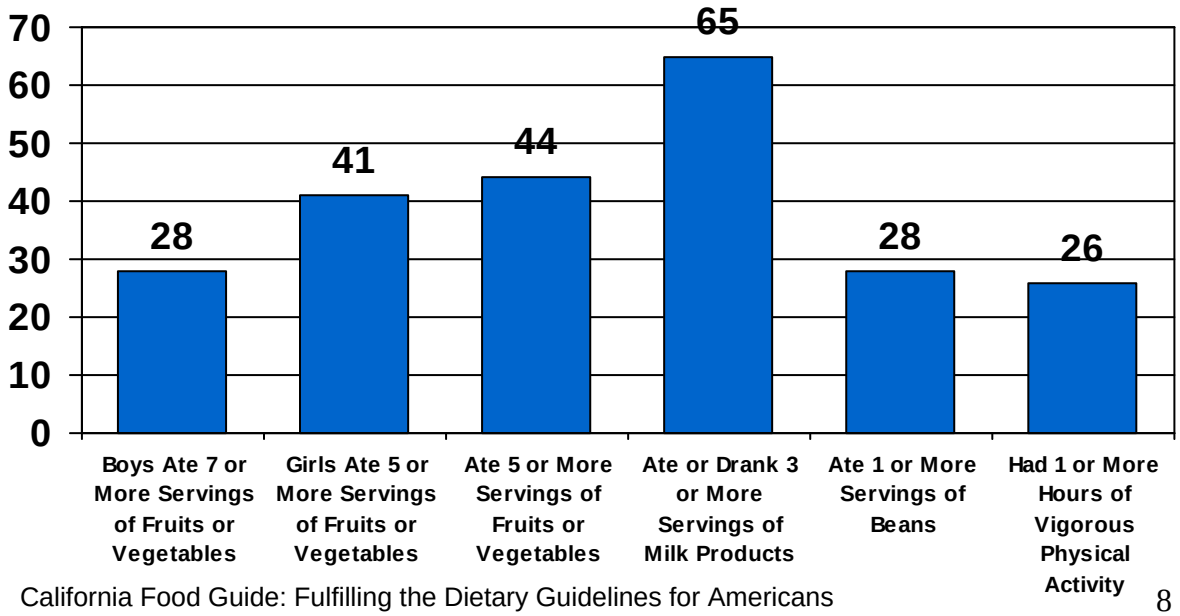


Table 2B: Proportion of California Children Who Met Minimum Recommendations, 1999[35]



Data from the 2000 California Teen Eating and Nutrition Survey indicated that only 26 percent of California teens had one or more hours of vigorous physical activity the previous day, only 28 percent of boys ate the recommended seven or more servings of fruit and vegetables, and only 41 percent of girls ate five or more servings of fruits and vegetables the previous day.[36] California teens fared better with the consumption of milk products--65 percent of teens ate or drank three or more servings of milk products the previous day.[36] See Table 3.

Table 3: California Adolescents Meeting Minimum Recommendations, 2000[36]



A recent report by IOM on food marketing to children and youth indicates that "there is strong evidence that marketing of foods and beverages to children influences their preferences, requests, purchases, and diets." The report also concludes that "overall, children are not achieving basic nutritional goals and they are consuming excess calories and exceeding recommended intakes for total fat, saturated fats, and added sugars, and sodium." Moreover the report identifies that dietary intakes of whole grains, fiber, calcium, potassium, magnesium, and vitamin E are well below recommended intakes. Teen girls and low-income toddlers are at risk for inadequate intakes of iron. The IOM report recommends that food and beverage companies, along with media and the entertainment industry, promote and support healthful diets for children and youth. It also advises government agencies to partner with the private sector and schools to create a social marketing campaign supporting parents, caregivers, and families to promote healthful diets for children and youth.[37] Critical to the implementation of the IOM's report will be adequate funding both at a government and private sector level.

With respect to the 1.5 million low-income children in California, some pediatric nutrition indicators show improved prevalence rates, however, others show little improvement or increased prevalence rates. The Pediatric Nutrition Surveillance System (PedNSS) is a child-based public health surveillance system that monitors the nutritional status of low-income children, aged 0-20 years of age, in federally funded maternal and child health programs. In California, PedNSS data is collected through the Child Health and Disability Prevention (CHDP) Program, which includes children who participate in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the federally funded Title V Maternal and Child Health Program, the Head Start Program, and other programs. The system includes trend data on birthweight, breastfeeding, anemia, short stature, underweight, and overweight. It is available according to race/ethnic groups, age, and county.[38, 39]

Rates for both low birthweight and high birthweight for PedNSS children less than five years of age in California have improved between 1995 and 2004. Those for pediatric overweight for children less than five years of age have not. Moreover, overweight prevalence rates for PedNSS children 5 $\leq$ 20 years have increased by 48 percent from 1995 to 2004.[38, 39] (See Table 4)

National trend data for anemia prevalence in PedNSS children six months to five years of age declined from 15.8 percent in 1994 to 12.8 percent in 2003, whereas anemia prevalence for California PedNSS children six months to five years of age have only declined by four percent (from 14.6 percent in 1995 to 14.0 percent in 2004).[40, 38] Anemia prevalence rates for California children 5 $\leq$ 20 years of age declined by eight percent.[39]

Table 4: Changes in Pediatric Nutrition Indicators for Low-Income Children in California, PedNSS Data Files[38, 39]

Year	Prevalence	% Relative Change
Overweight*-Children 2≥5 Years		
1995	14.4%	
2004	17.5%	21.5% increase over 10 years
Overweight*-Children 5≤20 Years		
1995	15.1%	
2004	22.4%	48% increase over 10 years
Anemia¥- Children 6 months<5 Years		
1995	14.6%	
2004	14.0%	4% decrease over 10 years
Anemia§- Children 5≤20 Years		
1995	13.8%	
2004	12.7%	8% decrease over 10 years
Low Birthweight- Children < 5 Years		
1995	8.9%	
2004	7.4%	20% decrease over 10 years
High Birthweight-Children < 5 Years		
1995	9.2%	11% decrease over 10 years
2004	8.3%	

*Overweight is defined as greater than or equal to (≥) 95th percentile for body mass index (BMI)-for-age. When reviewing prevalence data on a yearly basis, an increasing trend in prevalence is noted for overweight in both age groups. The comparison between ten year points is reflective of the upward increase in prevalence.

¥Anemia cutoff points vary for different age groups. Please refer to *Recommendations to Prevent and Control Iron Deficiency in the United States:* Table 6 "Maximum hemoglobin concentration and hematocrit values for anemia."[41]

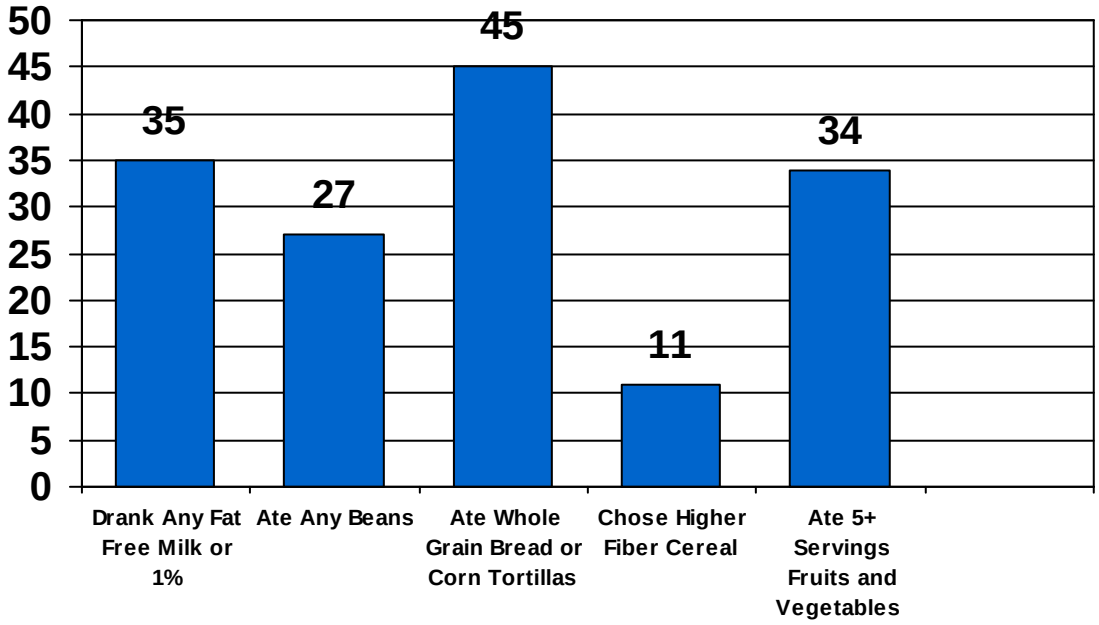
One area that has received increasing national and state attention has been the rising rates of pediatric overweight. Although there are a variety of core indicators for childhood nutritional well-being, pediatric growth profiles in relationship to BMI have attained government and public attention. In 2005, the IOM released "Preventing Childhood Obesity: Health in the Balance," an evidence-based review of pediatric overweight, which sets national goals and recommendations for the United States.[42] The report highlights the fact that over the past three decades, the rate of overweight for preschool children aged 2-5 years has more than doubled, and the rate for children aged 6-11 years has more than tripled. The rate for adolescents aged 12-19 years has doubled.[42] National prevalence trends for U.S. children and teens, using NHANES III data (1988-1994) indicates that the prevalence of pediatric overweight was 10.4 percent for children 2-5 years old, 15.3 percent for 6-11 year olds, and 15.5 percent for 12-19 year olds, a significant increase from the NHANES II survey (1988-1994), 7.2 percent, 11.3 percent, and 10.5 percent, respectively.[43]

With respect to California, the California Health Interview Survey (CHIS) reports that approximately 12 percent of adolescents are overweight.[44] Both national and state data confirm that these rates are highest among Latino, African American, and Native American/Alaska Native racial and ethnic groups.[43, 44]

Adult Nutrition

The California Dietary Practices Survey, which examined overall trends of healthy eating among California adults in 2001, found that most Californians did not meet the minimum dietary requirements for consuming five or more fruits and vegetables, choosing high fiber cereal, or eating any beans the previous day (see Table 5).[45]

Table 5: California Adults Who Met Minimum Dietary Recommendations, 2001[45]



Senior Nutrition

Americans over the age of 65 are often a neglected population when considering nutritional status. Older Americans may be on fixed incomes, alone, with poor mobility, and poor transportation access. They may also be edentulous and have limited smell and taste capacities. This may put them at risk for nutrient inadequacies, including obesity, hypercholesterolemia, and hypertension. Evidence suggests that potential inadequacies may occur with the intakes of calcium, magnesium, zinc, and vitamins D, B_6, and B_{12}.[16] According to a federal interagency forum on aging related statistics, 19 percent of seniors age 65 and older rated the quality of their diet as good whereas 67 percent stated their diet

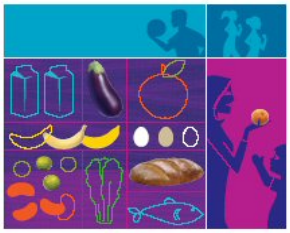
needs improvement. Furthermore, older people living in poverty were less likely to report a good diet (nine percent) than older people living above the poverty level (21 percent). Moreover, the rate of older people engaging in regular physical activity tends to decline at older ages. 2001-2002 national data indicates that the prevalence of regular physical activity declines from 26 percent among adults age 65-74 to nine percent for those 85 and older.[46] Older Americans are also being affected by increasing rates of obesity. The rate of increasing obesity has actually been more dramatic among older adults than younger adults with most of the increase in prevalence of obesity and overweight occurring since 1976-80. By 1999-2002 more than one-third (36 percent) were obese and nearly three-quarters (73 percent) of adults age 65-74 were overweight.[46]

Compared to other states, California ranked 22nd for prevalence rates of obesity for adults 65 years and older (19.1 percent in 2002). In 2001, data indicated that only 35.6 percent of California adults 65 and older were eating five or more fruits and vegetables each day.[47] Poor dietary and physical activity habits can put seniors at risk for chronic diseases and lead to increased health care costs. As a result of reduced wage earning capacity, declining cognitive abilities as well as physical limitations, seniors often require nutrition assistance programs to help with daily meal planning and preparation. Nutrition services can help with maintaining the health of older Californians by preventing premature institutionalization and improving overall quality of life.[48]

Federal and State Government Initiatives

Federal Initiatives

Dietary Guidelines for Americans 2005[2]



The California Food Guide Editorial Committee and authors support the USDA and Health and Human Services' (HHS) Dietary Guidelines for Americans 2005 (Dietary Guidelines) but also recognize that some areas may be improved upon over the next five-year cycle. The Dietary Guidelines are updated every five years and the 2005 update is a joint effort between the USDA and HHS and can be found at http://www.healthierus.gov/dietaryguidelines/. USDA and HHS jointly developed key recommendations based on an external scientific Advisory Committee's report and public agency comments. One of the basic premises of the Dietary Guidelines is that nutrient needs should be met primarily through consuming foods, and in certain cases, fortified foods and dietary supplements may be consumed.

It is not the intent of the California Food Guide to repeat all recommendations in the Dietary Guidelines, however, there are some key tables, recommendations,

as well as changes in the Dietary Guidelines 2005 that should be highlighted. Relevant CFG chapters reflect updated information based on the 2005 Dietary Guidelines.

Two central tables from the Dietary Guidelines are included in Appendix A Eating Patterns: A-1: The DASH Eating Plan, and A-2 the USDA Food Guide. Appendix A is found at: http://www.health.gov/dietaryguidelines/dga2005/document/html/appendixA.htm.

Major Changes to the Dietary Guidelines for Americans 2005:

The following major changes have been incorporated into the revised Dietary Guidelines:

- There are new sections including a glossary of terms and appendixes with information about the USDA Food Guide and Dietary Approaches to Stop Hypertension (DASH) Eating Plan, plus tables listing sources of some nutrients.
- The 2005 edition now includes eating patterns for 12 calorie levels ranging from 1,000 to 3,200 calories/day in the USDA Food Guide (found in Appendix A-2 in the guidelines).
- There has been a switch from using serving sizes for meat and beans; and grains food groups to ounce equivalents.
- A list of key recommendations has been added for the following: adequate nutrients within calorie needs; weight management; physical activity; food groups to encourage; fats; carbohydrates; sodium and potassium; alcoholic beverages; food safety; and key recommendations for specific population groups (infants, young children, pregnant women, older adults, and those who are immunocompromised).
- There is an emphasis on weight management and physical activity.
- There is an emphasis on types of vegetables, grains, milk products, and fats to consume.
- There is an appendix devoted to discretionary calorie allowance (A-3).

MyPyramid[3]

The MyPyramid Food Guidance System was developed to provide food-based guidance for consumers and professionals and is based on both the Dietary Guidelines and the IOM's Dietary Reference Intakes (DRIs). Materials are available on the web at http://www.mypyramid.gov/. The MyPyramid website includes interactive and print materials for consumers, and also includes materials designed for professionals. These materials include information on food intake patterns, an education framework, and glossary. There are four main themes to the educational framework: variety, proportionality, moderation, and activity.

The MyPyramid educational framework is also based on the following core recommendations:

- Increased intake of vitamins, minerals, dietary fiber, and other essential nutrients, especially those that are often low in typical diets.
- Lowered intake of saturated fats, *trans* fats, and cholesterol and increased intake of fruits, vegetables, and whole grains to decrease the risk of some chronic diseases.
- Calorie intake balanced with energy needs to prevent weight gain and/or promote a healthy weight.

Consumer basic messages include the following:

- Eat at least three ounces of whole-grain cereals, rice, or pasta every day;
- Go low-fat or fat-free when you choose milk, yogurt, and other milk products, and;
- Choose food and beverages low in added sugars.

Although the revised pyramid system has an improved focus on promoting whole grains and the reduced consumption of added sugars, it could be improved upon by having additional consumer and professional guidance on plant-based sources of protein, especially milk substitutes, as well as information for vegetarians. An additional concern is that the MyPyramid website may not be that accessible to low-income populations. At the time of this writing the website includes consumer materials for pregnant and breastfeeding women, children, and Spanish-speaking consumers. Additional multilingual materials would be an asset.

Dietary Reference Intakes[1]

In response to the ever growing knowledge base in nutrition, the Food and Nutrition Board, in partnership with Health Canada, has taken on the monumental task of revising the Recommended Dietary Allowances. One text is

now expanded to over ten related publications. The new primary title for these related reports is DRIs. Updated DRIs have been or are being developed for each nutrient or food component where adequate scientific data are available and include the following:

- **Estimated average requirement (EAR**): intake value that is estimated to meet the requirement defined by a specified indicator of adequacy in 50 percent of an age-and gender-specific group. At this level of intake, the remaining 50 percent of the specified group would not have met its need.
- **Recommended Dietary Allowance (RDA)**: is the dietary intake level that is sufficient to meet the nutrient requirements of nearly all individuals in this group.
- **Tolerable Upper Intake Level (UL)**: is the maximum level of daily nutrient intake that is unlikely to pose risks of adverse health effects to almost all of the individuals in the group for whom it is designed.

The DRI project has nutrient groups which include the following:

- Calcium, vitamin D, phosphorus, magnesium, fluoride
- Folate, antioxidants, and other B vitamins (vitamins C & E, selenium and choline)
- Macronutrients (e.g., protein, fat, carbohydrates)
- Trace elements (e.g., iron, zinc)
- Electrolytes and water
- Other food components (e.g., fiber, phytoestrogens)

Detailed information about the DRIs are available at IOM's website at: http://www.iom.edu/?id=4574&redirect=0. Also a complete set of Dietary Reference Intakes Tables, in PDF format, are available on the IOM's website at: http://www.iom.edu/?id=21381.

California State Government Initiatives

California state departments and programs involved with nutrition issues include the California Department of Health Care Services (DHCS)*, Department of Public Health (CDPH)*, Department of Education (CDE), Department of Social Services (DSS), Department of Aging (DA), and the University of California Cooperative Extension (UCCE). For a comprehensive summary of nutrition initiatives within California please refer to "Understanding Nutrition: A Primer on Programs and Policies in California," produced by the California Center for Research on Women and Families.[49] Relevant activities of DHCS, CDPH, and CDE, are summarized below.

* Please note that July 1, 2007 the California Department of Health Services (CDHS) split into two new departments: the Department of Health Care Services and the Department of Public Health. Please note that some websites and references may still refer to the old department. In subsequent revisions these items will be corrected.

California Department of Health Care Services

Office of Clinical Preventive Medicine

http://www.dhs.ca.gov/ps/ocpm/default.htm

The Office of Clinical Preventive Medicine works to integrate preventive care and public health policy into clinical settings, particularly Medi-Cal and managed health care systems. Recent projects include participation in the editorial coordination of the California Food Guide, development and implementation of the Medi-Cal Managed Care "Staying Healthy" assessment; development of an adolescent overweight provider toolkit; conducting a body mass index prevalence study with Medi-Cal managed care health plans; and, in the past, assistance with coordination of CDHS's physical activity and nutrition programs.

Children's Medical Services

http://www.dhs.ca.gov/pcfh/cms/

The Children's Medical Services (CMS) Branch provides a comprehensive system of health care for children through preventive screening, diagnostic, treatment, rehabilitation, and follow-up services. CMS includes the Child Health and Disability Prevention Program that provides preventive screening services to low-income children. These services include behavioral and nutritional risk assessments. CMS also provides advanced secondary and tertiary preventive services to eligible high risk infants and children through California Children's Services and the Medically Vulnerable Infant Program.

The California Department of Public Health

CDPH administers a variety of nutrition and physical activity promotion programs, conducts surveys, and provides supplemental food to special needs populations. CDPH also works collaboratively with other state departments, community based organizations, local health agencies, and academic institutions.

Listed below are the key nutrition-related programs in CDPH:

Network for a Healthy California

www.networkforahealthycalifornia.net

The *Network for a Healthy California (Network)* is a statewide social marketing initiative led by the California Department of Public Health's Cancer Prevention and Nutrition Section. The *Network* represents a movement of local, state, and national partners working collectively toward improving the health status of low-income Californians by increasing fruit and vegetable consumption, increasing daily physical activity, and reducing food insecurity. Multiple venues are used to facilitate behavior change and create supportive environments in the homes, schools, worksites, and communities of low-income Californians.

The *Network* works with Local Incentive Awardees (LIAs) that represent almost 100 local agencies in a variety of different community channels, including low

resource school districts, local health departments, county offices of education, public colleges and universities, Indian tribal organizations, city governments, First Five Commissions, cooperative extension agencies, as well as sister programs within the California Department of Public Health, park and recreation departments, and non-profit organizations. These projects are supported by a statewide infrastructure of 11 Regional Networks, targeted campaigns and programs, research and evaluation, media and public relations, partnership and leadership development, and community empowerment.

California Project LEAN
http://www.californiaprojectlean.org/
California Project LEAN: Leaders Encouraging Activity and Nutrition (Project LEAN) is a joint program of CDPH and the Public Health Institute. Project LEAN focuses on youth empowerment, policy and environmental change strategies, and community-based solutions. The goals of Project LEAN are to: 1) create healthier communities through policy and environmental change that support healthy eating and physical activity;
2) educate Californians to choose healthier foods and be more physically active; 3) conduct research-based, consumer driven nutrition and physical activity campaigns; and 4) serve as leaders by providing training and technical assistance and coordinating state and local efforts to promote healthy eating and physical activity.
Current Project LEAN programs include: 1) ***Food on the Run,*** which utilizes youth empowerment and policy and environmental change strategies to influence policies that will increase access to healthy food and physical activity options for low-income youth in California public schools; 2) ***Successful Students Through Healthy Food and Activity Policies*** educates local school board members about the link between healthy eating, physical activity, and academic achievement as a way to encourage healthy public school nutrition and physical education policy; 3) ***Strong Bones, Healthy Family Campaign*** seeks to increase lifestyle behaviors that promote bone health among Spanish-speaking women and their children as a way to improve health and reduce the risk of osteoporosis.

California Center for Physical Activity
http://www.caphysicalactivity.org/
The California Center for Physical Activity creates opportunities for everyday activity by connecting partners to active living resources and helping develop more walkable and bikeable communities. The Center works through collaboration with national physical activity experts, local health departments, community-based organizations and others in the public and private sectors to provide minigrants, technical assistance, and model programs to promote physical activity through active community environments. Projects include: Walkable Community Workshops, Healthy Transportation Network, the California Walk to School Headquarters website, Walkable Neighborhoods for Seniors, Active Aging Community Task Forces and the Take Action! web site.

California Obesity Prevention Initiative
http://www.dhs.ca.gov/ps/cdic/copi/default.htm
The California Obesity Prevention Initiative (COPI) evolved from a grant project with the Centers for Disease Control and Prevention. COPI partners with national, state, and local organizations focusing on reducing the lifelong risks associated with obesity by creating environments that support healthy eating, and physical activity, especially for youth. Major projects include a collaborative report titled: "Reversing the Obesity Epidemic: California's Plan for Action," along with a pilot project to promote quality physical education in low-resource schools in San Diego, tools to reduce TV viewing time of girls ages 11-14, and partnering to increase youth involvement in state and local policy issues related to obesity.

California Diabetes Program
http://www.caldiabetes.org/
The California Diabetes Program works with organizations in California and nationwide to: monitor diabetes and implement and evaluate diabetes interventions; initiate or sustain good public health policy for diabetes; increase access to quality diabetes care and treatment; and raise public awareness about diabetes. Program highlights include California's Plan for Diabetes; the California Diabetes Public Health System Assessment; the Diabetes Information Resource Center (DIRC), clinical guidelines for diabetes care, and development of the Diabetes Health Record card.

Safe Routes to School
http://www.dot.ca.gov/hq/LocalPrograms/saferoute2.htm
This program provides funding through the Department of Transportation to local California areas for construction of pedestrian and bike paths, bike lanes, new sidewalks, and crosswalks.

Maternal, Child and Adolescent Health/Office of Family Planning Branch
http://www.mch.dhs.ca.gov/
One of the Maternal, Child and Adolescent Health/Office of Family Planning (MCAH/OFP) Branch Title V Priority areas for California (2005-2010) is "Promote healthy lifestyle practices among MCAH populations and reduce the rate of overweight children and adolescents." The MCAH/OFP Branch promotes healthy eating and physical activity through all MCAH/OFP Branch programs and initiatives at the state and local level by:

- Encouraging the development of health care policies, training, and guidelines that support healthy eating and physical activity for all programs, health care providers, schools, child care centers, and employers.
- Supporting MCAH/OFP partners throughout the state in the development and participation in local healthy eating and physical activity related coalitions.

- Using healthy eating and physical activity epidemiological information that is obtained from multiple sources design, implement, and evaluate initiatives that are effective and reach individuals with the most need.

Some examples of MCAH programs and initiatives involved in this effort are the Adolescent and Family Life Program, the health jurisdiction MCAH allocations, the Black Infant Health Program, and the breastfeeding promotion initiative.

Special Supplemental Nutrition Program for Women, Infants and Children
http://www.wicworks.ca.gov/
The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) serves low-income pregnant, postpartum, and breastfeeding women and children under five years old and is 100 percent funded by USDA. WIC offers special vouchers to provide specific foods such as milk, eggs, cheese, dry beans, juice, cereals, and infant formula. WIC also provides nutrition education and breastfeeding promotion under specific federal requirements for expenditures on these activities. California operates the largest WIC program in the nation. In addition, WIC administers the WIC Farmers' Market Nutrition Program between May and November to provide WIC families with coupons to purchase produce at certified farmers' markets. USDA funded California to lead a "Fit WIC" special project. "Fit WIC" was a three-year, five-state project to evaluate childhood obesity prevention strategies. The California Fit WIC project developed several approaches targeting WIC families, WIC staff, and communities. The project results provide a model for local and state WIC agencies to use in implementing their own "Fit WIC" programs.

California Department of Education

While the California Department of Education's (CDE) primary focus is to create a dynamic education system that equips all students with the knowledge and skills to excel in college and careers, it also focuses on the importance of healthy eating and physical activity with the goal of preparing children so they are healthy and ready to learn. CDE participates in the following nutrition and physical activity-related activities as detailed below.

Coordinated School Health
The Learning Support Division within CDE administers the Coordinated School Health Program. CDE supports and encourages a coordinated approach to school health for many reasons; one being that such an approach has been shown to improve students' health and their capacity to learn through the support of families, schools, and communities working together. A coordinated school health approach is a school-wide attitude and commitment that supports and integrates eight components: 1) health education, 2) physical education, 3) parent/community involvement, 4) nutrition services, 5) health services, 6)

psychological and counseling services, 7) safe and healthy school environment, and 8) health promotion for staff. These components work together to develop and reinforce health-related knowledge, skills, attitudes, behaviors, and make health an important priority at school.

Building Infrastructure for Coordinated School Health California's Blueprint. This Blueprint delineates the foundation upon which children and adolescents in California can develop their capabilities for leading rewarding and productive lives. It creates a joint effort of public and private agencies, individuals, and communities, and assists in building infrastructure for implementing coordinated school health. Additional information is located on the CDE web site at www.cde.ca.gov/ls/he/cs.

Health and Physical Education Frameworks and Content Standards for California Public Schools, Kindergarten through Grade Twelve

The Health Framework for California Public Schools, Kindergarten through Grade Twelve provides a foundation for curriculum and instruction and describes the scope and sequence of knowledge and skills that students need to master. It emphasizes students' acquisition of health literacy – the capacity to obtain, interpret, and understand basic health information, the promotion of health education through a coordinated school health systems and the collaborative efforts of the school, the family, and the community. The Framework addresses the physical, mental, emotional, and social dimensions of health. Recently a bill (Assembly Bill 689) was signed into law stating that on or before March 1, 2008, based on recommendations of the Superintendent, the State Board of Education shall adopt content standards in the curriculum area of health education. The content standards shall provide a framework for instruction that a school may offer in the curriculum area of health education with a goal of providing school districts with the fundamental tools for developing health education curriculum and improve student assessment.

The Physical Education Framework describes a sequential, developmental, age-appropriate physical education program designed to provide students with the knowledge and ability to maintain a healthy active lifestyle. Additionally, the California State Board of Education recently adopted Physical Education Model Content Standards for California Public Schools outlining what students need to know and be able to do in physical education at each grade level. The State Board of Education adopted the standards in January 2005. The Physical Education Content Standards will assist schools in establishing specific learning goals and objectives for physical education. A sequential, developmentally appropriate curriculum still needs to be designed and implemented to help students acquire the knowledge, skills, attitudes, and confidence needed to adopt and maintain a physically active, healthy lifestyle.

Superintendent's Task Force on Obesity, Type 2 Diabetes, and Cardiovascular Disease

Citing an epidemic of obesity among children and youth, State Superintendent of Public Instruction Jack O'Connell established a task force on childhood obesity, type 2 diabetes, and cardiovascular disease to examine the factors that contribute to the increase in these diseases among California school children. Members of the task force included nutritionists, parents, physical education specialists, physicians, public health experts, school nurses, students, and other educators.

The Task Force's recommendations included actions schools and their partners can and should take to address the trends facing California: 1) The need to increase the quality and quantity of instruction in physical education, to provide more physical activity, and enhance student achievement of California's Physical Education Model Content Standards; 2) The need to increase the quality and quantity of health education to promote healthful eating and physical activity; and 3) Ensure the availability and quality of healthy foods and beverages served and sold at schools.

Healthy Children Ready to Learn – A White Paper on Health, Nutrition, and Physical Education

This document recently published (2005) by CDE addresses the issues surrounding student nutrition, physical activity and fitness, and the recommendations from The Superintendent's Task Force on Childhood Obesity, Type 2 Diabetes, and Cardiovascular Disease. Research shows that healthy, active, and well-nourished children and youths are more likely to attend school and are more prepared and motivated to learn. Yet an alarming number of students in California are overweight, unfit, or both. These children and youth are developing serious health problems now and face dire consequences in the future.

This document describes CDE's perspectives and plans to ensure that students are healthy and ready to learn. Specifically, it outlines four goals:
1) Support high-quality instructional programs in health education and physical education that provide students with the skills, knowledge, and confidence to develop and maintain active, healthy lifestyles; 2) Implement nutrition standards for all food and beverages sold on campus; 3) Increase participation in school meal programs so that no child goes hungry; and 4) Create a school environment that supports the health of students.

Advisory Committee on Nutrition Implementation Strategies

To assist schools and communities in their fight against childhood overweight and obesity, Superintendent O'Connell established the Advisory Committee on Nutrition Implementation Strategies. The 23 members represent students, school food service directors, school administrators, state agencies, teachers, parents, professional associations, and advocacy organizations and worked

together to improve the nutrition environment on school campuses. The Committee developed a comprehensive set of strategies that schools can use to improve the quality of food and beverages sold or served on school campuses. The final report is scheduled to be available in the spring of 2006.

Healthy School Nutrition Environment

Schools are central in providing students with the skills, social support, and environmental reinforcements to develop and practice healthy eating and physical activity behaviors. Creating a healthy school environment begins with a strong, comprehensive district policy that promotes the health and wellness of students.

The Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108-265) requires school districts participating in the U.S. Department of Agriculture National School Lunch Program to adopt a Local School Wellness Policy by the beginning of 2006 school year. These policies should apply to curriculum, instruction, and practices in the classroom, as well as non-instructional opportunities throughout the school day that guide and influence student behaviors. The California School Boards Association has released a sample board policy related to the federal requirement that districts develop local school wellness policies. http://www.csba.org/ps/samples/bp5030.pdf This sample policy includes recommendations that will be helpful to districts in examining nutrition, physical activity/education, and coordinated school health.

A school health council within the context of coordinated school health should develop policies. A school health council could include teachers, school food service staff, parents, administrators, health care professionals, and other community members. Once policies are established, schools can address the physical environment to identify where changes can be made to further support the health and fitness of all students. Additional regulations and laws regarding the sale and service of foods and beverages on campuses will impact the school health environment. In September 2005, with support from California's Governor Arnold Schwarzenegger, two Senate Bills were signed into law to become effective July 2007 in kindergarten through grade twelve. Senate Bill 12 puts nutritional limits on the types of foods sold beyond the federal meal programs. Senate Bill 965 restricts beverages sold on school campuses. These new laws will be the most stringent ever implemented in the State of California. For the specific California Education Code's that contain this enacted legislation refer to Sections 49430 - 49434.

Shaping Health As Partners In Education (SHAPE)

Shaping Health as Partners in Education (SHAPE) is a network of over 130 school districts committed to improving the health and academic success of the children they serve. Working as a team, child nutrition staff, teachers, school administrators, family, and community members provide a consistent nutrition message in child nutrition programs, classrooms, and throughout the school

environment by applying nutrition policies and practices and building partnerships.

Child Nutrition Programs

CDE administers the USDA's Child Nutrition Programs, which include the National School Lunch Program, School Breakfast Program, Child and Adult Care Food Program, and the Food Distribution Program. These federally funded programs assist schools, residential child care institutions, child care agencies and homes, and adult day care facilities in providing nutritious meals to children and adults at reasonable prices. In addition to financial assistance, the Child Nutrition Programs provide donated commodity foods to help reduce meal costs.

In June 1995, the School Meals Initiative (SMI) and Public Law 104-149 amended the Federal Regulations establishing the National School Lunch and School Breakfast Programs nutrition standards and incorporating the Dietary Guidelines for Americans. Schools must serve meals that comply with the nutrition standards. Meals must provide one-third of the Recommended Dietary Allowances (RDA) for protein, calcium, iron, vitamin A, vitamin C, and specific levels of calories varying with the age/grade of the students, and meet the Dietary Guidelines for Americans over a week's time.

Farm-to-School

Farm-to-School is administered by CDE's Nutrition Services Division and directly addresses the connection between farmers, consumers, and school children. This program educates children about their relationship to agriculture by highlighting their interactions with the community, the environment and the food they eat. Through Farm-to-School, the breakfast, lunch, and snack programs bring fresh California produce into schools, providing the opportunity to teach children to make their own healthy eating choices, and giving them the opportunity to try new foods. This is an investment that can improve children's health and education through garden-based learning, increased consumption of fresh fruits and vegetables, improved awareness of nutrition, and a sense of stewardship of our food and farming systems.

State Nutrition Action Plans (SNAP)

To support states as they strive to improve eating and lifestyle behaviors as a preventive approach to reducing diet-related health problems in America, the USDA has provided limited financial assistance for state nutrition education interventions and activities aimed at promoting healthy eating and related lifestyle behaviors. State groups initially met to identify a common nutrition goal and begin formulating a plan for working together to achieve the goal. California's goal in this endeavor is to create and encourage partnerships and collaborative interventions between the nutrition assistance programs and other related groups, such as health programs, health care providers, schools, faith-based

groups, and community organizations in the consumption of at least five servings of fruits and vegetables a day.

State agencies in California that have begun collaboration efforts include CDE, CDPH, Department of Social Services, and the Department of Aging. Some of the primary objectives established to meet the goal include maximizing the use of California grown fruits and vegetables in all USDA Food and Nutrition Programs in California; providing workshops for sponsors of the Summer Food Service Program and National School Lunch Program that include strategies to expand program participation and encourage fruit and vegetable consumption; expanding statewide efforts to promote Farm-to-School initiatives; developing an action plan that includes local input to overcome barriers and fill gaps in achieving the goal; and expanding cooperation between growers, retailers, and food banks to get more California products to food banks.

California Physical Fitness Test (FITNESSGRAM®)

The goal of the California physical fitness test is for students to achieve the minimum fitness levels, or performance standards, in various areas. State law requires school districts to administer a physical fitness test, designated by the State Board of Education, to all fifth, seventh, and ninth graders annually. The physical fitness test designated for California public school students is the FITNESSGRAM®, developed by The Cooper Institute. The test assesses six major fitness areas, including aerobic capacity (cardiovascular endurance), body composition (percentage of body fat), abdominal strength and endurance, trunk strength and flexibility, upper body strength and endurance, and overall flexibility. A number of test options are provided for most of the fitness areas so students with special needs have an opportunity to participate.

In 2005, just 25 percent of the students in grade five, 29 percent in grade seven, and 27 percent in grade nine achieved the fitness standards for all six areas of the test. A comparison of the results for the last three years reveals some improvement, with approximately three to four percent more students achieving the minimum fitness levels across all areas of the test. There are still far too many students failing to reach even minimal levels of physical fitness. Recent research associates good aerobic capacity with a reduction in many health problems. Overall, 56 percent of the students across the three grade levels met the targeted performance standard for aerobic capacity, considered the most important of the six areas tested.

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