

TECHNICAL ASSISTANCE memorandum



NEW YORK STATE OFFICE FOR THE AGING
Bldg. 2, Empire State Plaza, Albany, NY 12223-0001

TO: AREA AGENCY ON AGING DIRECTORS
 Nutrition Program Directors

Subject:
Menu Planning Guidelines

Response Due Date:

No: 89-TAM-7	Date: 8/1/89
Programs Affected: <input type="checkbox"/> III-B <input checked="" type="checkbox"/> III-C-1 <input checked="" type="checkbox"/> III-C-2 <input type="checkbox"/> III-D <input checked="" type="checkbox"/> SNAP <input checked="" type="checkbox"/> CSE <input type="checkbox"/> ELSEP <input type="checkbox"/> EPIC <input type="checkbox"/> RPE <input type="checkbox"/> HEAP <input type="checkbox"/> OTHER:	
Contact Person(s) - Phone Number(s) Nutrition Unit 518-474-4576 212-804-1676	
For Your Information Consulting/Staff Dietitians	
TAM Superseded by this document:	

The purpose of this Technical Assistance Memorandum (TAM) is to provide additional guidance to consulting dietitians and nutrition program staff concerning menu planning procedures and requirements.

This TAM reviews a number of nutrition program standards currently in effect as well as recommended practices established in recent years.

Highlights of this TAM include:

1. Suggested approaches to meeting the current Dietary Guidelines
2. Flexible menu planning when nutrient content is confirmed by analysis
3. Methods to confirm the nutrient content of meals
4. Attachments
 - a. Menu Planning Guidelines
 - b. Revised Nutrient Standard Method Units (Table)
 - c. 1980 Revised Recommended Dietary Allowances (Table)
 - d. Guidelines for Menus Planning (Excerpt from the New York City Department for the Aging program Manual)

Contact the Nutrition Unit at SOFA for additional information. The attachments (3 copies) will be provided to the AAA only. Please distribute this information to appropriate nutrition program staff.

MENU PLANNING

1. (Standard) The nutrition services provider provides menus, where feasible and appropriate to meet the particular dietary needs and preferences arising from the health requirements, religious requirements, or ethnic backgrounds of eligible individuals.
 - a) Participants' comments on meals should be routinely solicited and considered when planning menus. This can be accomplished by conducting an annual survey of food preferences and menu satisfaction and obtaining feedback from the site or nutrition advisory council.
 - b) Programs serving populations which observe religious dietary restrictions should provide meals which comply with the restrictions if feasible within the programs operation and budget.
 - c) Programs serving ethnic populations should provide meals which reflect their preferences if feasible within the programs operation and budget. Resources for ethnic menus are available from SOFA and the NPE network.
2. (Standard) Menus should be planned based on recommendations contained in the current Dietary Guidelines entitled "Nutrition and Your Health--Dietary Guidelines for Americans." The guidelines encourage the incorporation of adequate starch and fiber, and avoidance of too much fat, cholesterol, sugar and salt.
 - a) Current research has yet to establish a specific amount and type of fiber to provide in the general diet. However, a good source of fiber should be included daily.
 - b) The American Heart Association's guidelines suggest that no more than 30% of the total daily calories come from fats (of which saturated fats contribute 10% or less), carbohydrates provide 50% of the calories and the remaining 20% are calories from protein.
 - c) The National Research Council suggests that a "safe and adequate" sodium intake per day is about 1100 to 3300 mg. for an adult. However, a satisfactory approach would be to limit sodium in the general diet to 1000 - 1500 mg. per meal.
 - d) Foods high in sucrose generally have a low nutrient density yet are high in calories. Therefore, they should be used in moderation.
3. The Meal Pattern below provides the basic format for planning meals. However, it does not ensure nutritional adequacy and is not a substitute for analysis. Menus should generally follow this pattern but may deviate provided that nutrition requirements are met (as confirmed by analysis) and participant

satisfaction is maintained. For example, a serving of stew may contain only 2 ounces of meat if the total meal provides adequate protein and other nutrients.

MEAL PATTERN

Meat, fish, poultry or alternate	- 3 oz. edible portion
Vegetables and fruits	2-1/2 cup servings*
Whole grain or enriched bread	one serving
Butter or fortified margarine	one teaspoon
Dessert	1/2 cup**
Milk, whole, 1%, 2%, skim	1/2 pint

*All vegetables and full strength vegetable juices, all fruit and full strength juices must include one good source of Vitamin C daily and three good sources of Vitamin A per week.

**Desserts such as fresh or canned fruit, milk puddings, custard, ice cream, ice milk, sherbet, cookies should be offered more frequently than cakes or pies.

4. (Standard) Cycle menus must be planned for a minimum of 4-6 weeks.
 - o A cycle menu can incorporate a number of different food items for a particular season when various fresh fruits and vegetables are more readily available or when certain menu items are more desirable.
5. (Standard) Menus must be planned and meals served to be palatable, attractive and easy to consume.
 - o Include foods of different textures and preparation methods with appealing flavor and color combinations.
6. Menu items are evaluated to ensure their suitability to program operations.
 - a) Fit into the production schedule
 - b) Food cost are reasonable
 - c) Foods can be prepared using existing equipment and staff
 - d) Food items can be held and transported with minimal loss in quality
7. (Standard) All main meals are hot or designed to be eaten hot (frozen, canned foods) except during June, July and August when two main meals per week may be cold, e.g., soup and sandwich, salad plate.
8. Frozen meals or emergency meal packages should be planned to meet nutritional requirements as described below in order to be eligible for USDA commodity and/or cash support.

- o Emergency meal packages should contain shelf stable foods which require little or no cooking or minimal preparation.
9. (Standard) Standardized quantity recipes, adjusted to yield the number of servings needed must be used in order to produce meal items of consistent quality, cost and nutrient value.
 10. Resources for foods providing a good source of a specific nutrient include the Nutrient Standard Method Guide and 82-TAM-III-C-7, Vitamin Checklist, 9/23/82.

NUTRIENT CONTENT

1. (Standard) Each meal must contain at least one third of the current Recommended Dietary Allowance (RDA) as established by the Food and Nutrition Board -- National Research Council, National Academy of Science (Older Americans Act, 1965 as amended).
 - o See Table I 1980 RDA Current Guidelines
2. (Standard) When two meals are served on the same day for consumption by the same individual, the combined nutrient content of the two meals must provide two-thirds the Recommended Dietary Allowance.
3. Nutrients to be confirmed: Calories, Fat, Protein Vitamin A, Vitamin C, Thiamine, Riboflavin, Niacin, Calcium, Iron and Phosphorus.
4. Confirmation of the nutrient content of meals can be accomplished by using the Nutrient Standard Method (see revised requirements/units), computer nutrient analysis software or nutrient analysis resources such as Handbook 456. Note that adherence to the meal pattern (page 2) does not supplant the requirement for menus to be analyzed unless a waiver is granted by SOFA.
5. Therapeutic diets prescribed by a physician should be planned to provide as close to the Recommended Dietary Allowances as possible. However, if it is necessary to limit certain elements of the diet such as calories, protein, etc. and as a result the meal(s) does not meet the nutritional requirements of the program such requirements will be waived.
6. (Standard) Menus are approved in writing by the Area Agency on Aging registered dietitian, or by the registered dietitian whose services are utilized by the provider to meet nutritional requirements.
 - a) (Standard) All food must be clearly identified on the menu to enable accurate determination of nutrient content.

- (c) (Standard) Menu substitutions must be approved by the registered dietitian. When the approved and certified menu is altered, it must be documented and initialed on the official copy. Substitutions must be of equal nutritive value.
 - (d) (Standard) Menus not certified at the local level must be submitted to the State Office for the Aging at least six weeks prior to the first serving day. SOFA nutritionist will then evaluate, recommend any changes and certify menus.
7. (Standard) Menus on file must document what was actually served including all frozen and/or emergency meals provided. These menus must be kept by the nutrition provider for a period of one year from the last serving date.

NUTRIENT STANDARD METHOD

Revised nutrient value units based on the 1980 Recommended Dietary Allowance for a male 51 years or older.

	100% RDA	33% RDA	Nutrient value/ unit	Units/meal
Calories	2000-2800	800	76	10.5
Protein	56	18.7	2.1	8.9
Vit. A				
ret eg.	1000	333		
IU	5000	1666.7	179	9.3
Vit. C mg.	60	20	2	10.0
Thiamine mg.	1.2	.4	.04	10.0
Riboflavin mg.	1.4	.47	.05	9.4
Niacin mg.	16	5.3	.53	10.0
Calcium mg.	800-1000	300	35.6	8.4
Phosphorus mg.	800	266.7	35.6	7.5
Iron mg.	10	3.3	.44	7.5

II.B GUIDELINES FOR PLANNING MENUS

II.B.1. Main Dish

a. The main dish of meat or an alternate is the expedient way to meet the requirement for high quality protein. The serving must be three (3) ounces of cooked edible meat, fish, poultry, cheese or an alternate. Additional alternates are cooked dried beans, peas or nuts. Main dishes that combine vegetables, bread, and other fillers require larger portions to ensure that three ounces of protein are provided.*

a. Examples of meat or alternates without bone, skin, fillers or coatings are:

Roast beef slice	- 3.oz.
Roast turkey slice	- 3 oz.
Baked fish	- 3 oz.
Hard cheese	- 3 oz.

b. Examples of meat or alternates with bone, skin, fillers or coatings are:

Meat loaf (w/fillers)	- 4 oz.
Meat balls	- 4 oz.
Beef stew w/vegetables	- 3 oz. Beef & 1 cup vegetables
Chicken w/bone and skin (1/4 of 2 1/2 lb. chicken)	- 5-6 oz.
Chicken Chow Mein	- 3 oz. chicken & 1 cup vegetables
Turkey legs or wings	- 5-6 oz.
Short ribs	- 8 oz.
Oxtails	- 8 oz.
Stuffed peppers	- 3 oz. beef & 1 pepper
Fish and coating	- 4 oz.
Fish cakes	- 5 oz.
Baked ziti	- 6 oz. ricotta cheese & 1 cup macaroni
Macaroni and cheese	- 3 oz. hard cheese & 1 cup macaroni
Noodle kugel	- 6 oz. cottage cheese & 1 cup noodles
Frankfuters and Baked Beans	- 2 franks & 1/2 cup baked beans

*Recipes must be submitted for review to assigned nutrition consultant.

- b. Since the availability of any one specific fish is uncertain, simply indicate "Fish" as the entree item on any day when fish is to be served. A choice can be made closer to time of service depending on price and fish in season. Write in selected fish at that time.
- c. A hot main dish must be served daily. Cold meals are permissible once per week only during the months of June, July and August when temperatures are likely to be in the 90°'s.
- d. Sandwiches, hot or cold, when on the menu must contain 3 oz. of protein.
- e. A main mixed protein dish must itemize the amounts of each protein ingredient of the Menu Plan Form.

Examples:

- a. Baked macaroni and beef
 - 2 oz. beef
 - & 1 cup macaroni
 - & 1 oz. hard cheese
- b. Baked macaroni and cheese
and Egg salad
 - 2 oz. cheese
 - 1 cup macaroni
 - 1 egg sliced
 - on lettuce
- c. Spaghetti with meat balls
 - 2 oz. beef
 - 1 oz. hard cheese
 - 1 cup spaghetti
- d. Chili con carne
 - 2 oz. beef
 - 1/2 cup kidney beans
- f. The serving of eggs* as a main dish is discouraged since they are a food easily prepared by the elderly even with limited culinary skills. Eggs are better reserved for eating at home for breakfast or for a simple evening meal. They can, however, be used to supplement main dishes that require additional protein.

Examples:

- a. Meat loaf with egg as a binder.
- b. Tuna casserole with sliced egg salad.
- c. Turkey a la king with sliced egg garnish.

*For centers that observe Kashruth, eggs are permitted for preparing dairy meals and should be in the form of omelets, cutlets and creamed eggs.

- g. Cured, smoked and pickled meats are high in sodium (salt), nitrates and nitrites. Therefore, these items must be limited to no more than two times per month.

Examples are: corned beef, frankfurters, sausages and pre-portioned frozen breaded veal and pork patties.

- h. Gravies and sauces may be served on occasion to add interest to meals. They provide mainly fat calories and little or no nutritional value.

II.B.2. Fruits And Vegetables

- a. A minimum of two (2) half cup servings of fresh, frozen or canned vegetables and fruit or other juices must be served daily. To the extent possible, fresh vegetables and fruits in season should be utilized. The serving of one cup of a vegetable, such as "one cup - Tossed Salad" does not fulfill this requirement.
- b. Four (4) oz. of juice or a half cup of fruit salad or an appetizer will be counted as one of two (2) half cup servings. Fruit served as Dessert must be counted only as Dessert and not as one of the two (2) half cups of Vegetables and Fruits. It can, however, fulfill a Vitamin A or C requirement.
- c. Two food items that are both high in starch should not be served together.

Examples:

Potato and lima beans
Potato and corn
Potato and rice

- d. A good source of Vitamin C is to be served daily. The best natural sources of this vitamin are oranges, grapefruits, tangerines, tomatoes, and their juices. All other natural juices must be enriched with Vitamin C. (See vitamin checklist on Page 23 for other suggestions.)

Drinks made from syrup-type concentrates, fruit punches and ades are not acceptable substitutes for natural juices.

- e. A source of Vitamin A is to be served three (3) times per week. The best natural sources of this nutrient are liver and the deep orange-colored vegetables such as carrots, sweet potato (yams), pumpkin and Hubbard

squash, and the green leafy vegetables like spinach, mustard and turnip greens, kale and broccoli. (See vitamin checklist on Page 23 for additional suggestions.) A half ($\frac{1}{2}$) cup is considered a serving.

- f. Fresh fruits and vegetables available by the season of the year. (See "What's in Season...When" on Page 32.)

II.B.3. Bread Alternates

- a. All pasta products (noodles, spaghetti, and macaroni) and rice are sources of carbohydrates or starch. For menu planning purposes they cannot take the place of vegetables.
- b. Although optional, these products add interest and variety to menus and help to round out a meal. Only enriched varieties should be purchased in order to contribute vitamins and minerals as well as calories.
- c. When a bread alternate is served, a $\frac{1}{2}$ cup serving is recommended.
- d. When a bread alternate is served, two $\frac{1}{2}$ cup servings of Vegetables and Fruits must still be served.

II.B.4. Bread and Their Substitutes

- a. One serving is required daily. Enriched and whole grain breads, biscuits, muffins, rolls and cornbread and/or other types add variety to the menu.

Examples:

Bread	- 1 slice
Cornbread (2" x 2")	- 1 square
Dinner roll	- 1 medium
Hamburger bun	- 1 bun

Substitutes should be enriched products.

II.B.5. Margarine or Butter

- a. One teaspoon is to be served daily.

- b. Either margarine or butter can be used. Margarines high in polyunsaturated fats such as corn, cottonseed, soybean and sunflower seed oils are the recommended choices. However, butter, though a saturated fat high in cholesterol, is usually a more flavorful choice and can also be used.

The cost per serving may determine the choice that is made.

II.B.6. Dessert

- a. A half ($\frac{1}{2}$) cup serving of dessert is to be provided daily.
- b. A fruit dessert two to three times per week is the preferred choice. Fruit may be either fresh when in season, frozen or canned. If fruit is used as a source of either Vitamins A or C, the fruit must be named, and not simply stated as "fruit."
- c. Fruits preserved in light syrup or fruit juice should be purchased. Avoid fruits packed in heavy syrup.
- d. Milk puddings, gelatin dessert with fruit, ice cream and/or an occasional baked dessert may also be served. Puddings should be prepared utilizing powdered skim milk or whole milk. Canned puddings are to be avoided. They contain many preservatives, are costly, and are not as tasty as the site-prepared puddings.
- e. A plain gelatin dessert has little or no nutritional value. Therefore, fresh and/or canned fruit and their juices should be added to make a more tasty and nutritious dessert.

II.B.7. Milk, Whole, Low Fat or Skim

- a. A half pint (8 oz.) of pasteurized milk is to be served daily.
- b. Participants should be provided with a choice of low fat, skim or whole milk.

- c. Milk must be served in unopened half pint containers as packaged at the milk processing plant.
- d. Drinking straws if provided for milk shall be enclosed in a wrapper or dispensed from a sanitary device. (NYC Health Code, Section 87.11a.) They shall be discarded immediately after use.
- e. Until ready to be served, milk must be held under refrigeration at 35° - 40° F.

II.B.8. Other Beverages

- a. Water must be readily available at meal times and throughout the day in clean water pitchers, from a fountain or water cooler, or some other potable water source. During water emergencies, pitchers of water can be placed where participants can help themselves to it.
- b. Coffee, decaffeinated beverages, tea, herbal teas and fruit-flavored drinks may be served as optional additional items as the food budget allows.
- c. Alcoholic beverages must not be provided with nutrition project funds.

II.B.9. Condiments

- a. Iodized salt should be purchased instead of the non-iodized. Iodine is an essential mineral needed for the proper functioning of the thyroid gland. It is lacking in foods grown in certain areas of the United States and therefore is added to salt as a condiment that is most frequently used to season food.
- b. Nutrition programs funds should not be used to purchase substitutes for salt and sugar. Most sugar substitutes are highly suspect as cancer-causing agents.

II.B.10. Optional Items

- a. Soup in any form is an optional item that can be included in a day's menu as long as the cost of food remains within budgeted limits. Unless prepared "from scratch", soups usually contribute an excess of salt to a population whose salt and sodium must be restricted.
- b. Vitamin and mineral supplements must not be provided with program funds.

II.C. PROCEDURES FOR DEVELOPING MENU PLANS

Using the project menu plan forms (6 - 7 weeks at a time) write the menu down as they are planned. The center's Menu Planning Committee should have a voice in the planning of these menus.

1. Select the main dish, a source of protein, which accounts for approximately 1/3 or more of the per meal cost.
2. Select the vegetables and fruits to complement the main dish.
3. Include the vitamin C food for each day. (See Vitamin A and C checklist on Page 23 of this chapter.)
4. Include the vitamin A foods for at least three (3) days each week.

The nutrient requirements for Vitamins A & C can be met through servings of the required Vegetables and Fruits or the Dessert servings or the appetizer (if served).

5. Select the appetizer (when served).
6. Select rice, or type of pasta (noodles, spaghetti, macaroni) if needed to round out the meal.
7. Select the type of bread.
8. Include the table fat, either butter or margarine.
9. Select the dessert.
10. Include the required milk.
11. Other factors to consider:
 - a. Where feasible and appropriate, menus must consider the religious requirements and/or ethnic backgrounds of eligible individuals.
 - b. Meals must attempt to closely resemble a home prepared meal. They should be colorful and attractive in appearance.

- c. Salt, salty foods, saturated fats and highly seasoned foods must be avoided or limited.
- d. Current food costs, available kitchen staff and kitchen equipment availability and capacities need to be considered as well.
- e. The capabilities of the food service staff must also be considered.
- f. Where feasible and appropriate special menus shall be provided for meeting the particular dietary needs arising from health requirements.
(See section on Special Diets which follows.)
- g. Include foods in season in the planning of menus.

1980 Revised Recommended Dietary Allowances

The following tables have been approved by the National Academy of Sciences for distribution. They include tables on (a) Recommended Dietary Allowances for protein, fat-soluble and water-soluble vitamins, and minerals; (b) estimates of adequate and safe intakes of selected vitamins, trace elements, and electrolytes; and (c) Recommended energy intakes, together with mean heights and weights.

Reproduced from: Recommended Dietary Allowances, Ninth Revised Edition (1980, in press), with the permission of the National Academy of Sciences, Washington, DC.

Recommended Dietary Allowances, Revised 1980*
 Designed for the maintenance of good nutrition of practically all healthy people in the U.S.A.
 FOOD AND NUTRITION BOARD, NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNCIL

age and sex group	weight		height		protein gm.	fat-soluble vitamins			water-soluble vitamins						minerals							
	kg.	lb.	cm.	in.		vitamin A	vitamin D	vitamin E	vitamin C	thiamin	riboflavin	niacin	vitamin B ₆	folacin	vitamin B ₁₂	calcium	phosphorus	magnesium	iron	zinc	iodine	
						μg.R.E.†	μg.‡	mg.αT.E.#	← mg. →			mg.N.E.¶	mg.	← μg. →		← mg. →					μg.	
infants																						
0.0-0.5 yr.	6	13	60	24	kg. × 2.2	420	10	3	35	0.3	0.4	6	0.3	30	0.5**	360	240	50	10	3	40	
0.5-1.0 yr.	9	20	71	28	kg. × 2.0	400	10	4	35	0.5	0.6	8	0.6	45	1.5	540	360	70	15	5	50	
children																						
1-3 yr.	13	29	90	35	23	400	10	5	45	0.7	0.8	9	0.9	100	2.0	800	800	150	15	10	70	
4-6 yr.	20	44	112	44	30	500	10	6	45	0.9	1.0	11	1.3	200	2.5	800	800	200	10	10	90	
7-10 yr.	28	62	132	52	34	700	10	7	45	1.2	1.4	16	1.6	300	3.0	800	800	250	10	10	120	
males																						
11-14 yr.	45	99	157	62	45	1,000	10	8	50	1.4	1.6	18	1.8	400	3.0	1,200	1,200	350	18	15	150	
15-18 yr.	66	145	176	69	56	1,000	10	10	60	1.4	1.7	18	2.0	400	3.0	1,200	1,200	400	18	15	150	
19-22 yr.	70	154	177	70	56	1,000	7.5	10	60	1.5	1.7	19	2.2	400	3.0	800	800	350	10	15	150	
23-50 yr.	70	154	178	70	56	1,000	5	10	60	1.4	1.6	18	2.2	400	3.0	800	800	350	10	15	150	
51+ yr.	70	154	178	70	56	1,000	5	10	60	1.2	1.4	16	2.2	400	3.0	800	800	350	10	15	150	
females																						
11-14 yr.	46	101	157	62	46	800	10	8	50	1.1	1.3	15	1.8	400	3.0	1,200	1,200	300	18	15	150	
15-18 yr.	55	120	163	64	46	800	10	8	60	1.1	1.3	14	2.0	400	3.0	1,200	1,200	300	18	15	150	
19-22 yr.	55	120	163	64	44	800	7.5	8	60	1.1	1.3	14	2.0	400	3.0	800	800	300	18	15	150	
23-50 yr.	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	18	15	150	
51+ yr.	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	10	15	150	
pregnancy					+30	+200	+5	+2	+20	+0.4	+0.3	+2	+0.6	+400	+1.0	+400	+400	+150	††	+5	+25	
lactation					+20	+400	+5	+3	+40	+0.5	+0.5	+5	+0.5	+100	+1.0	+400	+400	+150	††	+10	+50	

*The allowances are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined. See text for detailed discussion of allowances and of nutrients not tabulated. See preceding table for weights and heights by individual year of age and for suggested average energy intakes.

†Retinol equivalents: 1 retinol equivalent = 1 μg. retinol or 6 μg. β-carotene. See text for calculation of vitamin activity of diets as retinol equivalents.

‡As cholecalciferol: 10 μg. cholecalciferol = 400 I.U. vitamin D.

#α-tocopherol equivalents: 1 mg. d-α-tocopherol = 1 αT.E. See text for variation in allowances and calculation of vitamin E activity of the diet as α-tocopherol equivalents.

¶1 N.E. (niacin equivalent) = 1 mg. niacin or 60 mg. dietary tryptophan.

||The folacin allowances refer to dietary sources as determined by *Lactobacillus casei* assay after treatment with enzymes ("conjugases") to make polyglutamyl forms of the vitamin available to the test organism.

**The RDA for vitamin B₁₂ in infants is based on average concentration of the vitamin in human milk. The allowances after weaning are based on energy intake (as recommended by the American Academy of Pediatrics) and consideration of other factors, such as intestinal absorption; see text.

††The increased requirement during pregnancy cannot be met by the iron content of habitual American diets or by the existing iron stores of many women; therefore, the use of 30 to 60 mg. supplemental iron is recommended. Iron needs during lactation are not substantially different from those of non-pregnant women, but continued supplementation of the mother for two to three months after parturition is advisable in order to replenish stores depleted by pregnancy.

Estimated safe and adequate daily dietary intakes of additional selected vitamins and minerals*

age group	vitamins			trace elements†						electrolytes		
	vitamin K	biotin	pantothenic acid	copper	manganese	fluoride	chromium	selenium	molybdenum	sodium	potassium	chloride
	← μg. →			← mg. →								
infants												
0.0-0.5 yr.	12	35	2	0.5-0.7	0.5-0.7	0.1-0.5	0.01-0.04	0.01-0.04	0.03-0.06	115-350	350-925	275-700
0.5-1.0 yr.	10-20	50	3	0.7-1.0	0.7-1.0	0.2-1.0	0.02-0.06	0.02-0.06	0.04-0.08	250-750	425-1,275	400-1,200
children and adolescents												
1-3 yr.	15-30	65	3	1.0-1.5	1.0-1.5	0.5-1.5	0.02-0.08	0.02-0.08	0.05-0.1	325-975	550-1,650	500-1,500
4-6 yr.	20-40	85	3-4	1.5-2.0	1.5-2.0	1.0-2.5	0.03-0.12	0.03-0.12	0.06-0.15	450-1,350	775-2,325	700-2,100
7-10 yr.	30-60	120	4-5	2.0-2.5	2.0-3.0	1.5-2.5	0.05-0.2	0.05-0.2	0.1-0.3	600-1,800	1,000-3,000	925-2,775
11+ yr.	50-100	100-200	4-7	2.0-3.0	2.5-5.0	1.5-2.5	0.05-0.2	0.05-0.2	0.15-0.5	900-2,700	1,525-4,575	1,400-4,200
adults	70-140	100-200	4-7	2.0-3.0	2.5-5.0	1.5-4.0	0.05-0.2	0.05-0.2	0.15-0.5	1,100-3,300	1,875-5,625	1,700-5,100

*From Recommended Dietary Allowances, Revised 1980, Food and Nutrition Board, National Academy of Sciences—National Research Council. Because there is less information on which to base allowances, these figures are not given in the main table of the RDAs and are provided here in the form of ranges of recommended intakes.

†Since the toxic levels for many trace elements may be only several times usual intakes, the upper levels for the trace elements given in this table should not be habitually exceeded.

Mean heights and weights and recommended energy intake*

age and sex group	weight		height		energy		
	kg.	lb.	cm.	in.	needs		range in kcal
					MJ	kcal	
infants							
0.0-0.5 yr.	6	13	60	24	kg. × 0.48	kg. × 115	95-145
0.5-1.0 yr.	9	20	71	28	kg. × 0.44	kg. × 105	80-135
children							
1-3 yr.	13	29	90	35	5.5	1,300	900-1,800
4-6 yr.	20	44	112	44	7.1	1,700	1,300-2,300
7-10 yr.	28	62	132	52	10.1	2,400	1,650-3,300
males							
11-14 yr.	45	99	157	62	11.3	2,700	2,000-3,700
15-18 yr.	66	145	176	69	11.8	2,800	2,100-3,900
19-22 yr.	70	154	177	70	12.2	2,900	2,500-3,300
23-50 yr.	70	154	178	70	11.3	2,700	2,300-3,100
51-75 yr.	70	154	178	70	10.1	2,400	2,000-2,800
76+ yr.	70	154	178	70	8.6	2,050	1,650-2,450
females							
11-14 yr.	46	101	157	62	9.2	2,200	1,500-3,000
15-18 yr.	55	120	163	64	8.8	2,100	1,200-3,000
19-22 yr.	55	120	163	64	8.8	2,100	1,700-2,500
23-50 yr.	55	120	163	64	8.4	2,000	1,600-2,400
51-75 yr.	55	120	163	64	7.6	1,800	1,400-2,200
76+ yr.	55	120	163	64	6.7	1,600	1,200-2,000
pregnancy						+300	
lactation						+500	

*From Recommended Dietary Allowances, Revised 1980, Food and Nutrition Board, National Academy of Sciences—National Research Council, Washington, D.C. The data in this table have been assembled from the observed median heights and weights of children, together with desirable weights for adults for mean heights of men (70 in.) and women (64 in.) between the ages of eighteen and thirty-four years as surveyed in the U.S. population (DHEW/NCHS data).

Energy allowances for the young adults are for men and women doing light work. The allowances for the two older age groups represent mean energy needs over these age spans, allowing for a 2 per cent decrease in basal (resting) metabolic rate per decade and a reduction in activity of 200 kcal per day for

men and women between fifty-one and seventy-five years; 500 kcal for men over seventy-five years; and 400 kcal for women over seventy-five (see text). The customary range of daily energy output is shown for adults in the range column and is based on a variation in energy needs of ±400 kcal at any one age (see text and Garrow, 1978), emphasizing the wide range of energy intakes appropriate for any group of people.

Energy allowances for children through age eighteen are based on median energy intakes of children of these ages followed in longitudinal growth studies. Ranges are the 10th and 90th percentiles of energy intake, to indicate range of energy consumption among children of these ages (see text).