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I. **Nutrition Related Sections of Family Planning Initial History Form**

A. Medical History

1. Heart disease or high blood pressure:

a. Reduce sodium intake (pay attention to sodium content of foods and avoid canned vegetables, soups and frozen meals containing high amounts of sodium; do not add salt to foods or when cooking); increase calcium and potassium in the diet by having three or more servings of low-fat dairy foods and 8-10 servings of fruits and vegetables each day.

2. Migraine or frequent headaches:

a. Reduce or eliminate foods that cause migraines in sensitive individuals such as: tuna, mackerel, mahi-mahi, aged cheese (cheddar), red wine, chocolate, beer, hot dogs, bacon, ham, salami, some nuts and foods made with monosodium glutamate (MSG).

b. Avoid skipping meals, as fasting can increase the likelihood of a headache.

3. High cholesterol / triglycerides:

a. Reduce total dietary fat, saturated fat and cholesterol in diet. Encourage label reading.

b. Limit egg consumption to 3-4 yolks per week. Choose egg whites or egg substitutes instead.

c. Encourage fish intake to increase omega-3 fatty acids.

d. Increase fiber, especially soluble fibers found in oatmeal, apples and beans.

e. Increase physical activity.

f. Refer to nutrition protocols for high cholesterol for more detailed recommendations.

4. Iron deficiency anemia:

a. Encourage adequate intake of lean red meats, pork and lamb; include vitamin C-rich foods (citrus foods) with iron-rich foods to increase absorption.

b. If taking an iron supplement, take with vitamin C-rich foods and avoid taking with dairy products or calcium supplements.

c. Refer to nutrition protocols for anemia for more detailed recommendations.

5. Gall bladder disease:

a. Oral contraceptives and estrogen may increase risk of gallbladder disease after years of use.

b. Lose excess weight, if needed. Avoid rapid weight loss.

c. Chronic gallbladder disease may need to limit total dietary fat.

      d.   Limit gas-producing foods such as cabbage, cauliflower, broccoli, beans, onions, etc.

    6.   Diabetes:

      a.   Refer to Section X on Diabetes (page 19).

B.   Personal Nutritional Information

Food	Recommended servings	Serving Sizes	Comments:
Milk, cheese and other dairy products	3-4 9-18 years: 1300 mg 19-50 years:1000 mg	8 oz. milk or calcium-fortified juice, 8 oz. yogurt, 1 ½-2 oz. cheese	Good sources of calcium. Especially important for women taking Depo-Provera due to risk of decreased bone mineral storage and bone loss. Young women need higher amounts due to growth & development.
Meat, fish, poultry, eggs and beans	2-3	3 oz. meat or fish; 1 egg; ½ cup beans	Good sources of protein and minerals like iron. Choose lean meats to decrease intake of fat and cholesterol.
Fruits and vegetables	At least 5 serving of fruits and/or vegetables per day	1 med. piece fresh fruit, ½ cup canned or frozen fruit, ½ cup cooked vegetables, 1 cup leafy greens, ¼ cup dried fruit, 4 oz. juice	Fresh fruits and vegetables are a good source of fiber and may help with weight regulation. Provide vitamins and folate in citrus and dark green vegetables. Limit juice consumption due to high calorie content.
Breads, cereals and grains	6-11	1 slice bread, ½ cup cooked cereal or pasta, ¾ cup ready to eat cereal	Fortified cereals are an excellent source of folic acid and iron. Whole grain products (whole wheat bread, oatmeal, etc.) may help with weight regulation due to higher fiber content.
Chips, crackers, french fries, desserts, ice cream, candy, cake, cookies, pies	Limit		Limit consumption due to high fat and calorie content, especially for women taking OC or Depo due to risk of weight gain. Women with diabetes need to limit due to high carbohydrate content and need for optimal glucose control by limiting carbohydrate intake.
Caffeine	Limit	6 oz. coffee or tea; 12 oz. soft drink	Flavored teas and specialty coffees are higher in calories than brewed tea or coffee and may result in weight gain. Avoid or limit caffeine intake during pregnancy

1. How often do you skip meals?

   - Refer to section on weight management for safe and effective strategies for weight loss.

2. Is your weight just about right, too heavy or too thin?

   - Helpful in determining healthful body image. Refer to appropriate nutrition sub-sections on weight management.

3. Have you ever vomited or used laxatives to lose weight?

   - References to possible eating disorder. Refer to weight sub-sections.

4. Are you on a special diet?

   - Refer to sub-sections on diabetes and cholesterol.

5. Are you taking vitamins, iron, folic acid or calcium or any weight loss or herbal preparations?

   - Refer to appropriate sub-sections in nutrition section.

II. General Nutrition / Diet Screening Methods

A. Background

Diet screening helps determine if a client's nutrition intake is adequate and highlights areas for improvement. A simple diet screening tool is the 24-hour recall, which provides information about current eating patterns, foods commonly consumed, cultural dietary practices and use of dietary supplements based on food choices over the past 24 hours.

B. 24-Hour Food Recall

The 24 hour food recall provides a way to quickly screen individuals for possible nutrition deficiencies. A full nutrition assessment collects more detailed information using tools such as a multi-day food intake record and biochemical testing.

To complete the 24-hour recall, the individual writes down or tells the interviewer everything consumed in a 24-hour period. This tool depends on the patient's memory and accurate estimate of portion sizes, which is a disadvantage. Take into consideration individual diets vary day to day. When analyzing the diet, ask if the intake on the day reported reflects a typical day or if the intake was unusual because of a special occasion, illness or another infrequent event.

To evaluate the diet, compare the number of servings eaten in each food group to the recommended number of servings for each group (see US Department of Agriculture (USDA) 2010 Dietary Guidelines for Americans section below). Prioritize areas needing improvement and provide suggestions on ways to improve.

C. **The USDA 2010 Dietary Guidelines for Americans**

http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/PolicyDoc/PolicyDoc.pdf

Key Recommendations:

1. Foods and nutrients to increase

a. Individuals should meet the following recommendations as part of a healthy eating pattern while staying within their calorie needs.

b. Increase vegetable and fruit intake.

c. Eat a variety of vegetables, especially dark-green and red and orange vegetables and beans and peas.

d. Consume at least half of all grains as whole grains. Increase whole-grain intake by replacing refined grains with whole grains.

e. Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese or fortified soy beverages.

f. Choose a variety of protein foods, which include seafood, lean meat and poultry, eggs, beans and peas, soy products and unsalted nuts and seeds.

g. Increase the amount and variety of seafood consumed by choosing seafood in place of some meat and poultry.

h. Replace protein foods that are higher in solid fats with choices that are lower in solid fats and calories and/or are sources of oils.

i. Use oils to replace solid fats where possible.

j. Choose foods that provide more potassium, dietary fiber, calcium and vitamin D, which are nutrients often deficient in American diets. These foods include vegetables, fruits, whole grains and milk and milk products.

2. Foods and food components to reduce

a. Reduce daily sodium intake to less than 2,300 milligrams (mg) and further reduce intake to 1,500 mg among persons who are 51 and older and those of any age who are African American or have hypertension, diabetes or chronic kidney disease. The 1,500 mg recommendation applies to about half of the U.S. population, including children and the majority of adults.

b. Consume less than 10 percent of calories from saturated fatty acids by replacing them with monounsaturated and polyunsaturated fatty acids.

c. Consume less than 300 mg per day of dietary cholesterol.

d. Keep trans fatty acid consumption as low as possible by limiting foods that contain synthetic sources of trans fats, such as partially hydrogenated oils, and by limiting other solid fats.

e. Reduce the intake of calories from solid fats and added sugars.

f. Limit the consumption of foods that contain refined grains, especially refined grain foods that contain solid fats, added sugars and sodium.

g. If alcohol is consumed, it should be consumed in moderation—up to one drink per day for women and two drinks per day for men—and only by adults of legal drinking age.

3. Recommendations for specific population groups:

a. Women capable of becoming pregnant

      b. **Choose foods that supply heme iron, which is more readily absorbed by the body, additional iron sources, and enhancers of iron absorption such as vitamin C-rich foods.**

      c. **Consume 400 micrograms (mcg) per day of synthetic folic acid (from fortified foods and/or supplements) in addition to food sources of folate from a varied diet.**

4. **Women who are pregnant or breastfeeding**

      a. **Consume 8 to 12 ounces of seafood per week from a variety of seafood types.**

      b. **Due to their high methyl mercury content, limit white (albacore) tuna to 6 ounces per week and do not eat the following four types of fish: tilefish, shark, swordfish, and king mackerel.**

      c. **If pregnant, take an iron supplement, as recommended by an obstetrician or other health care provider.**

5. **Individuals ages 50 years and older**

      a. **Consume foods fortified with vitamin B12, such as fortified cereals, or dietary supplements**

6. **Building healthy eating patterns:**

      a. **Select an eating pattern that meets nutrient needs over time at an appropriate calorie level.**

      b. **Account for all foods and beverages consumed and assess how they fit within a total healthy eating pattern.**

      c. **Follow food safety recommendations when preparing and eating foods to reduce the risk of foodborne illnesses.**

D.   The Food Groups

A range of servings is suggested for each major food group, as the number of servings needed for an individual will vary depending on age, gender, weight and activity level. Foods are divided into five basic groups. **See: http://www.choosemyplate.gov/**

- Grains (breads, cereals, rice, pasta)
- Vegetables
- Fruits
- Protein foods (meat, poultry, fish, beans, eggs and nuts)
- Dairy (milk, yogurt, cheese)

Foods are grouped together because they are good sources of similar nutrients. Serving sizes are adjusted so that a serving of any food within a group supplies similar amounts of nutrients. Thus, foods within a group may be "exchanged" for one another and the average quality of the diet will remain adequate.

E.   Counseling Points:

   1.   Eat a variety of foods every day and at least 5 servings of fruits and/or vegetables each day.

   2.   Drink at least 8 glasses of water each day.

   3.   Avoid having too many beverages with caffeine or alcohol.

   4.   Lose weight if you need to. Cut down on portion size to save calories.

   5.   Do not skip meals. You may eat too much at the next meal or later in the day if you do.

   6.   Use less added fat, sugar and salt.

   7.   Choose low-fat dairy products and lean meats.

   8.   Eat high fiber foods like vegetables, fruits, whole grains and beans more often.

   9.   Modify dietary recommendations according to an individual's dietary practices. A person's income level, cultural background, religious beliefs, climate, geographic location, agricultural conditions and philosophical attitudes toward food can all influence his or her eating habits. Pay special attention to cultural considerations. Discuss the participant's favorite or typical foods and ways to incorporate these foods into a balanced diet.

   10. Provide affordable suggestions for good nutrition and refer to appropriate food assistance programs (food banks, Food Stamps, WIC) for low-income participants.

III.   Nutrition Considerations of Various Contraceptives

   Refer to patient information sheets for more detailed information.

A.   Oral Contraceptives

   1.   Oral contraceptives have been shown to cause a decrease in glucose tolerance in some users. However, in a woman without diabetes, oral contraceptives appear to have no effect on fasting blood glucose. Because of these demonstrated effects, carefully monitor women with pre-diabetes and diabetes while taking oral contraceptives.

   2.   A small proportion of women will have persistent hypertriglyceridemia (high triglyceride levels) while on the pill. Some progestins may increase LDL ("bad cholesterol") levels. Refer to cholesterol and triglyceride guidelines (page 21) for suggestions on how to improve lipid levels.

   3.   Oral contraceptives may cause fluid retention.

B.   Paraguard/IUD®

   Women using the Paraguard/IUD® may be at risk of anemia. Refer to iron-deficiency anemia guidelines (page 15) for suggestions on how to increase iron intake.

C.   Depo-Provera®

   1.   Women using Depo-Provera® may be at risk of decreased bone mineral storage and increased mineral loss. Studies show this loss to be reversible after discontinuation of method. Women who wish to remain on this method beyond

two years must be counseled about the potential risks and about other available methods of birth control. This counseling must be documented in the woman's chart.

2. Supplementation of 1000 to 1200 mg of calcium may help to counteract this.

3. Women may also experience weight gain at an average gain of 4 pounds per year. Weight gain continues annually with continued use. Refer to weight management guidelines (page 8) for suggestions on how to avoid weight gain.

IV. Weight Assessment

A. Body Mass Index (BMI)

Body mass index describes relative weight for height and is significantly correlated with total body fat content, but cannot be interpreted as a certain body fat percentage. BMI is commonly used to classify underweight, normal weight, overweight and obesity in adults and to monitor changes in body weight.

B. Calculating BMI

1. <u>English</u>

BMI = [weight in pounds ÷ height in inches ÷ height in inches] x 703

Example: A person weighing 210 pounds and 6 feet tall would have a BMI = 210 pounds ÷ by 72 inches ÷ by 72 inches multiplied by 703 = 28.5

2. <u>Metric</u>

BMI = weight in kilograms ÷ height in meters^2

Example: A person weighing 95.3 kilograms and 182.9 centimeters tall would have a BMI = 95.3 kg ÷ by [182.9 cm x .01 to convert to meters] 2 = 28.5

3. <u>Conversion Table or BMI Wheel</u>

Tools are available for calculating BMI using conversion tables or a BMI wheel. **BMI wheels can be ordered for free from http://www.healthy-baby.org/index.html Select the health care professionals tab.**

C. Classification of weight status for non-pregnant & pregnant adults

In May 2009, the Institute of Medicine adopted the same standards for classifying weight status for pregnant women as for non-pregnant women.

Weight status	BMI value (kg/m^2)
Underweight	< 18.5
Normal	18.5 – 24.9
Overweight	25.0 – 29.9
Obese	$\geq$ 30.0
Obese class I	30.0 – 34.99
Obese class II	35.0 – 39.99
Obese class III	$\geq$ 40

(Source: World Health Organization:
http://apps.who.int/bmi/index.jsp?introPage=intro_3.html)

D.   Classification of weight for adolescents < 20 years of age

Use of the 2000 CDC revised sex-specific growth grids with BMI is recommended for this population as body composition is still developing. Calculation of BMI value is the same as for adults; however the weight status associated with the BMI value differs and is correlated to growth percentiles.

Weight Status	Growth Percentile
Underweight	< 5th percentile
Healthy Weight	5th percentile to less than the 85th percentile
Overweight	85th-to less than the 95th percentile
Obese	$\geq$ 95th percentile

(Source: 2000 CDC Growth Charts: United States Body mass index-for-age percentiles: Boys, 2 to 20 years Body mass index-for-age percentiles: Girls, 2 to 20 years at http://www.cdc.gov/growthcharts/) Also see (http://www.cdc.gov/healthyweight/assessing/bmi/childrens_BMI/about_childrens_BMI.html#How is BMI calculated)

V.   Overweight & Obesity - Promoting Weight Loss

A.   Definition & Background

Overweight is defined as having a body mass index (BMI) greater than or equal to 25.0 kg/m^2. Obesity is defined as having a BMI greater than or equal to 30 kg/m^2.

Intervention when BMI is between 25-30 kg/m^2 is an optimal time to promote lifestyle changes to avert negative health consequences associated with higher BMI values. Obesity is associated with a number of health conditions such as coronary heart disease, type 2 diabetes, stroke and some cancers (including colon, endometrial, and breast cancer). Gynecological problems such as abnormal periods and infertility are also associated with obesity in women, as are adverse pregnancy outcomes including: birth defects, infants who are large for gestational age, fetal and neonatal death, labor and delivery complications and maternal complications (such as hypertension, gestational diabetes and preeclampsia).

B.   Advantages to Losing Weight

Improved health can be achieved with even small weight changes (i.e. a reduction of 10% of body weight or 2-4 points lower BMI value).

1.   _Lower blood pressure_ in overweight and obese individuals with high blood pressure

2.   _Lower total cholesterol, low-density lipoproteins (LDLs) and triglycerides_ while raising high-density lipoproteins (HDLs) in individuals with abnormal blood lipid levels

3.   _Lower blood glucose levels_ in overweight and obese individuals with type 2 diabetes

C.   Weight Loss Goals

Set realistic and attainable goals.

1.   Initial goal of 10% reduction (2-4 BMI points) of weight from baseline

2.   Weight loss of 1-2 pounds/week for 6 months

3.   Decreased waist circumference

D.   Weight Loss Strategies

1.   Choose Healthier, Low-Calorie Foods

a.   Excessive calories, regardless of diet composition (carbohydrate, protein, fat) promote weight gain.

b.   A low-calorie diet that decreases caloric intake by 500 to 1,000 kcal/day below underline intake is the basis for individuals wanting to lose 1-2 pounds/week.

c.   Reducing dietary fat without reducing overall calories is not sufficient for weight loss. Reducing dietary fat, which is a concentrated source of calories, in addition to reducing total calories, can facilitate weight loss. Reduced-fat products may not be lower in calories than the full-fat versions; check the label.

2.   Avoid Fad Diets

Fad diets typically promote quick weight loss, yet fall short on long-term weight loss success. The following is a short overview of some common fad diets (adapted from the American Dietetic Association).

a. <u>Food-specific diets</u>: Some diets tout one food with special properties that can cause weight loss. Eating just one food while excluding others can result in weight loss because eating the same food becomes boring and people end up not eating the food or enough to maintain their weight. These diets don't teach healthy eating habits and are usually not nutritionally balanced.

b. <u>High-protein, low-carbohydrate diets</u>: These diets are based on the idea that carbohydrate is bad and that many people are insulin-resistant which causes them to gain weight when they eat it. Authors of these diets are quick to point out that people eating more carbohydrates--which nutrition professionals recommend--are heavier than before. What they don't say is that people are eating **more** calories, which is the **real** reason they are gaining weight.

c. <u>High-fiber, low-calorie diets</u>: Fiber-rich foods are an important part of a healthy eating plan and they can be very helpful for people trying to lose weight. Fiber-rich foods are filling and because fiber cannot be digested, it does not have calories, although too much is not always better. Eating more than 50 or 60 grams of fiber a day can cause cramping, bloating and diarrhea. Eating lots of fiber does not guarantee weight loss. The only thing that will cause weight loss is eating fewer calories.

d. <u>Liquid diets</u>: There are over-the-counter liquid meal replacements and very low calories diets that require medical prescription and supervision. These should not be used for long-term weight loss **as weight loss** actually plateaus after three months. Both regimens serve a short-term purpose, however, they don't teach good life-long habits.

e. <u>Fasting</u>: For years, fasting has been a way to cleanse the body or to start a weight-loss program. Actually, fasting just deprives your body of nutrients. You end up with low energy, weakness and lightheadedness--not weight loss. And when carbohydrates are not available for energy, ketones can build up and stress the kidneys, which can be harmful to your health.

3. Exercise

a. Recommend exercise as a part of the weight loss strategy and weight management program. Exercise will contribute to weight loss, decrease abdominal fat, increase cardiovascular fitness and help with weight maintenance once weight loss goals are achieved.

b. To initiate weight loss, recommend moderate activity for 30 minutes or more 5 days per week. The long-term goal should be to incorporate 30 minutes or more of moderate activity on most days of the week.

4. Pharmacotherapy

FDA-approved weight loss drugs may be part of a comprehensive weight loss program including diet and physical activity for patients with a BMI $\geq$ 30 kg/m^2 with no other risk factors, or those with a BMI of $\geq$27 kg/m^2 with concomitant obesity-related risk factors or disease. Drug therapy should never be used without lifestyle modification.

5. Weight Loss Surgery

Weight loss surgery is only an option in carefully selected patients with clinically severe obesity classified as a BMI $\geq$ 40 kg/m^2 or $\geq$35 kg/m^2 with comorbid conditions. Weight loss surgery should only be an option after less invasive methods have failed and patient is at high risk for obesity-associated morbidity or mortality.

E. Counseling Points:

1. Eat a variety of foods every day

2. Limit the fat in your diet: avoid fried foods, whole milk, extra sauces and gravies; remove visible fat and skin from meats and poultry, bake, broil or grill meats.

3. Avoid too many sweets: these foods are high in calories and low in nutrients.

4. Don't drink your calories. While juice provides nutrients missing in soft drinks, juices are calorically dense. A serving size of juice is only 4 ounces. Eliminating two regular soft drinks daily will result in a half pound of weight loss per week!

5. Increase fruit and vegetable consumption to at least 5 servings per day. Take veggies for a snack or try a fruit salad for dessert.

6. Increase fiber in the diet. Fiber creates a feeling of fullness in addition to other health benefits. Fiber is found in fruits, vegetables and whole grains like oatmeal, whole wheat bread and brown rice.

F. Nutrition Care Plan

Document assessment, education, client's behavior change goal, referral, and follow up if needed.

G. Referral

Refer to a reputable community weight loss program or dietitian for follow-up care. Beware of weight loss programs requiring purchase of special foods or pills, fraudulent claims and high costs. Some hospitals offer weight management programs.

VI.   Underweight

A. Definition & Background

Underweight is defined as having a body mass index (BMI) less than 18.5 kg/m^2. Being underweight is not an absolute indicator of health status. It is possible to be healthy and have a lower than normal BMI value. It is also possible the individual may have an eating disorder, poor knowledge of sound eating practices or an undiagnosed illness. Women with low a BMI may experience amenorrhea or fertility problems. Weight gain may assist with regulation of menstrual cycle and fertility. Women who are underweight before pregnancy are at greater risk for delivering a low birth weight baby.

B. Eating Disorders

Eating disorders can have serious health effects and can be life threatening.

1. **Anorexia Nervosa:** characterized by a refusal to maintain a normal weight; intense fear of fatness even when underweight; absence of menstrual periods; defensiveness or withdrawal when asked about diet and weight.

2. **Bulimia Nervosa:** persistent over concern with weight and appearance; repeated episodes of binge eating followed by purging with vomiting, laxatives or extreme exercise; food restriction when not bingeing; feelings of loss of control while bingeing; in some cases other impulse control problems are present such as shop lifting, abuse of alcohol or drugs and casual sex.

C. Counseling Points

1. Discuss weight concerns with client and determine if body image is distorted.

2. Discuss how weight status can effect pregnancy planning.

3. Review dietary intake for adequacy.

4. Evaluate other lifestyle factors contributing to underweight status such as smoking, excessive exercise or lack of food resources.

5. Discuss increased caloric intake and choosing nutritious foods with higher calories (ex: cheese, 2% milk, nuts) to increase weight gain.

D. Nutrition Care Plan

Document assessment, education, client's behavior change goal, referral, and follow up if needed.

E. Referral

1. If an eating disorder is suspected, refer client to primary care giver and a mental health provider. For more information on eating disorder treatment, go to the website for the Eating Disorder Center of Denver: http://www.edcdenver.com/.

2. Refer to food resources when appropriate such as food banks, Food Stamps or the Women, Infants and Children (WIC) program.

VII.   Folate / Folic Acid

A. Background

Folate is the water-soluble B vitamin naturally occurring in foods. Water-soluble vitamins are not stored in the body for long periods of time and need to be taken daily. Folic acid is the oxidized form found in vitamins and fortified foods. Folic acid from supplements is more readily absorbed than from natural sources.

Folic acid helps prevent birth defects of the brain and spine (neural tube defects), but must be taken <u>before</u> a woman is pregnant and during the first few weeks of pregnancy when these important organs are forming. Folic acid may also assist in the prevention of heart disease and cervical cancer.

B. Requirements

The Centers for Disease Control and Prevention recommends all women of childbearing age capable of becoming pregnant consume 400 micrograms (0.4 mg) of folic acid every day, starting at least one month before getting pregnant, to reduce the risk of spina bifida or other neural tube defects. Inform women of this recommendation during the following visits:

1. Initial or annual visit in family planning clinics.

2. Postpartum visit in prenatal or family planning programs.

3. Postpartum or breastfeeding women seen in any program.

4. Preconception counseling

All women should receive counseling about foods rich in folic acid and how to incorporate them into their diet.

C. History of Neural Tube Defects

Women 1) with a history of pregnancy affected by a neural tube defect or spina bifida, or 2) who have spina bifida themselves, and who are planning on becoming pregnant, need to see their doctor for a prescription for 4000 micrograms (4.0 mg). This may be helpful in reducing the chance of a neural tube defect in future pregnancies. The folic acid dose should be obtained from pills containing only folic acid. Multivitamin (over-the-counter and prescription) preparations containing folic acid should <u>not</u> be used to attain the 4000 micrograms (4.0mg) dose because harmful levels of vitamins A and D could also be taken. High doses of folic acid may complicate the diagnosis of vitamin B12 deficiency.

D. Food Sources of Folate

Meat and Meat Alternate Group	Folate (mcg)
Lentils (2 cup)	179
Black-Eyed Peas (2 cup)	178
Kidney Beans (2 cup)	115
Lima Beans (2 cups)	75
Peanuts (1 oz.)	41

Bread and Cereal Group	Folate (mcg)
Ready to Eat Fortified Cereal (3/4 cup)	400
Ready to Eat Cereal (3/4 cup)	100
Whole Wheat Bread (1 slice)	14

Fruit and Vegetable Group	Folate (mcg)
Spinach (2 cup)	131
Brussel Sprouts (2 cup)	79
Broccoli (2 cup)	54
Orange juice (4 oz.)	54
Peas (2 cup)	51
Orange (1 medium)	47
Corn (2 cup)	38
Okra (2 cup)	37
Banana (1 medium)	22

E.   Counseling Points:

1.   Eat a diet rich in folic acid including enriched cereals, orange juice, spinach, broccoli, beans, black-eyed peas, garbanzo beans and lentils.

2.   Take a multivitamin containing folic acid daily. Most multivitamins contain 4 mcg (0.4 mg) of folic acid, but check the label. Take vitamin at the same time as brushing teeth, eating breakfast or other established habit to ensure this becomes part of the daily routine.

F.   Nutrition Care Plan

Document assessment, education, client's behavior change goal, referral, and follow up if needed.

VIII.   Anemia

A.   Background

Although anemia is most frequently associated with iron deficiency, it may also be caused by other nutritional deficiencies (e.g., folate, vitamin B12), infection, chronic disease, protein-calorie malnutrition, hemoglobinopathies or blood loss. Iron and folate deficiency are the most common causes of anemia during the reproductive period. The mean corpuscular volume (MCV) can help distinguish between iron and folate deficiency. A low MCV suggests iron deficiency anemia, whereas a high MCV suggests folate deficiency anemia. Another possible, but less likely, cause of anemia is vitamin B12 deficiency. A serum vitamin B12 level should be determined for women who do not eat meat, fish, poultry, eggs or milk products.

Iron is needed to form hemoglobin, which assists in carrying oxygen to cells and carbon dioxide back to the lungs. Iron deficiency ranges from iron depletion, with no physiological impairments, to iron deficiency anemia, the final and most severe stage of iron deficiency. If an iron deficiency exists, then sufficient amounts of hemoglobin are not formed and the final result is that less oxygen is carried to all parts of the body causing iron-deficiency anemia. It is characterized by the production of smaller, light-colored red blood cells. A client who is anemic will look pale, and be tired, listless and irritable. The client may also report decreased appetite, headaches, or dizziness. She/he may also report decreased appetite, headaches, and dizziness. Iron deficiency anemia in the first and second trimesters of pregnancy has been associated with an increased risk of prematurity and low birth weight. **The screening of men for iron deficiency anemia is not addressed by the US Preventative Services Taskforce.**

B.   Assessment of iron deficiency anemia

Hematocrit values for anemia for women > 12 years of age[1]

Altitude (Feet)	Hematocrit (%)	Cigarette smoking	
		<1 pack/day	> 1 pack/day
		Hematocrit (%)	
3,000-4,999	<37%	<38%	<39%
5,000-6,999	<38%	<39%	<40%
7,000-7,999	<39%	<40%	<41%
8,000-8,999	<40%	<41%	<42%
9,000-9,999	<41%	<42%	<43%
>10,000	<42%	<43%	<44%

C.   Iron recommendations

The Daily Reference Intake (DRI) for women 19-50 years of age (or until menopause) is 18 mg/day (males: 8 mg/day) and increases to 27 mg/day in pregnancy.

D.   Food Sources

There are two forms of iron: heme and non-heme. Meats have a higher percentage of heme iron than non-heme iron, which is found in plant foods. Vitamin C has been shown to improve iron absorption. Iron absorption can be negatively affected by calcium (found in dairy products), tannins and polyphenols (found in tea, coffee and red wine) and phytates (found in wheat bran and soy).

1.   Iron-rich Foods

Liver, beef, pork, lamb, turkey, chicken, fish

Iron-fortified cereals, whole grain cereals and breads

Cooked beans and lentils, cooked greens, dried apricots, raisins

2.   Vitamin C-rich foods

Citrus fruits and juices, tomatoes, strawberries, melons, dark green leafy vegetables, potatoes

E.   Counseling Points

1.   Review good sources of iron in the diet and those containing vitamin C to increase absorption.

2.   If taking iron supplements, avoid taking them with dairy products, coffee, tea, wheat bran and soy products.

3.   To avoid side effects from supplements, take them with meals.

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[1] Centers for Disease Control and Prevention. Recommendations to prevent and control iron deficiency in the United States. MMWR 1998;47:1-29

F.   Nutrition Care Plan

Document assessment, education, client's behavior change goal, referral, and follow up if needed.

G.   Referral

Refer to a care provider who can provide supplementation. The treatment of iron deficiency anemia requires iron supplementation and dietary counseling to prevent recurrence.

IX.   Calcium

A.   Background

Calcium is a mineral needed for healthy development of teeth, bones, transmission of nerve impulses, blood clotting and prevention of hypertension. Low calcium intake can contribute to osteoporosis. Estrogen loss due to menopause or ovarian removal contributes to accelerated bone loss and osteoporosis.

Calcium supplements such as calcium carbonate or calcium citrate can be used, if dairy products are not tolerated or, if unable to consume recommended amount of calcium through the diet alone. Most supplements are in the form of calcium carbonate, which is best absorbed when taken with other foods. Calcium citrate does not require a meal for absorption. Adequate amounts of vitamin D are needed to promote calcium absorption. Vitamin D is found in fortified milk, egg yolk, tuna and salmon. The body also produces Vitamin D after exposure to sunlight. Only short time periods of exposure each day are needed.

B.   Risk Factors / Assessment

1.   Family history of osteoporosis

2.   Low calcium intake

3.   High alcohol use

4.   Smoking

5.   Underweight or short stature

6.   Review dietary intake and use of calcium supplements. Evaluate client's alcohol consumption and/or cigarette use.

C. Calcium Needs

AGE GROUP	REQUIRED AMOUNTS	NUMBER OF SERVINGS*
Adolescents ages 9-18	1300 mg	4-5
Adults 19-50	1000 mg	3-4
Pregnant or lactating	1000 mg	3-4
Adults ages 51 and up	1200 mg	4
Menopausal taking estrogen	1000 mg	3-4
Menopausal not taking estrogen	1500 mg	5

   Examples of one serving: 1 cup milk, yogurt, or calcium-fortified juice; 1 ½ oz. natural cheese, 2 oz. processed cheese

D. Calcium content of various foods in milligrams (mg)

   1 cup calcium fortified juice = 400

   1 cup plain nonfat yogurt = 452   1 cup low-fat fruit yogurt = 330

   3 oz sardines, canned, with bones = 372   3 oz salmon with bones = 187

   ½ cup almonds = 166   1/2 cup Brazil nuts = 130

   1 cup tofu =130   1 cup refried beans 140

   1 cup turnip greens = 249   1 cup collard greens = 358

   1 cup broccoli = 94

E. Counseling Points

   1. Aim for 3-4 servings of foods high in calcium each day.

   2. Limit caffeine and alcohol consumption.

   3. Avoid excessive protein intake, which can cause increased calcium excretion promoting bone loss.

   4. Weight-bearing exercise such as walking, jogging, aerobics or weight lifting can help with calcium absorption in the bones.

   5. Use calcium supplements with added vitamin D, if needed, to meet required daily amounts.

   6. Discuss the importance of all of the above for women using Depo-Provera®. Reassess risks vs. benefits of remaining on Depo-Provera® after two years of continuous use.

F.   Lactose Intolerance

More than two-thirds of non-white and up to 20 percent of white American adults have trouble digesting lactose, the carbohydrate naturally found in milk. Lactose intolerance is characterized by symptoms of gas, cramps, bloating or diarrhea when products containing lactose are consumed. Individuals will display varying degrees of lactose intolerance. Many can consume up to a cup of milk at a time without experiencing symptoms. Lactose tolerance tends to improve during pregnancy. Cooking with dairy products often helps with digestion (cooked pudding, cream soups etc.).

Over the counter products such as Lactaid® tablets or dairy products can also be helpful. Soy beverages may be fortified with calcium, check the label.

1.   Try small servings, ex: 4 ounces of milk several times a day. Whole milk may be better tolerated than low-fat or skim milk. Taking milk with other foods often helps avoid symptoms.

2.   Try yogurt containing active, live cultures.

3.   Try aged hard cheese such as cheddar cheese, although cheese contains less lactose than milk.

4.   Use milk in cooking soups, puddings or casseroles.

G.   Nutrition Care Plan

Document assessment, education, client's behavior change goal, referral and follow up if needed.

H.   Referral

If client has a positive family history of osteoporosis, or if she is concerned about risk factors, refer to her private physician.

X.   Diabetes

A.   Background

Diabetes is a disease in which the body does not produce or properly use insulin. Insulin is a hormone that is needed to convert sugar, starches and other food into needed energy. Genetics and environmental factors such as obesity and lack of exercise may predispose an individual to diabetes. There are three types of diabetes:

1.   **Type 1** - the body does not produce any insulin; occurs most often in children and young adults; requires daily insulin injections: accounts for 5 to 10 percent of diabetes.

2.   **Type 2** - the body either does not make enough insulin or does not use it properly; the most common form of diabetes; accounts for 90 to 95 percent of diabetes; nearing epidemic proportions; increasing rates among youth; greater prevalence among individuals with obesity and sedentary lifestyles.

3.   **Gestational Diabetes (GDM)** – any degree of glucose intolerance with onset or first recognition during pregnancy; occurs in up to 7 percent of all pregnancies; increased risk for developing GDM if: obese, past pregnancy with GDM or GDM-related obstetric complications, high-risk ethnic group (Hispanic, African American and Native American), age > 35 years, previous macrosomic infant,

first degree relative with diabetes, polycystic ovary syndrome or glycosuria; GDM resolves with delivery, however the risk of developing Type 2 diabetes is significantly increased. Women with Type 1 or 2 diabetes, who have poor glucose control at the beginning of the pregnancy, are at greater risk for congenital malformations and other pregnancy-related complications.

B.   Nutrition Guidance

   1.   All foods contain carbohydrate, protein, fat or a combination of these three macro nutrients. Carbohydrates are found in fruits; grain products (breads, pastas, cereals); dairy products; starchy vegetables (peas, corn, potatoes) and foods with added sugar, like desserts or soft drinks. Carbohydrates are the preferred source of energy and are converted to glucose with digestion. Balancing carbohydrate intake throughout the day will help regulate glucose values.

   2.   The misconception that people with diabetes cannot have sweets is no longer true. The type of carbohydrate, whether from fruit or candy, does not affect rate of absorption or peak of blood glucose value, but rather the amount of carbohydrate effects blood glucose values. Therefore, those with diabetes can enjoy small servings of sweets, if they adjust their meals for additional sources of carbohydrate.

   3.   Modest weight loss of even 10-20 pounds can improve blood glucose control.

   4.   Nutrition and diet education are essential management tools for diabetes management. Refer to the appropriate resources: dietitian, physician and/or certified diabetes educator, when appropriate.

C.   Counseling Points

   1.   Eat a variety of foods from all food groups.

   2.   Do not skip meals and try to eat similar amounts of food for breakfast, lunch and dinner rather than one or two large meals.

   3.   Choose sugar in moderation. Use foods made with sugar substitutes to save calories and assist with blood glucose levels.

   4.   Eat fewer fried and fatty foods. Select leaner cuts of meat and trim off excess fat. This can also help with weight management and heart disease.

   5.   Lose weight if you need to. Even losing 10-15 pounds can improve blood glucose control.

   6.   Exercise. This can help you lose weight and can also help the body regulate blood glucose levels by pulling glucose into your muscles for energy.

D.   Nutrition Care Plan

Document assessment, education, client's behavior change goal, referral, and follow up if needed.

E.   Referral

Clients with abnormal or high blood glucose values should be referred to their primary care physician for follow up care.

F.   Additional Resources

The American Diabetes Association — www.diabetes.org

The American Dietetic Association — www.eatright.org

Diabetes Clinical Guidelines
http://care.diabetesjournals.org/content/34/Supplement_1

Gestational Diabetes Clinical Guidelines
http://www.cdphe.state.co.us/pp/womens/gestationalDiabetes.html

XI.   Cholesterol and Triglycerides

A.   Background

There are an estimated 102.3 million American adults with a total blood cholesterol value of 200 mg/dL and higher and about 41.3 million American adults with levels of 240 mg/dL or above.

High blood cholesterol can lead to plaque formation within the arteries obstructing blood flow to the heart, brain or other vital organs resulting in a heart attack or stroke. High blood cholesterol is a modifiable risk factor for heart disease and can be controlled through diet, exercise and/or medication.

Triglycerides are fats derived from food eaten or made in the body from excess carbohydrates. High triglycerides are linked to coronary artery disease and untreated diabetes. Triglycerides can be lowered through weight reduction, reduced alcohol intake and reducing total saturated fat and cholesterol in the diet.

B.   Cardiovascular Risk Factors

1.   65 years of age or older

2.   male gender

3.   heredity and race

4.   Modifiable risk factors

a.   tobacco smoke

b.   high blood cholesterol

c.   high blood pressure

d.   physical inactivity

e.   overweight and obesity

f.   diabetes

C.   National Cholesterol Education Program Guidelines

It is preferable to measure both high-density lipoprotein (HDL) cholesterol as well as total cholesterol. If total cholesterol is 200 mg/dL or higher or HDL cholesterol is less than 40 mg/dL, a lipoprotein profile should be done and client should be referred to a care provider for follow-up testing and evaluation. The following lab results are for those with no more than one risk factor for heart disease. Those with additional risk factors have stricter cut off values.

Cholesterol and Triglycerides		
Total cholesterol	Desirable:	• less than 200 milligrams/deciliter (mg/dL)
	Borderline high:	• 200–239 mg/dL
	High:	• 240 mg/dL and greater
HDL cholesterol	High (desirable):	• greater than 60 mg/dL
	Acceptable:	• 40–60 mg/dL
	Low:	• less than 40 mg/dL
LDL cholesterol	Optimal:	• less than 100 mg/dL
	Near optimal:	• 100–129 mg/dL
	Borderline high:	• 130–159 mg/dL
	High:	• 160–189 mg/dL
	Very high:	• 190 mg/dL and greater
Triglycerides	Normal:	• less than 150 mg/dL
	Borderline high:	• 150–199 mg/dL
	High:	• 200–499 mg/dL
	Very high:	• greater than 500 mg/dL

Third Report of the National Cholesterol Education Program (NCEP) on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III), by the National Heart, Lung, and Blood Institute of the National Institutes of Health, May 2001, pg. 3.

D.   Homocysteine and B Vitamins

Homocysteine is an amino acid. Epidemiological studies have shown that an elevated **plasma** homocysteine level is an independent risk factor for cardiovascular disease and stroke. Studies suggest that homocysteine may have an effect on atherosclerosis by damaging the inner lining of arteries and promoting blood clots. **The American Heart Association (AHA) has not yet called hyperhomocysteinemia (high homocysteine level in the blood) a major risk factor for cardiovascular disease. Plasma homocysteine levels are strongly influenced by diet, as well as by genetic factors. A deficiency of folic acid, vitamin B6 or vitamin B12 may increase homocysteine levels in the body.** Other recent evidence shows that low levels of folic acid are linked with a higher risk of coronary heart disease and stroke.

Currently there are no recommendations for supplementation of folic acid and B vitamins for the prevention of atherosclerosis, and therefore eating a diet rich in these nutrients is recommended. **The AHA does note that patients at high risk for cardiovascular disease should be strongly advised to get enough folic acid and vitamins B-6 and B-12 in their diet.** High doses of B6 from supplements can lead to neuropathy leading to nerve damage in the legs and arms.

Foods high in folic acid include green, leafy vegetables and grain products fortified with folic acid (see folic acid section above). Foods high in vitamin B6 include fortified cereals, baked potatoes, bananas, salmon, chicken, pork and tuna. Foods high in vitamin B12 include animal products like dairy foods, eggs and meats. High doses of folic acid can mask a B12 deficiency. Untreated B12 deficiencies can result in irreversible nerve damage.

D.   Counseling Points

1.   Read food labels and look for foods lower in total fat (less than 3 grams per servings) and saturated fat (less than 1 gram per serving).

2.   Animal products like meat and dairy products contain varying amounts of cholesterol. Buy leaner cuts of meat like round or loin cuts. Cut off all visible fat.

3.   Broil, grill or bake meats rather than frying or pan-fry.

4.   Modify recipes to reduce fat. Use half of the recommended oil; use lower fat alternatives for sour cream, mayo, or whipped cream; use nonfat yogurt or whipped topping made from skim milk.

5.   Limit egg consumption to 3-4 whole eggs per week. Try using 2 egg whites instead of one yolk for recipes and omelets.

6.   Down size portion sizes. Three ounces of meat is a standard serving, the size of a deck of cards.

7.   Since animal products are the greatest contributors to saturated fat and cholesterol in the diet, limit these and increase bean and vegetable consumption.

8.   Increase intake of omega-3 fatty acids by eating fish, like salmon and tuna, twice a week.

E.   Nutrition Care Plan

Document assessment, education, client's behavior change goal, and referral and follow up if needed.

F.   Referral

Clients with borderline high blood cholesterol with two or more risk factors, and clients with high blood cholesterol/triglycerides should be referred to their physician for follow up care. Refer as appropriate to a reputable weight loss program, dietitian and smoking cessation classes.

XII.   Additional Nutrition Resources

The listed websites are only a sample of various nutrition web sites providing nutrition information. The content is not reviewed by or endorsed by CDPHE.

The American Dietetic Association	**www.eatright.org**
USDA Nutrition website	www.nutrition.gov
The American Diabetes Association	www.diabetes.org
The American Heart Association	www.americanheart.org
WebMd (nutrition info provided by the ADA)	www.webmd.com

Nutrition Education for New Americans Project (Education materials in 37 languages) http://monarch.gsu.edu/multiculturalhealth/

NIH Weight management http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/index.htm

March of Dimes	www.marchofdimes.com
Folic Acid	www.folicacid.net
National Dairy Council (education materials)	www.nationaldairycouncil.org/
Colorado State University (education materials)	www.ext.colostate.edu/