U.S. Public Health Service Food and Nutrition Guide for Deployment

(2nd Edition)

Updated by the Dietitian Professional Advisory Committee,

Readiness and Deployment Subcommittee

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Introduction

The *U.S. Public Health Service Food and Nutrition Guide for Deployment* is designed to prepare Registered Dietitians and other healthcare professionals with the fundamentals of nutrition and dietetics that may be pertinent in the field. The purpose of this guide is to provide references, resources and tools for the healthcare professional when providing nutrition care and food safety services to individuals of varied ages and state-of-health.

The dietary needs of all individuals may not be met during public health emergencies. The initial priority is to ensure the safety of citizens and emergency responders. Individuals with acute medical conditions or special dietary needs that cannot be met with available resources should be transported to facilities that can provide specialized care.

From packing essentials for the emergency responder, to clinical nutrition resources, and references pertaining to food safety while in the field, this guide continues to be updated to provide the most relevant and helpful dietary resources.

* * *

Preparing for Deployment

Packing Food for Deployment

Deployments are usually 14-consecutive day periods or longer based on the mission. Responders should bring enough food and water to last for at least the initial 24 hours. Two high-calorie nutrition bars per day may be enough to sustain energy, in addition to other food available at the disaster site. Suggestions for foods to pack include:

- Your favorite comfort food (e.g. hot sauce, etc.)
- Nuts (unsalted), dried fruit or trail mix
- Meals-Ready-to-Eat (MREs)
- Sports bars, granola bars
- Tuna/salmon/chicken in a pouch
- Beef/Turkey jerky
- Coffee, tea bags or instant packets
- Powdered Gatorade or similar product (e.g. electrolyte tablets). Note: these may be useful if working in the heat; make sure to follow package directions for use
- Multivitamin/mineral supplement
- For longer deployments, magnesium tablets (“stool softeners”) to alleviate constipation
- Powdered nutrition supplements, when space is limited; and when water/liquids are plentiful onsite (Liquid nutrition supplements are heavy to carry and generate unnecessary trash)

Packing a "GO Bag"

- Travel orders & credit card (if available)
- Print a detailed map of the area you are deploying to (if available)
- Copy of professional license, certifications, and Basic Life Support (BLS) card
- Money (small bills and quarters)
- Cell phone and charger (pre-program essential contacts and important numbers)
- Small notebook/pen/pencil
- 30-day supply of prescription and over-the-counter medications
- Bottled water for one day
- Alcohol wipes and/or unscented baby wipes
- Disposable gloves
- Hand sanitizer
- CDC Handout: Keep Food and Water Safe After a Disaster or Emergency (https://www.cdc.gov/disasters/foodwater/facts.html)
- Memory Stick (containing work tools, phone numbers and on-line references)
- Test Strips for Chemical Sanitizers: Chlorine-based, iodine-based, and quaternary ammonia (QA) sanitizers
- Flash light and extra batteries (non-lithium if traveling via air transport)
- Daypack
- Leatherman Kick Multi tools or equivalent (caution if traveling via air transport)
- Metal clipboard with compartment
- Safety glasses
- DEET spray bottles at 30% concentration
- Mosquito/insect netting
- Foam padding for cot (if needed)
- Cardiopulmonary resuscitation (CPR) Pocket Mask with O_2 Inlet/Breather with one-way valve
- Personal First Aid Kit

Dietitian-Specific "Go Kit" Supplies

- Calculator (if not using cell phone)
- Potable water testing kit and Chlorine test strips
- Calibrated thermometers, digital food thermometers
- Hairnets or hair covers
- Manual food grinder
- Temperature tapes for testing dish machine temperatures
- Thermocouple to measure food surface temperatures (if available)
- Can opener
- Corn starch (to use as a thickening agent if working at field hospital site)

Other Supplies to Consider

- Water bottle/canteen with insulated carrier (CamelBak® or similar)
- Thermal travel cup (suitable for hot or cold liquids)
- Eating utensils (reusable knife, fork, spoon, etc.)
- Bowl, Plate (plastic)
- Matches and/or lighter (DO NOT PACK IN CARRY-ON)
- Utensil cleaning supplies – dish soap and scrubber
- Travel-sized liquids container filled with laundry detergent

Pest Prevention

- All food should be stored in plastic zipped bag or sturdy containers and eaten outside the bunk/sleeping area
- Do not leave open packages in luggage/backpack or personal space
- Discard trash, as soon as possible

Do NOT Bring any of the following:

- Alcoholic beverages; unlabeled or illegal drugs
- Liquid fuel or "Sterno" heaters
- Cappuccino/coffee makers or other electrical appliances
- Food or beverages in glass containers

NOTE
Avoid changes to lifestyle habits (e.g., new foods, diet, caffeine, tobacco, etc.) as these changes may impact individual health, well-being and ability to maintain optimal performance during the deployment period.

For additional packing resources, refer to the CCMIS website, under the "Readiness" section. The Readiness and Deployment Branch team created and posted a deployment packing checklist, which is available as a PDF document and can be cross-checked for supplemental information and/or packing recommendations.

Nutrition Care in the Field

The following resources and references will serve as a guide when addressing the needs and cares of various individuals throughout the lifecycle. Follow current guidelines and implement the Academy of Nutrition and Dietetics (AND) standard Nutrition Care Process (NCP) in your assessment and care approach.

Develop an overall strategy on addressing nutrition-related concerns during the immediate response phase and re-evaluate and/or reassess individuals as appropriate. Communicate plan of action and care with interdisciplinary and service team appropriately.

(See ***Appendix I*** *for NCP model and* ***Appendix II*** *for normal lab values chart).*

Table 1. Estimated Energy Requirements per Day for Children and Adults

AGE	Males			Females		
	SEDENTARY[a]	MODERATELY ACTIVE[b]	ACTIVE[c]	SEDENTARY[a]	MODERATELY ACTIVE[b]	ACTIVE[c]
2	1,000	1,000	1,000	1,000	1,000	1,000
3	1,000	1,400	1,400	1,000	1,200	1,400
4	1,200	1,400	1,600	1,200	1,400	1,400
5	1,200	1,400	1,600	1,200	1,400	1,600
6	1,400	1,600	1,800	1,200	1,400	1,600
7	1,400	1,600	1,800	1,200	1,600	1,800
8	1,400	1,600	2,000	1,400	1,600	1,800
9	1,600	1,800	2,000	1,400	1,600	1,800
10	1,600	1,800	2,200	1,400	1,800	2,000
11	1,800	2,000	2,200	1,600	1,800	2,000
12	1,800	2,200	2,400	1,600	2,000	2,200
13	2,000	2,200	2,600	1,600	2,000	2,200
14	2,000	2,400	2,800	1,800	2,000	2,400
15	2,200	2,600	3,000	1,800	2,000	2,400
16	2,400	2,800	3,200	1,800	2,000	2,400
17	2,400	2,800	3,200	1,800	2,000	2,400
18	2,400	2,800	3,200	1,800	2,000	2,400
19-20	2,600	2,800	3,000	2,000	2,200	2,400
21-25	2,400	2,800	3,000	2,000	2,200	2,400
26-30	2,400	2,600	3,000	1,800	2,000	2,400
31-35	2,400	2,600	3,000	1,800	2,000	2,200
36-40	2,400	2,600	2,800	1,800	2,000	2,200
41-45	2,200	2,600	2,800	1,800	2,000	2,200
46-50	2,200	2,400	2,800	1,800	2,000	2,200
51-55	2,200	2,400	2,800	1,600	1,800	2,200
56-60	2,200	2,400	2,600	1,600	1,800	2,200
61-65	2,000	2,400	2,600	1,600	1,800	2,000
66-70	2,000	2,200	2,600	1,600	1,800	2,000
71-75	2,000	2,200	2,600	1,600	1,800	2,000
76 and up	2,000	2,200	2,400	1,600	1,800	2,000

[a] Sedentary means a lifestyle that includes only the physical activity of independent living.

[b] Moderately Active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the activities of independent living.

[c] Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the activities of independent living.

Source: Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2005.

Calculating Estimated Energy Requirements for Adults

Determining Which REE/Estimated Energy Expenditure to Use

Is the patient mechanically ventilated?

- NO → Use Mifflin-St. Jeor Equation to calculate REE

- YES → Does patient have trauma?
    - YES → Does patient have burns?
        - YES → Ireton Jones 1992 formula is used to calculate REE.
        - NO → Use the Penn State Equation (PSU) 2003b to calculate REE.
    - NO → Patient has BMI >30 and is >60 years: Use the modified Penn State equation (PSU) 2010 to calculate REE.
    - NO → Patient has BMI <30 and is any age *or* Patient has BMI >30 and is ≤60 years: Use the Penn State Equation (PSU) 2003b to calculate REE.

See **Appendix III for Calculations and Metric Conversions.*

Ireton-Jones (IJEE) 1992 Equation

- Ventilator dependent IJEE (v) = 1925 – 10(A) + 5(W) + 281(S) + 292(T) + 851(B)
- Equations use age (A) in years, body weight (W) in kilograms, sex (S, male = 1, female = 0), diagnosis of trauma (T, present = 1, absent = 0), diagnosis of burn (B, present = 1, absent = 0)

Mifflin-St Jeor

- Men: RMR = (9.99 X weight) + (6.25 X height) – (4.92 X age) + 5
- Women: RMR = (9.99 X weight) + (6.25 X height) – (4.92 X age) – 161
- Equations use weight in kilograms and height in centimeters.

Penn State Equations (PSU)

- PSU 2010 (Modified Penn State Equation)
- Used for patients with body mass index (BMI) over 30 and aged more than 60 years old. This equation was validated in 2010 by the American Dietetic Association Evidence Analysis Library (EAL); it is also referred to as the Modified Penn State Equation.
- RMR = Mifflin (0.71) + VE (64) + Tmax (85) – 3085
- [with Mifflin formula inserted: RMR = (W(10) + H(6.25) – A(5) + 166MALE –161) 0.71 + Tmax (85) + MINUTE VENTILATION(64) – 3085]

PSU 2003b (Penn State Equation)

- Used for patient of any age with BMI below 30 or patients aged younger with 60 years and a BMI above 30. This equation was validated in 2009 by the ADA EAL; it is also referred to as Penn State Equation.

- RMR = Mifflin (0.96) + VE (31) + Tmax (167) – 6212
- [with Mifflin equation inserted: RMR = (WT (10) + HT (6.25) – AGE (5) + 166MALE - 161)0.96 + TMAX (167) + MINUTE VENTILATION (31) -6212]
- Activity Factor/Injury Factor:
    - 1.2 - Bed Rest/ Minor Injury
    - 1.3/1.35- Ambulatory/Skeletal Trauma
    - 1.6/2.1- Sepsis/ Severe Burns

Table 2. Determining Total Energy Expenditure (TEE)

Activity Levels	Percent of calories to increase
Minimal Activity	10-20%
Moderate Activity	25-40%
Strenuous Activity	45-60%

NOTE: *if suspecting any patient of possible malnutrition or to complete an overall assessment to determine possible nutrition risks, consider completing a mini nutrition assessment.*
See **Appendix IV for screener tools.*

Estimating Daily Fluid Requirements

Adequate hydration is vital in a public health emergency. It is essential to emphasize the importance of adequate fluid intake for both victims and responders.

In the field, dehydration can be identified by dark urine, decreased skin turgor, dry mouth, lips, and mucous membranes, headache, dry or sunken eyes, rapid weight loss. Thirst is often the first sign of dehydration but individuals working hard in hot climates may be significantly dehydrated before they realize their thirst.

Factors That Affect Fluid Requirements

- Large fluid losses (i.e. vomiting, fever, diarrhea, large draining wound) may increase fluid requirements.
- Some conditions, e.g. renal failure, hepatic failure, congestive heart failure (CHF), head injury, pulmonary edema, may necessitate fluid restriction.
- Sweating increases fluid requirement by 10-25%.
- Intake and Output (I/O) as well as a comparison of actual dry weight should be evaluated when assessing fluid needs.
- A weight change of 2.2 pounds (1 kg) represents 1 L of fluid, if weight change is solely due to fluid loss or gain.
- Fluid requirements increase by roughly 12.5% for each 1 degree Celsius above normal.

Estimated Energy Requirements for the Child Lifespan: Infants to Teenagers

Predictive equations are routinely used to estimate energy requirements. Various sets of predictive equations have been developed and may be used depending on the setting and severity of illness.

Table 3. Calorie and Fluid Needs per Day of Infants, Toddlers, Children, Adolescents, and Teenagers

Age	**Calories (DRI)** Kcal/kg/day	**Protein (DRI)** g/kg/day	**Fluid** mL/kg/day
0-2 mo	105	1.5	100 ml/kg for the first 10kg of weight
2-3 mo	102	1.5	100 ml/kg for the first 10kg of weight 1000 ml + 50 ml/kg for the second 10 kg of weight
4-6 mo	82	1.5	(same as 2-3 mo)
7-12 mo	80	1.5	(same as 2-3 mo)
13-35 mo	82	1.1	(same as 2-3 mo)

Age	**Calories (DRI)** Kcal/kg/day	**Protein (DRI)** g/kg/day	**Fluid** mL/kg/day
3 years	82	0.95	1.1
4-5 years	75	0.95	1.1
6-7 years	61	0.95	1.1
8 years	59	0.95	1.1
9-11 years	42	0.95	1500 ml + 20 ml/kg for each kg >20 kg
12-13 years	40	0.95	(same as above)
14-16 years	33	0.85	(same as above)
17-18 years	31	0.85	(same as above)

Reference: **Table is derived from The Essential Guide to Nutrient Requirements*
https://www.nal.usda.gov/sites/default/files/fnic_uploads/DRIEssentialGuideNutReq.pdf
Daily Reference Intake Calculator for Healthcare Professionals available:
https://www.nal.usda.gov/fnic/dri-calculator/

Guidelines for Feeding Infants

- Breast-fed infants should continue being breast fed.
- Formula-fed infants should be fed ready-to-feed formula if possible. If ready-to-feed formula is not available, it is best to use bottled water to prepare small quantities of powdered or concentrated formula. If bottled water is not available, use boiled water. Use treated water (see ***Appendix VI***) to prepare formula only if you do not have bottled or boiled water.
- If formula is prepared with boiled water, let the formula cool sufficiently before giving it to an infant.
- Infant formulas are designed for infants under 1 year but may be modified in concentration for use by toddlers. Infants should not use Adult Formulas.

- Standard Infant Formulas are cow-milk based and contain 0.67 kcal/ml (20 calories per ounce when prepared as directed).
    - Infants with lactose intolerance will need a lactose free or soy-based infant formula.
    - Infants with milk protein allergy or malabsorption will need a hydrolysate or amino acid-based infant formula.
- Follow instructions on label for discard date and for storage of prepared formulas.
- Clean feeding bottles/nipples with bottled, boiled, or treated water before each use.
- Wash your hands before preparing formula and before feeding an infant. You can use alcohol-based hand sanitizer if the water supply is limited.
- Do not give honey, which has been associated with infant botulism. Karo syrup is also not recommended for infant feeding.

Table 4. Energy Requirements for per Day for Pregnant Women with a Healthy Pre-pregnancy Weight

	Energy Requirements	**Protein Requirements**	**Fluid Requirements**
First Trimester	+ 0 calories/day	0.8g/kg current body wt./day	8-10 glasses of liquids/day (preferably water)
Second Trimester	+ 340 calories/day	1.1g/kg/day (2nd half of pregnancy)	
Third Trimester	+452 calories/day		
Lactation: 1st 6 months	+330 calories/day	Additional 25 g/day (RDA – 1.1g/kg/day body wt.)	
Lactation: 2nd 6 months	+400 calories/day		

**For each additional fetus, add an additional 25g of protein/day. Estimates are based on Estimated Energy Requirements (EER) set by the Institute of Medicine*.
Source: Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2005.

The vulnerability of the elderly, infants and children, and seriously ill individuals is heightened in a disaster setting. Those with pre-existing medical conditions are at greater risk. Special attention to the nutritional needs of these groups is essential. Issues to consider include:

- **Assessment**—Evaluate impact of medical history and current status on nutrition and ability to eat and utilize nutrients. Assess weight change; previous dietary restrictions; food habits and eating patterns; chewing and swallowing function; food allergies and intolerances; bowel habits; need for nutrition supplement or special formula; self-feeding ability; availability of food, water, and caregiver. Consider age specific food and fluid needs.
- **Medications**—Individuals who do not have access to their usual medications may require stricter dietary modifications, if feasible, given the emergency food supply.

- **Appetite**—A disruption of routine and stress may impact appetite and diet tolerance. For those who lose their appetites, encourage frequent, small meals; oral supplements; calorically dense foods; planned meals and snacks. Avoid non-caloric liquids at meals and strong odors.
- **Hydration**—Dehydration is a risk for those who may not notice or respond to thirst or who are unable to obtain fluids because of immobility. Have beverages available and offer hourly. The elderly or infirmed may self- restrict fluids because of concern for reaching the bathroom. Assure that scheduled assistance is offered. Ice used to chill foods and beverages in coolers should not be consumed.
- **Food Safety**—Establish a policy early to discourage hoarding of food. In a disaster setting, people may want to save food to eat later. Stashes of perishable food held at room temperature can cause foodborne infections. Saved food may also attract rodents and insects. Monitor and provide assurance that food will be available.

Special Needs for Adult Nutrition

Those who should not receive food or fluid orally may include individuals with gastrointestinal bleeding, intractable vomiting and/or diarrhea. They will require intravenous fluid and parenteral or tube feeding. **See **Appendix V** for formulary references*

Heart Diseases

Coronary Heart Disease (CHD): Attempt to provide low-fat, low-calorie foods for all patients and staff. This will reduce the need for modified diets for most patients with elevated cholesterol levels.

Hypertension (HTN): Individuals with poorly controlled blood pressure should maintain a low sodium diet if feasible given the food supply.

Stroke: Assess self-feeding and swallowing ability. May need solid food consistency modification, including soft, mechanical soft or pureed foods. Patient may require thickened liquids.

Congestive Heart Failure (CHF): Restrict fluid to 1–1.5 L per day. Limit sodium more strictly. Patients on potassium-losing diuretics may need to consume high-potassium foods (if not supplemented). Encourage bananas, orange juice, dairy products, bran cereals, potatoes.

Patients on anticoagulants (warfarin) need to keep vitamin K-containing foods consistent in their diet. If vitamin K foods are not available consistently, it is recommended all vitamin K-containing foods are discontinued. Ensure anticoagulation labs are routinely assessed.

Gastrointestinal (GI) Disorders

Nausea/Vomiting: Recommend increased fluid intake (especially clear liquids), frequent, small meals, eating and drinking slowly, and limited activity after meals. Avoid strong odors, overly sweet food, and greasy, fatty or fried foods.

Diarrhea: Recommend increased fluid intake, active culture yogurt if available, and broth, sports drinks, juice diluted with an equal amount of bottled or boiled water. Add soluble fiber (i.e. oatmeal, rice, peeled or canned fruit). Eat frequent, small meals. Avoid greasy fatty, or fried foods. Minimize gas forming foods, such as beans, legumes, and broccoli. Minimize or avoid lactose-containing foods, such as milk and ice cream.

Constipation: May respond to increased fluid, fiber, and exercise. Use of laxatives may be necessary, if recommended by a physician. Constipation, especially for the elderly, children and others can be a real issue when rest rooms are not readily available or clean. If constipation is not relieved with increased fiber, fluids, and exercise, toilet facilities should be assessed for availability, cleanliness, and privacy. Individuals should be encouraged to not ignore the urge to have a bowel movement, and to allow enough time to have a bowel movement.

Dehydration: Recommend use of bottled electrolyte solutions or powdered formulations (e.g., Ceralyte®). If unavailable, a simple solution can be made with ½ teaspoon table salt, ½ teaspoon baking soda, ¼ teaspoon salt substitute (plain, no herbs), and 4 tablespoons regular table sugar. Add ingredients to make 1-liter (about a quart) with (safe) water. Stir or shake to dissolve. (Recipe courtesy of Choctaw Nation Health Care Center). If unable to meet fluid needs orally, intravenous fluid will be needed.

To reduce the spread of infectious causes of nausea, vomiting, and diarrhea, thorough hand washing, and safe food handling practices are essential.

Diabetes (DM)

Consistent Carbohydrate Diet

Definition: Carbohydrate-controlled diets are often recommended for individuals diagnosed with diabetes, pre-diabetes, or some level of insulin or blood sugar imbalance. While no specific dietary pattern is recommended for the management of diabetes, controlling the amount and type of carbohydrate consumed has been found to be helpful in managing blood sugar (ADA, 2017). The amount of carbohydrate and available insulin may be the most important factor influencing the body's response after eating and should be considered when developing a patient's eating plan (Evert & Bouchier, 2013). Managing carbohydrate intake whether by carbohydrate counting or experience-based estimation remains a key strategy in achieving glycemic control.

Components of Consistent Carbohydrate Diet

- There is no ideal amount of carbohydrate recommended for everyone.
- The quantity of carbohydrate is determined by the registered dietitian nutritionist (RDN) in consultation with the patient with diabetes (Dietetics, 2015).
- The consistent carbohydrate diet provides a range of 3-5 carbohydrate servings (45 g-75 g) at each meal along with 0-2 carbohydrate servings (0 g-30 g) during snacks. The following ranges are often used as a starting point in meal planning for people with diabetes:

Table 5. Carbohydrate Servings for Meals/Snacks

Approximate Energy (kcal)	**Carbohydrate Servings Per Meal Per Day**	**Carbohydrate Servings Per Snack Per Day (if desired)**
1,200-1,500 (for weight loss)	3 (45 g)	1 (15 g)
1,600-2,000 (for weight control)	4 (60 g)	1-2 (15-30 g)
2,100-2,400 (for active individuals)	5 (75 g)	1-2 (15-30 g)

Reference: https://www.andeal.org/topic.cfm?menu=5305&cat=5596 ***If insulin is not available, this is a medical emergency and an effort to procure insulin or evacuate the patient emergently should be undertaken.***

Goals in emergency care settings are to prevent hypoglycemia and ketosis (insufficient insulin).

- NPH/Regular insulin regimens require afternoon and bedtime snacks. Persons on a basal with rapid-action insulin regimen can adjust insulin doses to meal content and timing.
- Increased activity may cause risk of delayed hypoglycemia; check glucose frequently (consider adding a nocturnal reading).
- Hypoglycemia (blood glucose <70 mg/dL): Use the 15-15 Rule for treatment. Provide 15 grams of carbohydrates (use glucose tablets, or when not available, offer 4 ounces of fruit juice or regular soft drink; 1 tablespoon of sugar or honey; avoid mixed foods containing fat or protein in treating hypoglycemia) and check glucose in 15 minutes. If still below 70 mg/dL, provide another 15 grams of carbohydrate. Repeat steps until blood glucose is at least 70 mg/dL. Once blood glucose is greater than 70 mg/dL, eat a meal or snack to prevent a low blood glucose from occurring again.

Renal Disease

Immediately following a disaster, individuals with renal disease (not End Stage Renal Disease) will most likely benefit from a conservative diet that is low in protein, potassium, and fluid.

Table 6. Medical Nutrition Therapy for Chronic Kidney Disease

Nutrient	**Stages 1 – 2**	**Stages 3 – 4**	**Goals**	**Evaluating Tools**
Calories	23-35 kcal/kg	23-35 kcal/kg	23-24 kg/m2 or higher 90 – 100% SBW (<90% → mild malnutrition; <70% → severe malnutrition) "A" rating	BMI %SBW SGA rating
Protein	0.8-1.4 g/kg BW	0.8 g/kg BW	Albumin 4.0 g/dL	Serum albumin, nPNA, Dietary Recall
Sodium	<2,400 mg	<2,400 mg	135-145 mEq/L	Serum sodium, Edema assessment, Weight history
Fluids	No limit	Evaluate need to limit	Fluid balance maintained with normal fluid intake	Weight history, Dietary recall for sodium intake, Medications
Potassium	No limit unless high serum levels	Evaluate need to limit	3.5 – 5.0 mg/dL	Serum potassium, Clinical signs & symptoms
Calcium	DRI	DRI Limit to 2,000 mg if on calcium-based phosphate binders	8.4 – 10.2 mg/dL (8.4 – 9.4 mg/dL preferred)	Serum calcium Corrected for low albumin)
Phosphorus	DRI	800-1,000 mg/day	Stages 3 & 4: 2.7 – 4.6 mg/dL Stage 5: 3.5 – 5.5 mg/dL	Serum phosphorus Calcium PTH Alkaline Phosphatase
Vitamins	Individualized	Individualized	Individualized	Labs (if available)

Table 7. General Medical Nutrition Therapy Recommendations for Renal Patients

Treatment	Pre-Stage 5 CKD	Hemodialysis	Peritoneal Dialysis
Protein (gm/kg SBW or Adj BW if appropriate)	0.6 – 0.8 Nephrotic Syndrome 0.8 – 1.0 65% HBV	≥ 1.2 for stable patients Higher for unstable patients At least 50% HBV	1.2 – 1.3 for stable patients Higher for unstable patients At least 50% HBV
Energy (kcal/kg/SBW or Adj BW if appropriate)	35 Adjust for age, acuity, activity level and weight goal	30-35 Adjust for age, acuity, activity level and weight goal	30-35 Including both diet and glucose absorbed from dialysate (PD). Adjust for age, acuity, activity level and weight goal
Phosphorus (mg/kg SBW)	800 – 1000 (adj for dietary protein needs) or 10-12 mg/gm protein required	800 – 1000 (adj for dietary protein needs) or 10-12 mg/gm protein required	800 – 1000 (adj for dietary protein needs) or 10-12 mg/gm protein required
Potassium (mg/d)	Typically unrestricted Restrict if serum levels elevated	2000 – 3000 Adjust per serum levels	Initial 3000 – 4000 Adjust per serum levels, typically unrestricted
Sodium (mg/d)	1000 – 3000 If necessary	2000 – 3000 Individualize	2000 – 3000 individualize
Fluid (ml/d)	Typically unrestricted	750 – 1000 Plus urine output in 24-hours, adj as indicated	1000 plus urine output

SBW = Standard Body Weight

HBV = High Biological Value (protein)

- General medical nutrition therapy (MNT) recommendations need to be adjusted based on the specific conditions of the individual patient such as age, acuity, activity level, and comorbid conditions.
- The dietitian will collaborate with the attending physician to design an individualized diet as well as vitamin, mineral, binder, and supplement recommendations to meet the patient's nutritional needs.

Daily needs for immunocompromised individuals

There is no one specific diet for immunocompromised individuals. Factors such as malabsorption and metabolic abnormalities affect whether individuals can ingest enough calories and nutrients to maintain health. Immunocompromised individuals who are underweight or have advanced Human Immunodeficiency Virus (HIV) need early and ongoing MNT. Counseling and MNT should include considerations for supplementation in addition to increasing both protein (1.6-1.8 g/ kg current wt) and total kcal needs (40-50 kcal/kg of current wt).

Weight loss and vitamin/mineral deficiencies generally result from loss of appetite caused by nausea/vomiting, altered sense of taste, fatigue, or opportunistic infections in the gastrointestinal tract. Individuals with a poor appetite should eat six or more small meals throughout the day, rather than three large ones. Check for co-morbidities, such as diabetes or obesity, which will further affect recommendations for medical nutrition therapy.

In general, immunocompromised individuals should have:

- Adequate hydration (fluid intake) — important for the metabolism of medication, and even more important if diarrhea and/or vomiting is present. *Need: 30-35 ml/kg/day*
- A possible increase in calorie and protein intake depending on the health of the person and/or stage of disease. The diet should include lean meat, fish, beans, seeds and nuts, whole grain breads and cereals, and fruits and vegetables. Moderate amounts of fat for energy and calories can be acquired through foods such as nuts, peanut butter, and seeds.
- Proper nutrition to support nutritional deficiencies (including vitamins A, C and E, the B vitamins, magnesium, selenium, and zinc) that occur early in the disease process.
- Oral nutritional supplements, if possible.

Please note: Food safety is CRITICAL for immunocompromised individuals. It is important to keep all foods refrigerated, to avoid eating rare meats, to practice proper hand washing, and to clean and sanitize all food-contact surfaces. Food-borne illnesses pose serious threats for such patients. If there are ANY doubts about the purity of the public water supply, safe bottled water should be provided.

Special Needs for Pediatric Nutrition

Infants and Children with Gastrointestinal Issues (GI)

- For infants with acute nausea, vomiting or diarrhea, provide frequent feedings of Pedialyte® (or other commercially available electrolyte rehydration solution) initially, advancing to breast milk or formula as symptoms subside. If unable to meet fluid needs orally, intravenous fluid will be needed.

Tube Feedings (see Section on Adult Tube Feeding for general information)

- Use standard infant formula, if available.
- For children between the ages of 1 and 10, use appropriate formula for age (e.g. PediaSure®)
- Only use adult formulas for children under age 10 when pediatric formulas are not available. *If using an adult product for a child under 10, select a formula with a low protein content to minimize risk of dehydration.*
- Most children older than 10 years can use standard Kcal/ml adult formulas. When adult formulas are used for pediatric patients who are poorly nourished or younger than 10 years old, additional water may be necessary to maintain adequate hydration.
- If the protein content of the 24-hour supply of formula exceeds 2.5–3 g. protein/kg., as it frequently does when using an adult formula, additional water should be given to compensate for increased renal solute load.
- The following equation is suggested:

  Additional free water = [gm protein/24 hr. - (wt. × 2.5 gm protein/kg)] × 16 ml

Administer the additional free water in divided doses every 4-hours to maintain adequate hydration and to compensate for the increased renal solute load. Selection of another formula may be necessary if free water is excessive.

Tube Feedings (TF)

Enteral nutrition (EN) is defined as "nutrition provided through the GI tract via a tube, catheter, or stoma that delivers nutrients distal to the oral cavity." Common indications for EN include stroke, other neurological disorders that impair swallowing ability, oral intubation for mechanical ventilation preventing oral nutrition intake, or the need to feed the gut distal to an obstruction or high-output fistula. A functional GI tract, with sufficient length and absorptive capacity, is necessary for effective nutrient delivery.

Contraindications: severe short bowel syndrome (<100-150 cm remaining small bowel in the absence of the colon or 50-70 cm remaining small bowel in the presence of the colon), other malabsorptive conditions, severe GI bleed, distal high-output GI fistula, paralytic ileus, intractable vomiting and/or diarrhea that does not improve with medical management, inoperable mechanical obstruction, or when the GI tract cannot be accessed (e.g., when upper GI obstructions prevent feeding tube placement).

Modality

- Enteral feeding may be administered by a continuous, intermittent drip, or bolus method.
- Continuous drip or pump assisted feedings for non-critically ill patients can be initiated at 50 ml/hr and advancing by 15 ml per hour every 4 hours until the goal rate is met. In critically ill patients, EN is commonly started at a volume of 10 to 40 ml per hour and advanced to the goal rate by 10 to 20 ml per hour every 8 to 12 hours. EN initiation should be delayed in those critically ill patients who are: hemodynamically unstable, generally defined as a mean arterial blood pressure of less than 50 mm Hg, or those who are starting vasopressor medications. EN may be initiated in patients on low-dose stable vasopressors, but these patients should be monitored closely for signs of intolerance.
- Bolus feedings are accomplished by providing a set volume of formula at specified time intervals. A typical feeding regimen might provide 240 ml of formula over a 4 - 10-minute time-frame, with infusions 3 - 6 times per day and at least 3 hours between feedings. Bolus feedings can be advanced by volumes of 60 - 120 ml every 8 - 12 hours until goal volume is reached; more rapid advancement may be well tolerated by some patients at low risk for refeeding.
- Cyclic feeding: Cyclic feeding provides EN by pump or gravity drip over a time period that is less than 24 hours. Sometimes 12-hour feeds or nocturnal feeds are used for transitioning from 24-hour feeds.
- Intermittent Feeding: Can be delivered by infusion pump or by the gravity drip method. Volumes can range from 240-720 ml (1 to 3 cups), be administered in a time period ranging from 20 - 60 minutes and be provided anywhere from 4 to 6 times per day depending on the volume of formula required to meet the patient's specific needs.

Where Tubes Can Be Placed

- Nasogastric (NG) or nasojejunal (NJ): Placed for short-term access
- Percutaneous endoscopic gastrostomy (PEG): Placed for long term gastric access
- Other placements sites may also be appropriate (i.e. oral gastric tubes for neonates)

Storage Times/Temperatures for Adult Nutrition Products

Temperature Guidelines: Between 32˚F and 95˚F. The most desirable temperature range for storage is between 55˚F and 75˚F.

Storage Times: Once the product is opened, use or refrigerate within 4 hours. Discard refrigerated product after 48 hours. For Ready-to-Hang (RTH) products, follow instructions for use on the RTH carton. If more than one feeding set is used or if more than one RTH container is used with a single feeding set, the maximum safe hang time is 24 hours.

Sample Calculations for a Continuous Feeding Regimen

Patient's estimated daily nutrient needs:
1900 kcal
80 grams protein
2100 ml water

1) Choose EN formula:
    a. Standard formula
    b. 1.2 kcal/ml, 55 g protein per liter, 810 ml free water per liter
2) Calculate total volume of formula needed:
    a. 1900 kcal / 1.2 kcal/ml= 1583 ml/d
3) Divide by desired hours of infusion:
    a. 1583/24 hours= 65.9 ml/hr
4) Round to the nearest 5 ml, and calculate final volume:
    a. 65 ml/hr x 24 hours= 1560 ml/d
5) Calculate protein and water provisions:
    a. Protein: 1.56 L x 55 g/L= 85.6 g/d
    b. Water: 1.56 liters x 810 ml/L= 1264 ml/d
6) Determine additional protein and fluid needs:
    a. Protein: No protein modular necessary
        i. If using a powder protein modular (e.g., Beneprotein), mix each scoop with 2-4 ounces of water and use a syringe to administer via tube feeding. Flush with 60 ml of water.
        ii. If using liquid protein supplement (e.g., Pro-stat), administer through tube feeding using a syringe and flush with 60 ml of water.
    b. Water: 2100 ml-1264= 837 ml/d
7) Calculate water flushes (if not receiving fluid from another source):
    a. 837 ml / 4 flushes/d= ~200 ml water flushes 4 times per day
8) Final EN regimen provides:
    a. 1560 ml/d x 1.2 = 1872 kcal
    b. 1.56 L X 55 = 86 g protein
    c. (1.56 L/d X 810) + (200 ml X 4) = 2063 ml water

Example: (Formula Name)1560ml/day @ 65ml per hour x 24hrs + 200ml H2O flush q 6hrs @ 0800, 1400 & 2000hrs. TF Rx provides _____kcal, ___g protein, _____ml total fluids, 100% RDI vitamins and minerals.

Nutrition Care for the Health Responders

The tendency for erratic eating, working and sleep schedules all may contribute to an interrupted routine from everyday habits and schedules prior to deployment. Various factors may influence the timing and nature of the next meal in the field. Taking small measures to ensure you're taking care of yourself by supplying your body with adequate calories and fluids is key.

Nutrition

Bring along snacks of choice, such as trail mix in a snack baggie or 1-2 high calorie granola or nutrition bar to keep handy and supplementing calorie needs between mealtimes. Limit meal skipping if possible to maintain optimal energy levels. Prepare for the possibility that there may not be a hot meal available or a scheduled mealtime.

Hydration

A rule of thumb for calculation of fluid needs is:
Weight in pounds divided by 2 = number of ounces of water/day needed for hydration.

When working in a warm environment and wearing the Operational Dress Uniform (ODU), additional fluid and intermittent cycles of rest will be necessary. The following hydration chart is designed to assist deployed officers depending on the conditions in which they are working.

Table 8. Calculation of Fluid Needs

Heat °F	Work/rest* cycle	Water intake ounces/hr. moderate work†	Work/rest cycle (min) hard work‡	Water intake ounces/hr. hard work	Work/rest cycle (min) very hard work§	Water intake ounces/hr. very hard work**
78–81.9	N/A	16	N/A	24	40/20	24
82–84.9	N/A	16	50/10	24	30/30	32
85–87.9	N/A	24	40/20	24	30/30	32
88–89.9	N/A	24	30/30	24	20/40	32
>90	50/10	32	20/40	32	10/50	32

Adapted from Mountain et al. 1999
*Rest is sitting or standing, preferably in the shade
†Moderate work is mild to no sweating
‡Hard work is sweating consistently
§Very hard work is sweating profusely
**Officers working under very hot humid conditions sweating profusely should also consume electrolyte replacement fluids (sport type drinks) or nutrition bar along with water. Bottled water will very likely be supplied on site. Officers should be advised to bring one refillable no leak container for water.

Disaster Preparedness in Action

General Guidelines for a Disaster Food Plan

Planning

- Determine your responsibilities for foodservice during a disaster, including the need to serve not only patients but staff and first responders as well. Determine if your facility will use as a triage center, in which case you may be responsible for serving members of the community and possibly their pets.
- Keep a 7-day inventory of shelf-stable items for the number of meals (patient and non-patient) you anticipate serving in a sustained emergency that may disrupt the availability of water, power, and/or delivery of food supplies. At minimum, a residential care facility should consider an inventory of food products for 72 hours, and a hospital should consider an inventory of food products for 96 hours.
- Have a plan for water emergencies and identify a source for potable water in the case of a loss of water supply.
- Coordinate the availability of backup electrical power, if not already connected to emergency power, with plant operations. Priority needs for electrical generation include the following:
    - Refrigeration
    - Hoods
    - Stoves, ovens, and steamers
    - Freezers
- Determine your recovery plan. This plan is a basic statement of what you plan to do to restore operations, in terms of feeding patients, staff, and first responders.

Prep Supplies

1. When feasible, store food, water, and cleaning and sanitary supplies, including disposables, onsite. Practice FIFO (first in, first out) for conducting inventory and rotate supplies by expiration date. Include security for food products in the overall facility security plan.
2. Have a plan for the maintenance of refrigerated foods, should there be a loss of power. This includes, but not limited to, monitoring temperatures and limiting access to the refrigerated areas. Consider drafting a memorandum of understanding (MOU) for obtaining refrigerated trucks to hold refrigerated foods temporarily. The MOU should also include a provision for obtaining fuel to keep the refrigerated trucks operating.
3. Determine how you will work with your food vendors during a disaster to make sure your facility has food products to meet your needs. Consider drafting MOUs with vendors that outline the responsibilities of both your facility and the vendors during a disruption of the food supply chain in a disaster.
4. Plan to conserve food supplies immediately at the beginning of a known emergency. Strategies will be incident-specific and may include but not limited to:
    - Cutting back to two meals per day for non-patients
    - Reducing hours of cafeteria services

    - Curtailing complimentary beverages
5. Ensure that gas and other devices are stored safely.
    - Your facility should have the ability to heat water and/or limited food products with gas grills or other such devices with grills.
6. Work with information technology (IT) to ensure that needed foodservice information is on backup and is retrievable in an emergency. Keep up-to-date printed copies of your disaster plan; your communication protocol, including contact information for food vendors and other suppliers; and your MOUs.
7. Be prepared for your facility to function on its own, should resources from outside your facility not be available.

Storage

- Store disposable dinnerware for the number of meals you may need to serve for the period of the identified planning period.
- Store hand sanitizers, if water is not available for hand washing before and after meals.
- Store cleaning supplies for washing the limited number of "pots and pans" that may be used.
- Have a plan for waste disposal. Note that waste disposal will increase significantly with the use of disposables.

Table 9. Sample Menus for 3 Consecutive Days

Sample Menu for 3 Consecutive Days	
Meal	**Food sample**
Breakfast	Assorted juices Dry cereal with milk (if available) Canned fruit Bread, jelly/jam spread Instant coffee/tea for adults Hot cocoa for children
Lunch and Dinner	Soup (if possible) Peanut butter and jelly sandwiches (lunch—day 1) Fruit juices, instant coffee/tea Protein salads for both lunch and dinner—tuna, chicken, pimento cheese Peanut butter and jelly with bread/crackers Cold mixed canned vegetable salad, dressing Canned fruit, ready-to-eat puddings, gelatins Chips (if available) Juice, instant drinks

Field Food Safety Basics

The following information does not reflect all recommendations in the FDA Food Code, or individual states' food code. Food service personnel should contact the local or state health department for information on the rules and regulations governing the preparation of food in retail or institutional settings in the area. Food safety is critical for pregnant women, infants, the elderly, and those with suppressed immune systems, low white blood counts, cancer, and HIV/AIDS.

By following four simple steps, food is kept safe:

- **Clean**—Wash hands and surfaces often
- **Separate**—Do not cross contaminate
- **Cook**—Cook to proper temperatures
- **Chill**—Refrigerate promptly

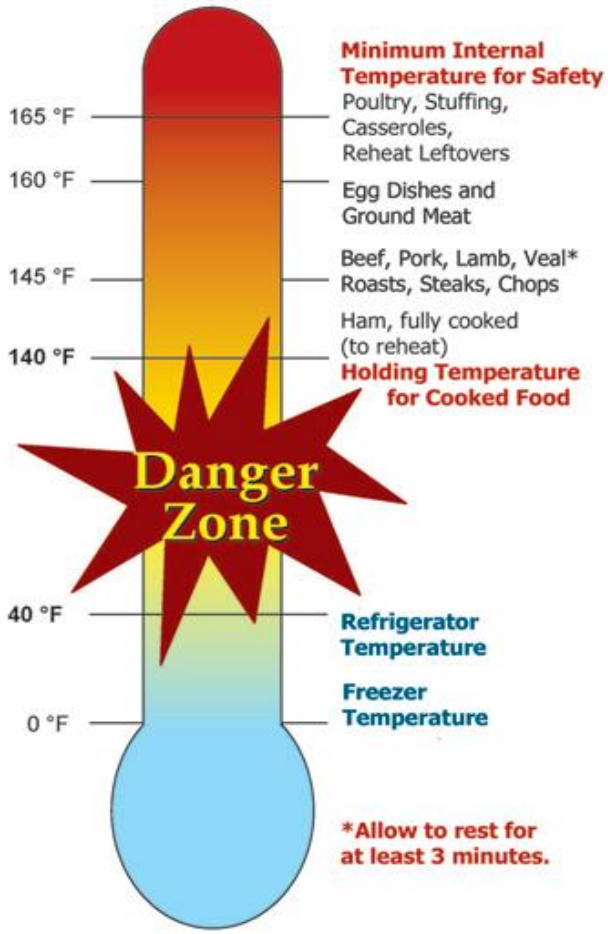
Keys for Food Safety

- Identify and throw away food that may not be safe to eat. When in doubt, throw it out.
- Label and date foods if it is being repacked and refrigerated.

Food Sanitation Highlights

- Maintain personal hygiene when handling food
- Ensure adequate hand washing facilities and frequent hand washing
- Wear clean clothes and maintain separate area for changing
- Hairnets and gloves should be worn and changed frequently between duties
- Individuals with communicable diseases or open sores/cuts should **not** work in food service.

Figure 1. Food Safety Temperatures



Time and Temperature Control

Bacteria multiply rapidly between 40^{0}F and 140^{0}F. To keep food out of this danger zone, keep cold food cold and hot food hot. Use calibrated and sanitized thermometers.

- Store food in the refrigerator (41°F or below) or freezer (0°F or below).
- Cook food to a safe minimum internal temperature.
    - Beef, pork, veal, and lamb (steaks, roasts, and chops) to ≥145 °F internal temperature, (with a 3-minute rest time).
    - Ham, uncooked (fresh or smoked to 145 °F (with a 3-minute rest time)
    - Ground beef, veal, and lamb to ≥160 °F.
    - All poultry (ground, parts, whole, and stuffing) should reach a safe minimum internal temperature of ≥165 °F.
    - Eggs (cook until yolk & white are firm)
    - Egg Dishes cook to 160 °F
- Maintain hot cooked food at ≥135 °F or above.
- Reheat cooked food rapidly to ≥165^{0}F.
- It is important to cool food through the danger zone as fast as possible to keep bacteria from growing. Three cooling methods include:
    - Shallow pan method (food no more than 2 inches deep)
    - Size reduction (cutting food into smaller portions)
    - Time and temperature monitored (forcing food to cool in a short amount of time)

Safe Storage and Cleaning Tips

- Dry storage: off the ground in pest-proof (sealed tight) containers.
- When refrigeration is not available, discard all perishable foods removed and left out of the storage container for 2 hours or more; 1 hour in air temperatures above 90° F.
- Inspect (and do not use) incoming foods for spoilage, pests, or contamination (e.g., damaged containers, dented cans, water-damaged food items).
- Monitor water quality often in kitchens using a chlorine residual test kit.
- Do not place bags of ice on the floor.
- Clean and sanitize all food contact surfaces prior to each use. Sanitize sinks at least daily.
- Ideally, four sinks are desired:
    - Designate one sink for hand washing with soap and disposable towels
    - Use a three-compartment sink or three separate sinks to wash, rinse, and sanitize. Sanitizing solution: ½ tablespoon bleach (5.25% sodium hypochlorite) per 1-gallon of water will create 50-ppm sanitizing solution. Wash with soap in hot (110°F) water; rinse with hot water if possible; Sanitize in 50-ppm solution for at least 30 seconds.

Water, Sanitation, and Hygiene (WASH)

Critical to public health and safety during an emergency is the critical necessity of having clean and safe water to meet drinking, sanitation, and hygiene needs for every person. After an emergency, tap water may not be available or safe to drink or use for sanitation and hygiene purposes. Maintaining adequate hydration during deployment is key to successfully fulfilling the mission and ensuring that the number of casualties does not increase due to water-borne illnesses. Drink only bottled, boiled, disinfected or filter treated water until the community supply is tested and found safe for use. General guidelines for managing your safe water supply for WASH are described below:

Handwashing

Keeping hands clean during an emergency helps prevent the spread of germs. If tap water is not safe to use, wash hands with soap and water that has been boiled or disinfected. If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol. Note sanitizers **do not** eliminate all types of germs. Hand sanitizers are **not** effective when hands are visibly dirty.

Drinking Water

If possible, use bottled water; it is the safest choice for drinking and all other uses. Ensure the seal has not been broken. Otherwise, water should be boiled or treated before use (*see below*).

State, local, or tribal health departments provide specific recommendations for obtaining access or treating water specific to their area. In an emergency situation, tap water may not be safe to drink or use. In the event that there is no emergency water supply or bottled water available, it is essential to know how to make contaminated water safe to drink and how to find alternate sources of water.
Water contaminated with germs can often be made safe to drink by boiling, adding disinfectants, or filtering. These methods and guidelines below are listed in order of what is most effective at making water safe.

**NOTE* Water contaminated with fuel or toxic chemicals will NOT be made safe by boiling or disinfection. Use bottled water (if available) or a different source of water if you know or suspect that water may be contaminated with fuel or toxic chemicals.*

Boiling

Boiling is the surest method to kill disease-causing organisms, including viruses, bacteria, and parasites.
If the water is cloudy:

1. Filter it through a clean cloth, paper towel, or coffee filter OR allow it to settle.
2. Draw off the clear water.
3. Bring the clear water to a rolling boil for 1 minute (*at elevations above 6,500 feet, boil for three minutes).*
4. Let the boiled water cool.
5. Store the boiled water in clean sanitized containers with tight covers.

If the water is clear:

1. Bring the clear water to a rolling boil for 1 minute (at elevations above 6,500 feet, boil for three minutes).
2. Let the boiled water cool.
3. Store the boiled water in clean sanitized containers with tight covers.

The flat taste of boiled water can be improved by pouring it from one container to another and then allowing it to stand for a few hours (if possible), OR by adding a pinch of salt for each quart or liter of boiled water.

Disinfectants

If boiling is not possible, small quantities of filtered and settled water can be made safer to drink by using a chemical disinfectant such as unscented household chlorine bleach (5.25% sodium hypochlorite). Disinfectants can kill most harmful or disease-causing viruses and bacteria, but are not as effective in controlling more resistant organisms, such as the parasites *Cryptosporidium* and *Giardia (see links below).* Chlorine dioxide tablets can be effective against *Cryptosporidium* if the manufacturer's instructions are followed correctly. *Again, if the water is contaminated with a chemical, adding a disinfectant will* ***not*** *make it drinkable.*

For additional information on the parasites mentioned, follow links:

- Cryptosporidium - CDC website describing the Cryptosporidium parasite: https://www.cdc.gov/parasites/crypto/index.html
- Giardia – CDC website describing the Giardia parasite: https://www.cdc.gov/parasites/giardia/index.html

To disinfect water with unscented household liquid chlorine bleach:
If the water is cloudy:
1. Filter it through a clean cloth, paper towel, or coffee filter OR allow it to settle.
2. Draw off the clear water.
3. Follow the instructions for disinfecting drinking water that are written on the label of the bleach.
4. If the necessary instructions are not given, check the "Active Ingredient" part of the label to find the sodium hypochlorite percentage. Typically, unscented household liquid chlorine bleach will be between 5-6% and 8.25% sodium hypochlorite, though concentrations can be different.
5. Using the tables in ***Appendix VI***, add the appropriate amount of bleach using a medicine dropper, teaspoon, or metric measure (mL).
6. Stir the mixture well.
7. Let it stand for at least 30 minutes before using it.
8. Store the disinfected water in clean, sanitized containers with tight covers.

If the water is clear:
1. Follow the instructions for disinfecting drinking water that are written on the label of the bleach.
2. If the necessary instructions are not given, check the "Active Ingredient" part of the label to find the sodium hypochlorite percentage.
3. Stir the mixture well.
4. Let it stand for at least 30 minutes before using it.
5. Store the disinfected water in clean, sanitized containers with tight covers.

See **Appendix VI for additional CDC guidelines on making water safe to drink using various concentrations of bleach.*

To disinfect water with tablets that contain chlorine or iodine:
- Follow the manufacturer's instructions on the label or package.
    - Chlorine dioxide tablets can be effective against *Cryptosporidium* if the manufacturer's instructions are followed correctly.
    - Iodine and iodine-containing tablets tetraglycine hydroperiodide) or chlorine tables are not effective against *Cryptosporidium*.

Filters
Many portable water filters can remove disease-causing parasites such as *Cryptosporidium* and *Giardia* from drinking water but they do not remove bacteria or viruses. When choosing a portable water filter, select one that has a filter pore size small enough to remove parasites.

Carefully read and follow the manufacturer's instructions for the water filter you intend to use. After filtering, add a disinfectant such as iodine, chlorine, or chlorine dioxide to the filtered water to kill any viruses and remaining bacteria. **Do not use contaminated water to wash dishes, brush teeth, wash and prepare food, or make ice.**

Filtering Tap Water
Many but not all available home water filters remove *Cryptosporidium*. Some filter designs are more suitable for removal of *Cryptosporidium* than others. Filters that have the words "reverse osmosis" on the label protect against *Cryptosporidium*. Some other types of filters that function by micro-

straining also work. Look for a filter that has a pore size of 1 micron or less. This will remove microbes 1 micron or greater in diameter (*Cryptosporidium*, *Giardia*). There are two types of these filters — "absolute 1 micron" filters and "nominal 1 micron" filters but not all filters that are supposed to remove objects 1 micron or larger from water are the same. The absolute 1-micron filter will more consistently remove *Cryptosporidium* than a nominal filter. Some nominal 1-micron filters will allow 20% to 30% of 1-micron particles (like *Cryptosporidium*) to pass through.

Filter manufacturers may pay to have their filters tested to see if they remove *Cryptosporidium* or *Giardia.* Filters that have been tested and certified should have wording on their labels indicating they have been listed and labeled to NSF/ANSI Standard 53 or Standard 58 for cyst removal or cyst reduction by an ANSI-accredited certification organization. To find out if a particular filter is certified to remove *Cryptosporidium,* you can look for "NSF 53" or "NSF 58" plus the words "cyst reduction" or "cyst removal" on the product label information. If you chose to use a non-certified product, select those technologies more likely to reduce *Cryptosporidium,* including filters with reverse osmosis and those that have an absolute pore size of 1 micron or smaller.

Because filter testing is expensive and voluntary, some filters that may work against *Cryptosporidium* may not have been tested. If you chose to use a product not labeled "NSF 53" or "NSF 58", select those technologies more likely to reduce *Cryptosporidium*, including filters with reverse osmosis and those that have an absolute pore size of 1 micron or smaller.

Use of Filters according to the CDC

Filters designed to remove Crypto (any of the four messages below on a package label indicate that the filter should be able to remove Crypto)

- Reverse osmosis (with or without NSF 53 or NSF 58 labeling)
- ***Absolute*** pore size of 1 micron or smaller (with or without NSF 53 or NSF 58 labeling)
- Tested and certified to NSF/ANSI Standard 53 or NSF/ANSI Standard 58 for cyst removal
- Tested and certified to NSF/ANSI Standard 53 or NSF/ANSI Standard 58 for cyst reduction

Filters labeled only with these words may NOT be designed to remove Crypto

- *Nominal* pore size of 1 micron or smaller
- One micron filter
- Effective against *Giardia*
- Effective against parasites
- Carbon filter
- Water purifier
- EPA approved (*Caution: EPA does not approve or test filters)*
- EPA registered (*Caution: EPA does not register filters based on their ability to remove Cryptosporidium)*
- Activated carbon
- Removes chlorine
- Ultraviolet light
- Pentiodide resins
- Water softener
- Chlorinated

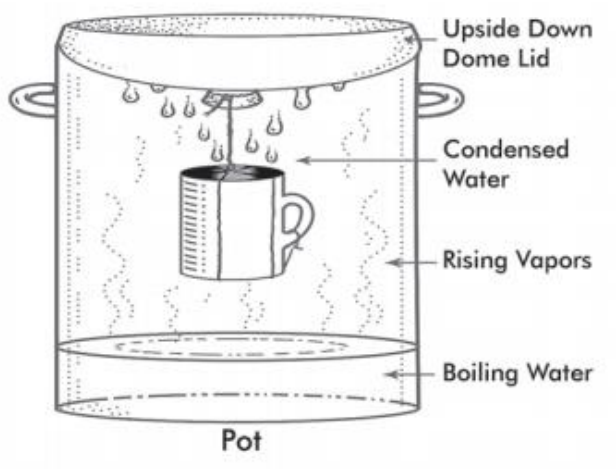
Note: Filters collect germs from water, so someone who is not immunocompromised should change the filter cartridges. Anyone changing the cartridges should wear gloves and wash hands afterwards. Filters may not remove *Cryptosporidium* as well as boiling does because even good brands of filters may sometimes have manufacturing flaws that allow small numbers of *Cryptosporidium* to get in past the filter. Selection of certified filters provides additional assurance against such flaws. Also, poor filter maintenance or failure to replace the filter cartridges as recommended by the manufacturer can cause a filter to fail.

Distillation

Water may also be made safe by distilling, which will remove microorganisms that were not killed off via boiling and chlorination. Additionally, heavy metals, salts and most other chemicals will also be removed. Distillation is a process which involves boiling water and then collecting the vapor that condenses back to water. The condensed vapor will not include salt and most other impurities.

To Distill Water:

1. Fill a pot halfway with water.
2. Tie a cup to the handle on the pot's lid so that the cup will hang right-side-up when the lid is upside down (make sure the cup is not dangling into the water) and boil the water for 20 minutes. The water that drips from the lid into the cup is distilled. (See image below)



Other Methods

Ultraviolet (UV) Light

Portable units delivering a measured dose of UV light are an effective way to disinfect small quantities of clear water. However, this technique is less effective in cloudy water since germs may be shielded from the light by small particles.

Solar Radiation

In an emergency, water can be disinfected with sunlight. Water in a clear plastic bottle, preferably lying on a reflective surface (such as aluminum foil), will be safe to drink after a minimum of 6 hours in bright sunlight. **NOTE* this technique does NOT work on cloudy water.*

Water Storage

Containers for water should be rinsed with a bleach solution before using and reusing. Use water storage tanks and other types of containers with caution (i.e. fire truck storage tanks, as well as previously used cans/bottles, can be contaminated with microbes or chemicals.

Personal water containers and community use of large water storage tanks should be marked as potable water appropriately.

Cleaning and Sanitizing

Basic Guidelines for Shelter / Mass Feeding Centers

- ONLY accept food and water from official sources.
- Use commercially bottled water, if the water system is contaminated.
- Avoid leftovers.
- Avoid bare-hand contact with ready-to-eat food. Use gloves and utensils.
- Avoid self-service whenever possible.
- Use disposable tableware and cups.
- Limit access to food preparation and storage areas.
- Clean and sanitize food preparation services appropriately.
- Avoid contact between raw and ready-to-eat foods. Store ready-to-eat foods above raw foods or preferably in separate containers.
- Obtain adequate supplies of detergent, soap, paper towels and bleach.
- To supplement hand washing stations, place hand sanitizer at the front of food lines and require all individuals going through the line to use sanitizer before entering the food service area.

Cleaning and Sanitizing with Bleach

- Use regular unscented 5-6% household bleach. Read and follow the safety instructions on the bleach container's label.
- Never mix bleach with ammonia or any other cleaner.
- Wear rubber gloves, eye protection, and if necessary, non-porous rubber boots.
- Try not to breathe bleach vapors. Open windows and doors to get fresh air.

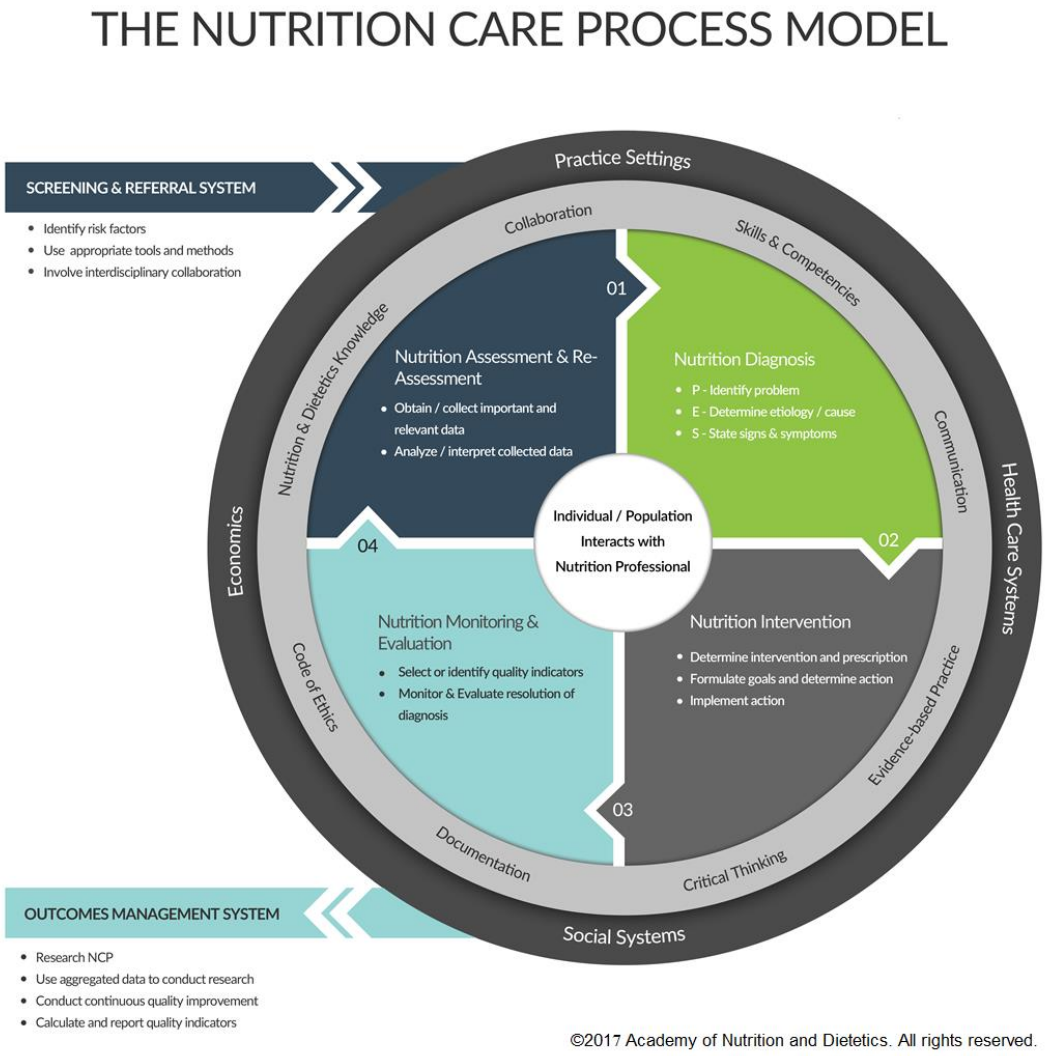
Cleaning Recommendations: The amount of bleach to mix with water depends on what you are cleaning or sanitizing.

*See **Appendix VI** for charts identifying common cleaning surfaces and cleaning steps for specific purposes.*

Appendix I – Nutrition Care Process

The NCP consists of four distinct, interrelated steps:

- **Nutrition Assessment**: The RDN collects and documents information such as food or nutrition-related history; biochemical data, medical tests and procedures; anthropometric measurements, nutrition-focused physical findings and client history.
- **Diagnosis**: Data collected during the nutrition assessment guides the RDN in selection of the appropriate nutrition diagnosis (i.e., naming the specific problem).
- **Intervention**: The RDN then selects the nutrition intervention that will be directed to the root cause (or etiology) of the nutrition problem and aimed at alleviating the signs and symptoms of the diagnosis.
- **Monitoring/Evaluation**: The final step of the process is monitoring and evaluation, which the RDN uses to determine if the patient/client has achieved, or is making progress toward, the planned goals.



Appendix II – Normal Lab Values

Health care facilities have their own normal values according to established lab procedures. The following ranges are reference values as used by the Indian Health Services.

Table 10. Reference Range Lab Values for Adults

Component	**Reference Range**
Glucose	
Fasting	77-99 mg/dl
HgA1C	5.5 – 7.0%
Lipids	
Cholesterol	120-210 mg/dl (20-30% HDL, 60-70% LDL)
Triglycerides	10-190 mc/dl
Protein	
Total	6-8 g/dl
Albumin	3.5-5.5 mEq (45-55% total)
Globulin	1.5-3 g/dl
Prealbumin	15-36 mg/dl
Transferrin	200-400 mg/dl
Blood Urea Nitrogen (BUN)	10-20 mg/dl
Sodium	136-145 mEq/l
Creatinine	.7-1.4 mg/dl
Chloride	96-108 mEq/l
Potassium	3.5-5.5 mEq/l
Hemoglobin	
Males	14-17 g/dl
Females	12-15 g/dl
2 months-2 years	11.5 – 12 g/dl
2-6 years	12-12.5 g/dl
Hematocrit	
Males	40-54%
Females	37-47%
1 month-2 years	36-43%
2-12 years	37-49%

Appendix III – Calculations and Metric Conversions

Metric Conversions
To convert pounds to kilograms:
Pounds/2.2 = # Kilograms OR
Pounds × 0.4535 = # Kilograms

1 kg = 2.20 pounds

To convert inches to centimeters:
Inches × 2.54 = # cm

Calculation of Body Mass Index (BMI)
BMI is calculated the same way for both adults and children. The calculation is based on the formulas in the chart on the following page.

Table 11. Calculation of Body Mass Index

Measurement units	**Formula and calculation**
Kilograms and meters (or centimeters)	Formula: weight (kg) / [height (m)]2 With the metric system, the formula for BMI is weight in kilograms divided by height in meters squared. Since height is commonly measured in centimeters, divide height in centimeters by 100 to obtain height in meters. Example: Weight = 68kg, Height = 165 cm (1.65 m) Calculation: 68 / (1.65)2 = 24.98
Pounds and inches	Formula: weight (lb.) / [height (in.)]2 Calculate BMI by dividing weight in pounds (lbs.) by height in inches (in) squared and multiplying by a conversion factor of 703. Example: Weight = 150 lbs., Height = 5'5" (65") Calculation: [150 / (65)2] x 703 = 24.96

Appendix IV – Malnutrition Screening Tool (MST)

The MST is an example of a rapid screen that can be completed by nurses or other ancillary personnel when a patient is admitted to acute or ambulatory care (Ferguson, Capra, Bauer, & Banks, 1999).

Advantages are it has been tested for reliability, accuracy and it is simple for minimally trained persons to use. The following Table is adapted from (Ferguson, Capra, Bauer, & Banks, 1999) with permission of Elsevier.

Table 12. Malnutrition Screening Tool

Malnutrition Question	**Score**
Have you lost weight recently without trying?	No = 0 Unsure = 2
If yes, how much weight in kilograms have you lost?	1-5 = 1 6-10 = 2 11-15 = 3 > 15 = 4 Unsure = 2
Have you been eating poorly because of a decreased appetite?	No 0 Yes 1

Instructions:

1. Tally the total score from all questions above.
2. A score of 2 or more = risk of malnutrition.

Malnutrition Criteria
ICD-10 Codes
Levels of severity:

- E43: Unspecified severe protein-calorie malnutrition
- E44.0: Moderate protein-calorie malnutrition

Three typical etiologies:

1. Acute Illness/Injury: Severe acute inflammation
2. Chronic Illness: Mild to moderate chronic inflammation
3. Social/Environmental Circumstances: without inflammation

Six characteristics:

1. Insufficient energy intake
2. Loss of subcutaneous fat
3. Loss of muscle mass
4. Localized or generalized fluid accumulation
5. Diminished functional status—measured by hand-grip strength

A minimum of two characteristics is recommended for diagnosis of either severe or non-severe malnutrition.

Table 13. Academy/ASPEN Clinical Characteristics to Support Diagnosis of Malnutrition in Adults

Food and Nutrient Intake (Kondrup, 2001). Malnutrition is the result of inadequate food and nutrient intake or assimilation; thus, recent intake compared with estimated requirements is a primary criterion defining malnutrition. The RDN obtains or reviews the food and nutrition history, estimates optimum energy needs, compares energy needs with estimates of energy consumed, and reports inadequate intake as a percentage of estimated energy requirements over time.					
Malnutrition in the Context of Acute Illness or Injury		Malnutrition in the Context of Chronic Illness		Malnutrition in the Context of Social or Environmental Circumstances	
Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
< 75% of estimated energy requirement for > 7 days	≤ 50% of estimated energy requirement for ≥ 5 days	< 75% of estimated energy requirement for ≥ 1 month	≤ 75% of estimated energy requirement for ≥ 1 month	< 75% of estimated energy requirement for ≥ 3 months	≤ 50% of estimated energy requirement for 1 ≥ month
Interpretation of Weight Loss (Blackburn GL, 1977); (Klein S, 1997); (Rosenbaum K, 2000); (Keys, 1948). The RDN evaluates weight in light of other clinical findings, including the presence of underhydration or overhydration. The RDN assesses weight change over time reported as a percentage of weight lost from baseline.					
Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
% Time	% Time	% Time	% Time	% Time	% Time
1-2%: 1 week 5%: 1 month 7.5%: 3 months	> 2%: 1 week > 5%: 1 month > 7.5%: 3 mos.	5%: 1 month 7.5%: 3 mos. 10%: 6 months 20%: 1 year	> 5%: 1 month > 7.5%: 3 months > 10%: 6 months > 20%: 1 year	5%: 1 month 7.5%: 3 months 10%: 6 months 20%: 1 year	> 5%: 1 month > 7.5%: 3 months > 10%: 6 months > 20%: 1 year
Physical Findings (Keys, 1948); (Detsky AS, 1987). Malnutrition typically results in changes to the physical exam. The RDN may perform a physical exam and document any one of the physical exam findings below as an indicator of malnutrition.					
Body Fat. Loss of subcutaneous fat (e.g. orbital, triceps, fat overlying the ribs).					
Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
Mild	Moderate	Mild	Severe	Mild	Severe

Muscle Mass. Muscle loss—for example, wasting of the temples (temporalis muscle); clavicles (pectoralis and deltoids); shoulders (deltoids); interosseous muscles; scapula (latissimus dorsi, trapezius, deltoids); thigh (quadriceps); and calf (gastrocnemius).					
Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
Mild	Moderate	Mild	Severe	Mild	Severe
Fluid Accumulation. The RDN evaluates generalized or localized fluid accumulation evident on exam (extremities, vulvar/scrotal edema or ascites). Weight loss is often masked by generalized fluid retention (edema), and weight gain may be observed.					
Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
Mild	Moderate to severe	Mild	Severe	Mild	Severe
Reduced Grip Strength (Norman K, 2011). Consult standards supplied by the manufacturer of the measurement device.					
Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition	Nonsevere (Moderate) Malnutrition	Severe Malnutrition
N/A	Not recommended in ICU	N/A	Measurably reduced for age/gender	N/A	Measurably reduced for age/gender

Sources: (ADA E. A., 2009) (Blackburn GL, 1977) (Detsky AS, 1987) (Evert & Bouchier, 2013) (Hagan, 2009) (Keys, 1948) (Klein S, 1997) (Kondrup, 2001) (Norman K, 2011)

Notes

1. Height and weight should be measured rather than estimated to determine body mass index.
2. Usual weight should be obtained to determine the percentage and to interpret the significance of weight loss.
3. Basic indicators of nutritional status such as body weight, weight change, and appetite may substantively improve with refeeding in the absence of inflammation. Refeeding and/or nutrition support may stabilize but not significantly improve nutrition parameters in the presence of inflammation.
4. The National Center for Health Statistics defines “chronic” as a disease/condition lasting 3 months or longer (Keys, 1948).
5. Serum proteins such as albumin and pre-albumin are not included as defining characteristics of malnutrition because recent evidence analysis shows that serum levels of these proteins do not change in response to changes in nutrient intake (Detsky AS, 1987).

Appendix V – Formulary/Product References

Standard Enteral Nutrition (EN) Formulas

Contain intact proteins, typically providing 10-25% of energy from protein. Protein sources may include one or more of the following: Casein, caseinates, soy, whey, milk. Derive 30-60% of energy from carbohydrates. Some have added fiber in the form of soy polysaccharide, oat fiber, fructo-oligosaccharides, or other types of fiber. Carbohydrate sources may include one or more of the following: Corn syrup solids, sucrose, fructose, sugar alcohols. Fat provides 10-45% of total energy in most standard enteral formulas. Fat sources may include one or more of the following: Canola oil, corn oil, safflower oil, medium-chain triglycerides, and soy lecithin. Nutrient density varies between 1.0-2.0 kcal/ml. Most patients needing EN support can be fed using a standard 1.0- to 1.2-kcal/mL formula. Formulas with higher energy density may be considered for patients requiring fluid restriction or for those having difficulty tolerating higher volumes.

Elemental (hydrolyzed) Formulas

Provides nutrients in predigested or hydrolyzed form. Intended for people with digestive or absorptive pathology that impairs the normal digestive process. Protein provided as some combination of free amino acids, dipeptides, tripeptides and some longer oligopeptides. Carbohydrate sources may include hydrolyzed cornstarch or maltodextrin, sucrose and/or corn syrup solids. Fat is provided as a combination of long-chain and medium chain triglycerides.

Specialty Enteral Formulas

Health conditions for which specialty formulas are marketed include the following: Diabetes, kidney disease, hepatic failure, immune compromise, wound healing, ARDS, COPD.
Use of most specialty enteral formulas is not well supported by scientific literature; studies often lack external validity or have methodologic concerns that preclude making conclusions regarding their use. Use of a specialized formula for acute respiratory distress syndrome is an exception, however, as this enteral formulation, which contains anti-inflammatory lipids and antioxidants, resulted in a significant reduction in length of stay in the intensive care unit, time on the ventilator, and mortality. Most of these formulas are more expensive than standard formulas, and use should be limited to very well-defined situations (i.e., acute lung injury, ARDS).

ABBOTT NUTRITION Website (https://abbottnutrition.com)

HORMEL HEALTH LABS (http://www.hormelhealthlabs.com/)

LYONS MAGNUS (https://www.lyonsmagnus.com/healthcare)

MEAD JOHNSON (http://www.meadjohnson.com/)

NUTRICIA (https://www.nutricia.com/)

NESTLE (https://www.nestlehealthscience.com/)

Appendix VI – Water, Sanitation, and Hygiene (WASH)

Using Bleach to Make Drinking Water Safe

Making Water Safe to Use with Bleach Having a 1% Concentration of Sodium Hypochlorite

1 quart/liter water	1 gallon water	5 gallons water
If you have a dropper: Add 10 drops of bleach	If you have a dropper: Add 40 drops of bleach	If you have a dropper: Add 200 drops of bleach
If you have something that measures milliliters (ml): Add ½ ml of bleach	If you have something that measures milliliters (ml): Add 2 ½ ml of bleach	If you have something that measures milliliters (ml): Add 12 ½ ml of bleach
If you have a measuring spoon: Add 1/8 teaspoon of bleach	If you have a measuring spoon: Add ½ teaspoon of bleach	If you have a measuring spoon: Add 2 ½ teaspoons of bleach

Making Water Safe to Use with Bleach Having a 5-6% Concentration of Sodium Hypochlorite

Note: if water is cloudy, murky, colored, or very cold, add double the amount of bleach listed below

1 quart/liter water	1 gallon water	5 gallons water
If you have a dropper: Add 2 drops of bleach	If you have a dropper: Add 8 drops of bleach	If you have a dropper: Add 40 drops of bleach
If you have something that measures milliliters (ml): Add 0.1 ml of bleach	If you have something that measures milliliters (ml): Add ½ ml of bleach	If you have something that measures milliliters (ml): Add 2 ½ ml of bleach
If you have a measuring spoon: Amount is too small to measure	If you have a measuring spoon: Add a little less than 1/8 teaspoon of bleach	If you have a measuring spoon: Add ½ teaspoon of bleach

Making Water Safe to Use with Bleach Having an 8.25% Concentration of Sodium Hypochlorite**

Note: if water is cloudy, murky, colored, or very cold, add double the amount of bleach listed below

1 quart/liter water	1 gallon water	5 gallons water
If you have a dropper: Add 2 drops of bleach	If you have a dropper: Add 6 drops of bleach	If you have a dropper: Add 30 drops of bleach
If you have something that measures milliliters (ml): Amount is too small to measure	If you have something that measures milliliters (ml): Add ½ ml of bleach	If you have something that measures milliliters (ml): Add 2 ml of bleach
If you have a measuring spoon: Amount is too small to measure	If you have a measuring spoon: Add a little less than 1/8 teaspoon of bleach	If you have a measuring spoon: Add 1/3 teaspoon of bleach

**8.25% is the most common household bleach concentration available

Making Water Safe with Bleach Having an Unknown Concentration of Sodium Hypochlorite

1 quart/liter water	1 gallon water	5 gallons water
If you have a dropper: Add 10 drops of bleach	If you have a dropper: Add 40 drops of bleach	If you have a dropper: Add 200 drops of bleach
If you have something that measures milliliters (ml): Add ½ ml of bleach	If you have something that measures milliliters (ml): Add 2 ½ ml of bleach	If you have something that measures milliliters (ml): Add 12 ml of bleach
If you have a measuring spoon: Add 1/8 teaspoon of bleach	If you have a measuring spoon: Add ½ teaspoon of bleach	If you have a measuring spoon: Add 2 ½ teaspoons of bleach

Cleaning and/or Sanitizing Various Surfaces

Cleaning and Sanitizing Food Cans and Surfaces

Area/Item to be Cleaned	Amount Bleach	Amount Water	Cleaning Steps
Food surfaces that may have touched flood water (i.e. countertops, plates) Note: throw away wooden cutting boards, baby bottle nipples and pacifiers	1 cup (240 milliliters)	5 gallons (18.9 Liters)	1. Wash item/area with soap and hot, clean water. 2. Rinse with clean water. 3. Sanitize in solution of 1 cup of household chlorine bleach per 5 gallons of clean water. 4. Allow to air dry.
Food cans that are not bulging, open, dented, or otherwise damaged	1 cup (240 milliliters)	5 gallons (18.9 Liters)	1. Remove can label(s). 2. Wash can(s) with soap and warm, clean water. 3. Dip can(s) in mixture of 1 cup of bleach per 5 gallons of water. 4. Allow to air dry. 5. Re-label cans with a permanent marker.

Cleaning and Sanitizing Household Surfaces and Items

Area/Item to be Cleaned	Amount Bleach	Amount Water	Cleaning Steps
Surfaces that do not soak up water and that may have touched floodwater (i.e. floors, stoves, sinks, certain toys, countertops, flatware, plates, and tools).	1 cup (240 milliliters)	5 gallons (18.9 Liters)	1. Clean surface with soap and warm, clean water. 2. Rinse with clean water. 3. Sanitize using a mixture of 1 cup of household chlorine bleach to 5 gallons of clean water. 4. Allow to air dry.

Cleaning Mold Growth off Hard Surfaces

Area/Item to be Cleaned	Amount Bleach	Amount Water	Cleaning Steps
Mold growth on hard surfaces (i.e. floors, stoves, sinks, certain toys, countertops, flatware, plates, and tools).	1 cup (240 milliliters)	5 gallons (18.9 Liters)	1. Mix 1 cup of household bleach to 1 gallon of clean water. 2. Wash surfaces with bleach mixture. 3. If surfaces are rough, scrub them with a stiff brush. 2. Rinse surfaces with clean water. 4. Allow to air dry.

(Reference: CDC "Cleaning and Sanitizing with Bleach After an Emergency" https://www.cdc.gov/disasters/bleach.html)

Appendix VII – Dietary Resources

Abbott Clinical Handbook with Practice Tools (68-page PDF):
https://static.abbottnutrition.com/cms-prod/feedme.com/img/3-feedME_ClinicalHandbook.pdf

American Association of Diabetes Care & Education Specialists (ADCES)
(https://www.diabeteseducator.org/living-with-diabetes)

American Cancer Society (https://www.cancer.org/treatment/survivorship-during-and-after-treatment/staying-active/nutrition/nutrition-during-treatment/weak-immune-system.html)

American Diabetes Association (ADA) (http://www.diabetes.org/)

- ADA Approaches to Glycemic Treatment:
  http://care.diabetesjournals.org/content/38/Supplement_1/S41

American Heart Association (AHA) Professional Resources https://www.heart.org/en/professional

American Society for Parenteral and Enteral Nutrition (ASPEN)

- Clinical Guidelines:
  https://www.nutritioncare.org/Guidelines_and_Clinical_Resources/Clinical_Guidelines/
- ASPEN Safe Practices for Enteral Nutrition (89-page PDF):
  https://www.nutritioncare.org/uploadedFiles/01_Site_Directory/Guidelines_and_Clinical_Resources/EN_Pathway/Boullata_et_al-2016-Journal_of_Parenteral_and_Enteral_Nutrition.pdf
- Guidelines for Provision and Assessment of Nutrition Support Therapy, published in 2016: (53-page PDF):
  https://www.nutritioncare.org/uploadedFiles/01_Site_Directory/Guidelines_and_Clinical_Resources/EN_Pathway/McClave_et_al-2016-Journal_of_Parenteral_and_Enteral_Nutrition.pdf
- Enteral Nutrition Care Pathway (2-page PDF):
  https://www.nutritioncare.org/uploadedFiles/01_Site_Directory/Guidelines_and_Clinical_Resources/EN_Pathway/EN%20Pathway_Print.pdf

Centers for Disease Control and Prevention (CDC):

- HIV: https://www.cdc.gov/hiv/
- Heart Disease: https://www.cdc.gov/heartdisease/index.htm
- Diabetes: https://www.cdc.gov/diabetes/ndep/index.html
- Recommendations of the Advisory Committee on Immunization Practices (ACIP): Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence:
  https://www.cdc.gov/mmwr/preview/mmwrhtml/00023141.htm

Dietary Guidelines for Americans (DGA) 2020 - 2025: DietaryGuidelines.gov

National Institute of Diabetes and Digestive and Kidney Diseases:
https://www.niddk.nih.gov/health-information/communication-programs/nkdep

National Institutes of Health (NIH): https://www.nhlbi.nih.gov/node/80397

National Kidney Foundation – Health Guide: https://www.kidney.org/atoz/atozTopic_Brochures

National Lipid Association: https://www.lipid.org/

NestleHealthScience – Pediatric Health Management:
https://www.nestlehealthscience.com/health-management/pediatrics

U.S. Food and Drug Administration (FDA) – Populations at Risk for Food-Borne Illness:
https://www.fda.gov/food/consumers/people-risk-foodborne-illness

Water, Sanitation, and Hygiene (WASH) Resources

American Red Cross "Food and Water in an Emergency" handbook (16-pg PDF):
https://www.redcross.org/content/dam/redcross/atg/PDF_s/Preparedness__Disaster_Recovery/Disaster_Preparedness/Food_Safety/Food_and_Water-English.revised_7-09.pdf

CDC "Water, Sanitation, & Hygiene (WASH) – related Emergencies & Outbreaks":
https://www.cdc.gov/healthywater/emergency/drinking/making-water-safe.html

CDC "Cleaning and Sanitizing with Bleach after an Emergency":
https://www.cdc.gov/disasters/bleach.html

CDC "Making Water Safe in an Emergency" Public Factsheet (1-page PDF):
https://www.cdc.gov/healthywater/emergency/pdf/make-water-safe-H.pdf

U.S. Environmental Protection Agency (EPA) – Ground Water and Drinking Water:
https://www.epa.gov/ground-water-and-drinking-water

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