

FAQ Patient Care 2. What are general dietary recommendations and food suggestions for Ebola Treatment Unit (ETU) patients (of all ages and population groups)?

General considerations

Patients in the ETU should receive food and drinks that meet their needs and preferences and have the highest likelihood of contributing to recovery from their disease.

The diet must:

- Contribute to treatment and recovery by:
 - Providing adequate amounts of energy (kcal) and essential nutrients, meeting nutritional needs during different phases of illness
 - Helping to normalize metabolic and electrolyte disturbances (see FAQ PC2)
 - Facilitating hydration
- Have a high likelihood of being consumed, and therefore:
 - Align with patient preferences (in terms of taste, cultural habits, and beliefs regarding the food's contribution to recovery, etc.)
 - Be palatable, attractive and varied (not monotonous)
 - Have the consistency (i.e., liquid, semi-solid or solid) required and preferred by patients
- Not aggravate symptoms, taking into consideration:
 - Diarrhoea – by being cautious of osmolality, dietary fiber, lactose, etc.
 - Risk of liver and kidney impairment – by being cautious of protein and electrolyte intake (in particular, renal solute load)¹

Type of diet and choice of specific food/drinks should be guided by individual patient nutritional assessments (see FAQ PC1).

Food and drinks can fall into three diet categories according to consistency: **liquid, semi-solid and solid**.² A combination diet is also possible. Refer to the food tolerance and appetite test decisional tree in FAQ PC1 Annex 2 for assistance in selecting the proper diet categories for patients.

(NOTE: WHO interim guidance materials suggest using maintenance, transition and boost phases² to guide dietary choices, rather than the categories described above. Either approach can be used according to the capacities and preferences of staff in EVD programmes or even at the level of each ETU).

Special considerations for critically ill patients:

- For critically ill patients with severe dehydration, fulfilling nutritional requirements is a lower priority than rehydration. Strategies to address volume replacement with fluids and electrolytes should take (temporary) precedence, over nutritional support.⁴
- For some critically ill patients, nasogastric feeding with an appropriate liquid diet should be considered. Smaller amounts should be provided initially and increased progressively, as tolerated by the patient¹ (see FAQ PC5 regarding use of nasogastric tubes).

Recommended daily requirements

Patient diets should be well balanced, providing all essential macronutrients (carbohydrates, protein, and fat) and micronutrients (vitamins and minerals). Each meal should include 2 to 3 different family foods from the following food groups, with all groups being covered each day:

- Starches (staple foods): grains, roots, and tubers.
- Foods of animal source: meat, chicken, fish, liver, eggs, and dairy products.
- Legumes: beans, lentils, peas, and seeds. (Soak beans and legumes prior to cooking to make them softer and more suitable for children to consume).
- Fruits and vegetables (especially those rich in vitamin A): papaya, mango, passion fruit, oranges, dark green leafy vegetables, carrots, pumpkin, and sweet potatoes.

Energy requirements

Daily energy needs depend principally on age. Table 1 provides estimated ranges for each age group. Lower limits in each range may be more pertinent for patients who are acutely ill and on a liquid diet, while upper limits may be more pertinent for patients who are recovering and on a solid diet. For patients ≥ 2 years old, 12 per cent of energy should be from a protein source.⁵

It is important to note that the energy intake recommendations are estimates. Determining the exact caloric content of different foods and of exact quantities of foods consumed by patients may be difficult and laborious. Recommended daily energy needs should help establish targets and guide food and meal planning.

In patients with negligible food intake for more than 5 days, the introduction of food should be managed cautiously to avoid re-feeding issues.²

During convalescence (and when there is no risk of a re-feeding syndrome), patients should be encouraged to eat as much as they want and can tolerate (even if this means exceeding the recommended daily intake).²

Table 1. Daily recommended energy intake per age group⁶

Age	Recommended daily energy intake (kcal)
6–11 months	850–1000
12–23 months	1,000–1200
24–59 months	1,200–1400
5–10 years	1,400–1600
11–18 years	1,600–2000
>18 years	2,000–2600
Pregnant and lactating adolescents and women ⁷	Intake for their age + ≥ 300

Micronutrient requirements

EVD patients should receive the standard daily requirement of micronutrients; excessive use of micronutrients is not recommended.⁸

If dietary diversity is potentially insufficient to provide the standard daily requirement, micronutrient supplementation may be necessary. Supplementation can be provided through micronutrient tablets or multiple micronutrient powders (see FAQ PC4 for more information on multiple micronutrient powders).

Some studies have suggested the benefit of supplementation with multivitamins⁹ and vitamin A¹⁰ on EVD disease course. A retrospective multisite cohort study in Liberia and Sierra Leone during the 2014–2015 Ebola outbreak⁹ found that early treatment of EVD patients with oral multivitamins (daily intake <48 hours after admission) resulted in a reduced mortality rate compared with those not treated. Considering the low cost and safety of multivitamin treatment alongside its potential role in clinical improvement, the study authors highly recommend initiating multivitamin treatment in the initial stages of ETU care. The study also emphasized that vitamin A may have had a specific (additional) role related to innate and adaptive immunity.

Children <5 years old who have NOT received vitamin A supplementation in the past 6 months should be offered single dose supplementation.^{1,2}

Patient preferences

All attempts should be made to have nutritionally balanced and complete diets using **local/traditional foods** and guided by **local preferences**. As much as possible, offer meals according to a patient's tastes and preferences, while balancing nutritional needs. Use of specialized nutritious products may be necessary to ensure adequate protein and micronutrient intake but should not be the default option (see FAQ PC4).

Field experience with Ebola patients in treatment centres shows wide differences in their capacity to eat and drink, and that appetite can be a driving factor. Presenting patients with choices increases the likelihood that they will eat sufficient quantities of food. When a patient does not like a specific food/drink that is offered, alternatives should be sought. This is facilitated with good logistics and well-resourced treatment units,² although high patient numbers may be a limiting factor, even in well-resourced ETUs.

Suggestions for addressing food preferences:³

- Assess all local food options, considering supply chain stability and reliability (e.g., visit markets, shops, local providers, etc.).
- Consider local perceptions of comfort or 'medicinal' foods (e.g., ask staff, caregivers (EVD survivors) and patients to gather this information).
- Provide meals that can be adjusted according to individual preferences and needs (i.e., in terms of consistency, taste, specific nutritional requirements). It can be helpful to have a "standard meal" with options for adjustments.
- Consider supporting the families and friends of patients to provide meals. This can positively impact a patient's food consumption and foster a sense of normalcy (see FAQ FS5).¹¹

- Ensure a participatory approach with patients and caregivers regarding nutritional care (see FAQ G4 on monitoring the patient's food intake).

ETU staff have reported that EVD patients complain about an altered or impaired sense of taste and have suggested using strong flavours and/or spices. If patients have a normal appetite and complain about lack of taste, specific strong-flavoured food products or spices can be tried out in consultation with patients and nutritionists (whether on site or remotely).

Past experiences: During the 2014–2016 Ebola outbreak in West Africa, pepper soup and coconut water were identified as local foods that were preferred and consumed by many adults in ETUs, even patients who were very ill, anorexic and/or unwilling to eat. ¹

Meals and snacks

Three main meals and 2–3 snacks should be provided daily in ETUs.^{1,2} (For children <2 years old, refer to FAQ PC3 and national guidance for infant and young child feeding practices).

See Annexes for examples of weekly meal plans and recipes.

General considerations

- Smaller, frequent meals may be more easily tolerated by patients. Consider providing smaller than usual meals, complemented by multiple healthy snacks. Increase the meal portion size for recovering patients.
- Convalescent patients might have increased appetite and should thus be offered an increased volume of meals and snacks, without limit. Priority should be given to energy-dense foods.⁵
- Additional meals should be provided if requested.
- Meals should be served hot and in a timely manner⁷ to respect food hygiene measures (see FAQ FS3), but also out of respect for patients and because food is more appetizing when served hot.

Solid diet (standard diet)

Patients with appropriate appetite and ability to eat/swallow should be provided with foods with regular consistency.

*Examples:*⁵

- Breakfast: porridge (e.g., rice, sorghum), bread, local doughnuts, eggs, and soup
- Lunch: standard 'family' meal with staple foods and egg/meat/fish without bones, sauce, pulses, and oil
 - Suggestion of generic recipe for one patient:
 - 150 g starch (e.g., rice, pasta, millet)
 - 80–130 g protein (e.g., chicken, fish, beans, eggs)
 - 70–100 g vegetables
 - Salt + oil
- Dinner: similar to lunch

Semi-solid diet

Patients with moderate appetite and/or difficulty eating/swallowing should be provided with foods that do not require any chewing. With some exceptions, food used for a solid diet can generally also be used for a semi-solid diet. Some foods must simply be mashed or ground up to facilitate eating/swallowing.

*Examples:*⁵

- Breakfast: porridge (e.g., rice, sorghum), fruit/juice, eggs, mashed foods, and soups
- Lunch: soup, mashed version of a standard 'family' meal made with staple foods and egg/meat/fish without bones, sauce, pulses, and oil
- Dinner: similar to lunch

Specialized nutrition products in paste form should not be provided to patients with swallowing difficulties.

Liquid diet

Patients with poor appetite and/or severe difficulty with eating/swallowing should be provided with a liquid diet. Liquid foods/drinks with low osmolarity and low salt content should be provided.⁴

Liquid diets can be an important source of fluids for patients. Consider tracking how much fluid is given this way.

Liquid diets have been problematic for some patients.³ This is likely due to a combination of factors, including the proposed food commodity (e.g., use of poorly tasting therapeutic milks), monotony of diet, and the patient's clinical condition (i.e., weakness, lack of appetite). These obstacles can be overcome by following patient preferences, providing favourably tasting and varied options, and offering the required feeding support (see FAQ G2 and G3).

*Examples:*⁵

- Soup, broth, yoghurt, highly diluted and blended porridge or pap
- Use of specialized nutrition products (e.g., sip feeds) may be more important and necessary than for those patients needing semi-solid or solid diets (see FAQ PC4).

Snacks^{5,13}

A variety of snacks should be available for patients at any time, including throughout the night. For patients with poor or moderate appetite, it may be important to regularly offer snacks between meals as they may not request them.

Snacks should conform with prescribed diet consistency (i.e., liquid, semi-solid, solid).

Night-time snacks should ideally require minimum preparation,⁵ be easy to reach and consume, and have low risk of bacterial contamination if left at the patient's bedside.

Examples:

- Bread, fruit, nuts, biscuits, sip feeds, and ready-to-use therapeutic food or ready-to-use supplementary food, if appropriate.

Fluids

Proper hydration is essential in the care of EVD. The recommendations below offer a complementary nutritional perspective to the guidance provided on this by WHO.

Various approaches for facilitating hydration have been described in relation to EVD:

- Offer oral rehydration solution (ORS) or water with each meal/snack,⁵ and ensure it is always freely and abundantly available.
- Optimize the intake of fluids by actively encouraging frequent sips. Greater support should be given to those who are more ill.¹
- If nausea or vomiting impedes fluid intake, consider an antiemetic medication such as ondansetron.¹
- Provide flavoured ORS or mix in some fruit juice to increase palatability.^{1,14}
- Use coconut water or “jelly water” (coconut milk from a young coconut) to increase intake of fluid and potassium.^{1,3}
- In warm climates, offering cold water (rather than room temperature water) may facilitate intake.

The use of sweetened carbonated beverages or juices in patients with diarrhoea has been controversial because of the high osmolarity and low nutritional value of these products; caution is therefore needed, as high consumption of these beverages can exacerbate the diarrhoea.² Further, these products are low in electrolytes and nearly all essential nutrients.

Despite their drawbacks, ETU health workers have argued that carbonated drinks have been useful in increasing/maintaining fluid intake. Patients frequently request them, and they have been reported to “cheer people up”.³ The current consensus is that sweetened carbonated beverages should be avoided, except as a short-term solution if a patient refuses all other drinks offered. Non-sweetened, non-caffeinated carbonated beverages (e.g., sparkling water) may be permitted.

NOTE: Please refer to medical protocols for guidance regarding **rehydration**, including volumes of ORS to provide and when to use intravenous fluids.

Additional considerations when selecting foods/liquids and planning meals

Viable food commodities and meals should:^{2,6,15}

- Be easy to ingest
- Require minimal assistance to eat
- Require minimal use of utensils
- Have limited risk of bacterial contamination
- Be able to be kept at the bedside for 2–3 hours without spoiling
- Be accessible and available
- Have limited non-soluble fibre content
- Be easy to prepare

NutVal is a free access tool for meal planning using a wide range of available foods. It can be found here: <https://www.nutval.net>.

ANNEXES

Annex 1. Weekly menu examples for solid and semi-solid diets (must be properly adapted and blended for semi-solid diet)

Example 1:¹¹

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast	Cream of wheat, sausage, sweet bread, banana, fruit juice	Cream of wheat, egg, banana, fruit juice	Corn meal, yogurt, sweet bread, banana, fruit juice	Oats cream, boiled egg, sweet bread, banana, fruit juice	Corn meal, egg, yogurt, banana, fruit juice	Cream of wheat, yogurt, banana, fruit juice	Corn meal, egg, yogurt, banana, fruit juice
Lunch	Vegetable stew, rice + animal-based protein*	Potato greens, rice + animal-based protein*	Vegetables beans, rice	Cassava leaves, rice + animal-based protein*	Vegetables, rice + animal-based protein*	Vegetable soup, fufu + animal-based protein*	Potato greens, rice + animal-based protein*
Dinner	Irish potato soup, fruit juice	Eddoes soup, fruit juice	Plantain soup, fruit juice	Potato soup, fruit juice	Yam and plantain soup, fruit juice	Plantain soup (+ green bean and carrots), fruit juice	Eddoes soup, fruit juice

* e.g., beef, goat, chicken, fish, egg

Example 2:⁷

	Breakfast* (7:30-8:30 am)	Mid-morning** (11:00-11:30 am)	Lunch (1:00-2:30 pm)	Dinner (6:00-7:00 pm)
Sunday	Bread & butter Sardines Rice pap	Boiled cassava Meat soup	Fried rice Vegetables Chicken	Pasta with meat sauce
Monday	Bread & butter Lunch meat Ogi pap	Pancake Chicken and gravy	Rice Cassava leaves Meat or smoked fish	Boiled rice Fish soup
Tuesday	Bread & butter Boiled egg Rice pap	Boiled cassava Fish soup	Jollof rice Vegetable and chicken stew	Pancake Fried fish and gravy
Wednesday	Bread & butter Sardines Ogi pap	Pasta and chicken Soup	Rice Crain-Crain Meat or smoked fish	Boiled rice Meat soup
Thursday	Bread & butter Lunch meat Rice pap	Boiled cassava Meat soup	Rice Potato leaves Meat or smoked fish	Rice Chicken soup
Friday	Bread & butter Boiled egg Ogi pap	Pancake with Chicken Gravy	Checked rice Groundnut soup Chicken	Pasta or rice Meat stew
Saturday	Bread & butter Cheese Rice pap	Sweet potato and fish soup	Rice Green leaves Meat or smoked fish	Rice Chicken soup

* Tea served daily with breakfast ** Optional snack for patients with strong appetite

Annex 2. Examples of breakfast, lunch and dinner recipes for solid and semi-solid diets (must be properly adapted and blended for semi-solid diet)¹¹

Breakfast

	Food items	Amount/person
Corn meal and boiled egg	Corn meal Oil Sugar Milk powder Egg	150 g 10 g 10 g 5 g 50 g (1 egg)
Corn meal, sausage and yoghurt	Corn meal Oil Sugar Milk powder Sausage (only for solid diet) Yoghurt	150 g 10 g 10 g 5 g 30 g 100 g
Oat porridge and yoghurt	Oats Oil Sugar Milk powder Yoghurt	150 g 10 g 10 g 5 g 100 g
Cream of wheat and boiled egg	Wheat flour Oil Sugar Milk powder Egg	150 g 10 g 10 g 5 g 50 g (1 egg)
Cream of wheat and sausage	Wheat flour Oil Sugar Milk powder Sausage (only for solid diet)	150 g 10 g 10 g 5 g 30 g
+ 1 piece of sweet bread (solid diet only) + 1 banana + fruit juice		

Lunch

	Food items	Amount/person
Vegetable stew	Rice Oil Chicken* Fish** Vegetables Onion Salt	200 g 20 g 70 g 40 g 90 g 10 g 1g
Kidney beans and rice *** Soak overnight and cook for a long time until very soft.	Rice Oil Kidney beans*** Chicken* Vegetables Onion Salt	200 g 20 g 60 g 60 g 90 g 10 g 1 g
Vegetable rice	Rice Oil Chicken* Vegetables Onion Soy sauce Salt	200 g 20 g 110 g 90 g 10 g To taste 1 g
Potato greens	Rice Oil Chicken* Fish** Green leaves (include some carrots) Onion Salt	200 g 20 g 70 g 40 g 90 g 10 g 1 g
Cassava leaves	Rice Oil Chicken* Fish** Cassava leaves Onion Ground nuts Salt	200 g 20 g 70 g 35 g 80 g 10 g To taste/per local tradition 1 g
Fufu and soup	Fufu Oil Chicken* Fish** Green leaves (include some carrots) Salt	175 g 20 g 70 g 40 g 90 g 1 g

* Weights provided are for whole fish, although it should be served without bones (edible portion of 40 g fish is around 35 g) ** Weights provided are for whole chicken, although it should be served without bones (edible portion is only about 65 per cent)¹¹

Dinner

	Food items	Amount/person
Potato soup	Potatoes Oil Chicken* Onion Benny seeds Salt	250 g 10 g 20 g 10 g Trace 1g
Plantain soup (with green beans and carrots when no vegetables in lunch)	Plantain Oil Dry fish (boneless) Peanut paste Onion Salt	250 g 10 g 15 g 10 g 10 g 1 g
Eddoes soup	Eddoes Oil Dry fish (boneless) Benny seeds Salt	250 g 10 g 15 g Trace 1 g
Yam, plantain and sweet potato soup	Yams Plantains Sweet potatoes Oil Chicken* Onion Salt	60 g 70 g 120 g 10 g 20 g 10 g 1 g

* Weights provided are for whole chicken, although it should be served without bones (edible portion is only about 65 per cent)¹¹

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