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Managing the Supply Chain of Specialized Nutritious Foods

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Managing the Supply Chain of Specialized Nutritious Foods

About this Guideline

Purpose

Specialized nutritious foods (SNF) are increasingly recognized as a viable and efficient component of programmes to treat and prevent undernutrition.

This publication has been produced to provide comprehensive guidance on the supply chain management of SNF. Its purpose is twofold:

1. to improve planning, procurement and delivery of nutritious foods to beneficiaries; and
2. to maintain the nutritional quality of SNF by promoting optimal control during transport, storage, stock management and distribution.

This guideline merges existing information on nutrition intervention planning, procurement, quality management and logistics. It will serve as an operational tool in the field, supporting staff from World Food Programme (WFP). However, it can also be used as reference for a wider humanitarian and development community, bearing in mind that some processes may reflect specific WFP corporate approaches. Each chapter presents guidance and 'golden rules' for practice at each stage of the supply chain.

Scope

This guideline addresses the use of SNF in nutrition interventions to:

- treat moderate acute malnutrition (wasting);
- prevent acute malnutrition (wasting);
- prevent chronic malnutrition (stunting); and
- address micronutrient deficiencies (MNDs) among vulnerable people.

SNF can also be used in other programming, for example general food distributions, school feeding, and food for assets. It is important to note that SNF are meant to be consumed in addition to the regular diet.

SNF differ from other commodities, such as staple foods, in several ways. Purchasing the right quality and maintaining it along the supply chain is challenging. For example:

- programme design can be complicated if the government hasn't incorporated SNF into their guidance and standards, or if programme designers are not familiar with using SNF;
- procurement planning needs to take into account the limited number of suppliers, limited stock availability, lead times and contingency planning;
- transport can be complex because the products need to be protected from high temperatures, and because cartons of different sizes complicate load plans for trucks;
- warehousing requirements may include temperature control, and monitoring will be necessary to maintain product quality;
- stock management must include detailed inventory data as Best Before Date (BBD) is one of the main considerations;
- traceability (tracking and tracing) must be in place in case of product recalls.

Use

This guideline consolidates information currently available and builds on core materials used by different organizations. In some areas, little formal guidance exists at present; in these instances, issues are presented for consideration. The guideline will be updated on a regular basis to include the most recent developments.

This publication does not provide in-depth technical information; instead it provides references for resources from which additional information can be obtained.

Users seeking guidance on a particular topic should consult the table of contents and the index. The Glossary in Chapter 8 explains the most common terms related to SNF.

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Acronyms

AIDS	Acquired Immunodeficiency Syndrome
API	Active pharmaceutical ingredient
ART	Anti-retroviral therapy
BBD	Best-before date
BMI	Body Mass Index
BSFP	Blanket supplementary feeding programme
CAPA	Corrective Action and Preventive Action plan
CMAM	Community-based Management of Acute Malnutrition
CO	Country Office
CP	Cooperating partner
CSB	Corn Soy Blend
DON	Deoxynivalenol
DOTS	Direct Observed Treatment Short-course (for TB)
EAR	Estimated average nutrient requirement
EDP	Extended delivery point
ER	Emergency Response
ETA	Expected time of arrival
FAO	Food and Agriculture Organization of the United Nations
FBF	Fortified blended foods
FDP	Final delivery point
FEFO	First Expired, First Out

FIFO	First In, First Out
FIM	Food incident management
FLA	Field-level-agreement
FPF	Forward Purchase Facility (WFP)
FPP	Finished pharmaceutical product
GAM	Global acute malnutrition
GCMF	Global Commodity Management Fund
GFA	General food assistance
GMO	Genetically modified organism
HAZ	Length-/Height-for-Age Z-score
HIV	Human Immunodeficiency Virus
HQ	Headquarters
I.D.E.A.L.	Initiate, detect, estimate, act, learn
IDP	Internally displaced person
IMC	Incident Management Committee
IPF	Import Parity Form
IPO	Internal Purchase Order
IU	International Unit
IYCF	Infant and young child feeding
LNS	Lipid-based nutrient supplement
LQ	Large quantity (as in LNS)

LTSH	Land, transport, storage and handling
MAM	Moderate acute malnutrition
MDER	Minimum dietary energy requirement
MND	Micronutrient deficiency
MNP	Micronutrient powders
MQ	Medium quantity (as in LNS)
MUAC	Mid-upper arm circumference
NFC	New Food Committee
NGO	Non-governmental organization
PLW	Pregnant and lactating women
RB	Regional Bureau
RING	Rapid Incident Notification Grid
RNI	Recommended nutrient intake
RSB	Rice soya blend (in Super Cereal and Super Cereal Plus)
RUF	Ready-to-use foods
RUSF	Ready-to-use supplementary foods
RUTF	Ready-to-use therapeutic foods
SAM	Severe acute malnutrition
SBCC	Social & behaviour change communication
SNF	Specialized Nutritious Foods
SO	Sales Order

SOP	Standard operating procedure
SQ	Small Quantity (as in LNS)
TB	Tuberculosis
TOR	Terms of Reference
TSFP	Targeted supplementary feeding programme
UL	Tolerable Upper Intake Level
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water, sanitation and hygiene
WFH	Weight-for-Height
WFP	World Food Programme
WHO	World Health Organization
WSB	Wheat Soya Blend
ZEA	Zearalenone

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CHAPTER 1

Specialized nutritious foods

In this chapter

- 1.1 gives a brief background on SNF, the different product categories and their physical characteristics
- 1.2 describes elements to be considered in SNF supply chain management
- 1.3 outlines the importance of quality management
- 1.4 presents the golden rules

For information concerning generic product specifications, see the following links:

- Specific requirements that vendors must follow to meet WFP's contract for delivering our commodities. Online at: <http://foodqualityandsafety.wfp.org/specifications>
- United Nations Children's Fund (UNICEF) Supply Catalogue. Online at: <https://supply.unicef.org/>
- International Federation of Red Cross and Red Crescent Societies' Emergency Items Catalogue. Online at: <http://procurement.ifrc.org/catalogue/>
- Information about adding new foods to the basket online at: <https://newgo.wfp.org/documents/new-foods-committee>

1.1 Background

Undernutrition includes wasting, stunting, and MNDs, and is a leading cause of morbidity and mortality.

Acute malnutrition (wasting) occurs as a result of recent rapid weight loss (or, in children, a failure to gain weight) and is associated with increased morbidity and mortality. The risk of mortality is even higher when a child is affected by both wasting and stunting.¹ Acute malnutrition is further distinguished into moderate acute malnutrition (MAM) and severe acute malnutrition (SAM).

Chronic malnutrition (stunting) develops as a result of inadequate nutrition, repeated infections, or both. It is associated with poor cognitive development, poor learning and limited productivity (which, in turn, undermines national development). It accumulates over time, in particular during the first 1,000 days – from conception to a child's second birthday. Some negative outcomes associated with stunting may be irreversible, therefore stunting should be prevented.

MND is a shortage of essential vitamins or minerals. People who suffer from MNDs may not show any signs or symptoms, so it is sometimes referred to as 'hidden hunger'. MNDs can take many forms depending on the micronutrient/s deficient in the diet. Worldwide, iron, vitamin A and iodine are the three most common MNDs.

Poor nutrition during adolescence (10 to 19 years) and youth (15 to 24 years) can negate the cumulative benefits of good nutrition accrued in infancy and early life, and can perpetuate the intergenerational cycle of malnutrition.

There are many drivers of malnutrition. These include: illness and inadequate nutrient intake, as well as food insecurity, poor health environment and deficient care practices (see the conceptual framework in Annex 1, Causes of undernutrition). Humanitarian emergencies often aggravate the causes of undernutrition.

Even in development contexts, individuals can have difficulty accessing and utilizing the 40 nutrients required for growth and biological development. This is especially true of infants, young children, and pregnant and lactating (breastfeeding) women (PLW). Even if people appear to have enough to eat, they may still be lacking essential micronutrients. For these reasons, fortified foods are often used to supplement the current diet.

There are times when SNF are required as part of an overall response to treat or prevent undernutrition in specific target groups. In such cases, these nutrient-dense foods are used to help meet nutrient requirements for specific target groups; prevent irreversible, long-term developmental problems; and reduce mortality.

¹ Black, Robert E, *et al.* (2008) "Maternal and child undernutrition: global and regional exposures and health consequences" in *The Lancet*, 371:9608, pp. 243-260. DOI: [https://doi.org/10.1016/S0140-6736\(07\)61690-0](https://doi.org/10.1016/S0140-6736(07)61690-0)

1.1.1 SPECIALIZED NUTRITIOUS FOODS

SNF have been designed to complement the regular diet, and not to replace it. In recent years, a range of SNF has been developed to address different nutrition programming:

- SNF for the treatment acute malnutrition are nutrient and energy dense.² They contain animal source proteins.
- SNF for prevention of acute malnutrition are nutrient dense. They, too, include animal source proteins, but in smaller amounts because they are not meant for treating MAM.
- SNF for prevention of chronic malnutrition add a range of micronutrients and macro-minerals, essential amino acids, essential fatty acids and animal proteins (milk) required for linear growth.
- SNF for prevention of MND were originally developed to address anaemia. Now, they are increasingly used in the prevention of a wider range of micronutrient MNDs.

SNF covered in this guideline fall into three categories:

- **Fortified blended foods (FBF)** are a mixture of cereals and other ingredients that have been milled, blended, pre-cooked and fortified with vitamins and minerals. In 2009 WFP replaced its original FBF with two improved products: CSB + (former name of Super Cereal) and CSB ++ (former name of Super Cereal Plus). In 2011, WFP issued new specification for Super Cereal Plus. These are available as corn-, wheat-, or rice-soya blends, with or without sugar.³
- ✓ In 2016 a new Codex international food safety standard set maximum levels for Deoxynivalenol (DON) in foods for children under 36 months and for general populations.⁴ WFP has applied the recommendations to both its products, Super Cereal and Super Cereal Plus.
- **Lipid-based nutrient supplements (LNS)** are ready-to-eat products,⁵ in the form of lipid-based pastes that can provide energy and a range of nutrients and essential fatty acids. LNS are grouped into three categories, according to their energy and nutrient profile:
 - LNS-SQ (Small quantity). For example: Nutributter[®], eeZee20[™];
 - LNS-MQ (Medium quantity). For example: Plumpy'Doz[®], Wawa Mum, eeZee50[™]; and
 - Ready to use Supplementary Foods (RUSF also defined as LNS-LQ (Large quantity). For example: Plumpy'Sup[®], eeZeeRUSF[™], Acha Mum, REBOUND[®].
- **Micronutrient powders (MNP)** are mixes of vitamins and minerals packaged in small, single-dose sachets. They are added, at household level, to solid or semi-solid foods after preparation (to avoid heat degradation) and prior to consumption. They are different from the premixes used to fortify industrially-produced foods such as flour, sugar or oil. There are various country-specific names for MNP. They may also be referred to as 'Vitamin and Mineral Powder'.

The WFP *SNF Sheet*⁶, in Section 3.1, Figure 4, summarizes which SNF should be used for each of the four interventions covered in this guideline. It specifies targets and ration size, as well as the products' characteristics and shelf life. WFP's *SNF Sheet* builds on the product sheets in the Global Nutrition Cluster's *Decision Tool for Emergencies*⁷, and is modified to address specific logistical and programme planning requirements.

2 In 2012, WHO developed a technical note that serves as a reference for recommendations on the composition of supplementary foods used to treat children with MAM. Online at: http://apps.who.int/iris/bitstream/10665/75836/1/9789241504423_eng.pdf

3 **CSB+** = Super Cereal – Corn Soya Blend; **CSB++** = Super Cereal Plus – Corn Soya Blend; **WSB+** = Super Cereal – Wheat Soya Blend; **WSB++** = Super Cereal Plus – Wheat Soya Blend; **RSB** = Super Cereal – Rice Soya Blend; and **RSB ++** = Super Cereal Plus – Rice Soya Blend.

4 Deoxynivalenol (DON) is a toxic chemical produced by fungi. DON occurs predominantly in grains such as wheat, barley, oats, rye and maize, and less often in rice and sorghum. It can cause acute gastrointestinal symptoms such as vomiting.

5 LNS are also sometimes referred to as ready-to-use food (RUF), a generic term for foods that do not need to be prepared, cooked, or mixed with water. RUTF (Ready-to-Use Therapeutic foods are also RUFs).

6 Online at <https://newgo.wfp.org/documents/wfp-specialized-nutritious-foods-sheet> PLEASE NOTE: THIS SHEET IS CONTINUALLY UPDATED

7 Global Nutrition Cluster. *Moderate Acute Malnutrition: A Decision Tool for Emergencies*, 2014 (updated 2017). Online at: <http://nutritioncluster.net/resources/ma/>

It is important to be clear about the distinction between SNF and fortified food aid commodities:

- Staple food commodities and vitamin A and D -enriched vegetable oil are used to address household food insecurity in general, not individual nutrition status.
- SNF, on the other hand, have all been formulated to achieve specific nutritional objectives for individuals. They can be used in the treatment of acute malnutrition, the prevention of acute malnutrition, the prevention of stunting, or in addressing MNDs.

1.1.2 PHYSICAL CHARACTERISTICS OF SNF

Figure 1. **The physical characteristics of SNF**



Raw materials. SNF are mainly composed of ingredients such as cereals, pulses, oil, milk and sugar, and additives such as emulsifier, antioxidant, minerals and vitamin premix. All ingredients and additives must be of good quality and should comply with prevailing Codex Alimentarius safety standards. Some countries may have additional regulations concerning genetically modified organisms (GMOs). Be aware that SNF products are available with and without GMOs.

Formula. Emulsifier and antioxidants are used to ensure product homogeneity and stability during assigned shelf life. Mineral and vitamin premixes are used to increase nutrient density. Each manufacturer must determine the right quantities of these ingredients so that the finished product complies fully with the specifications.

Processing. If cereals and pulses are used, they are pre-cooked to improve their taste, digestibility and stability, and to reduce their microbiological load. Recipes must be followed precisely, with all ingredients being mixed according to pre-defined ratios. Processing SNF requires strict adherence to food hygiene principles throughout the manufacturing process.

Packaging. The packs in which these products are shipped are designed to efficiently protect SNF against contamination, infestation, moisture and oxygen from the air. Provided they remain intact, they will protect the finished product along the supply chain, including handling of SNF at extended delivery point (EDP) or final delivery point (FDP). Note, however, that packaging does not protect SNF from heat. Reducing prolonged exposure to high temperatures is discussed in detail section 1.2.1.

Labelling. Primary and secondary packaging is labelled with essential information for logistics operations and beneficiaries. This information must comply with Codex general standard for the labelling of pre-packaged foods.⁸ Labelling enables traceability, which facilitates segregation in the event of a food incident (see Section 4.5). From a beneficiary's perspective, labelling provides information about how to use the products correctly and safely. For all SNF, it is critical that instructions for use are provided in beneficiaries' local language and in pictures. Instructions can be provided on leaflets that are given to beneficiaries along with the SNF or, where possible, included on the package. In the case of MNP, small sachets with a generic design are packaged in boxes, the labelling of which is part of programme design.

1.2 Elements to be considered in SNF supply chain management

SNF products are sensitive to high temperatures and humidity. Implications for supply chain management are summarized below. Operational modifications for Food Quality, Procurement and Logistics are discussed in the respective chapters.

1.2.1 TEMPERATURE

Oxidation and vitamin degradation (particularly of vitamin A) are proportional to temperature exposure. Rancidity, loss of nutritional value, and quality incidents may arise when SNF are not stored properly.

If SNF have been stored for more than six months above 30°C, or for more than three months above 40°C,⁹ the product quality may have degraded, and the focal point for food quality must be asked to check them before they are distributed (see Chapter 4). Storage instructions are included on SNF product labels. Current recommendations for MNP state that they should be stored at less than 25°C or as indicated on the packaging.

Before SNF are delivered, Logistics need to formulate a proper storage plan to improve temperature and moisture control, and any work will need to be completed in readiness for the SNF's arrival.

Figure 2. **Temperature control overview**

PRODUCT TRANSPORT / STORAGE TEMPERATURE	< 30°C	More than 180 days (6 months) above 30°C	More than 90 days (3 months) above 40°C
RISK	Nutritional content and taste remain satisfactory.	Nutritional content and taste may not be satisfactory anymore. It is recommended to contact your quality focal point.	

⁸ CODEX STAN 1 1985. Online at: <http://www.fao.org/fao-who-codexalimentarius/codex-texts/list-standards/en/>

⁹ This applies if the SNF have been stored in conditions in which the temperature is consistently above 30°C for 120 days or consistently above 40°C for 60 days.

1.2.2 SHELF LIFE

Compared to staple foods, SNF have a short shelf life. Also, their nutritional value can be reduced by prolonged exposure to high temperatures. As a result:

- Specific transport and storage conditions are required.
- Procurement should ensure that suppliers deliver products with the longest possible BBD. Orders should include a contract clause stating a minimum acceptable shelf life.
- The frequency of orders should be appropriate to the context. This will avoid using up shelf life time in storage prior to use.
- Warehouse management must apply the First Expired, First Out (FEFO) Rule.
- Before SNF are ordered, the procurement unit should coordinate with all other units involved to ensure that the warehouse is organized in time, and that the products are consumed rapidly.

1.2.3 AVAILABILITY

SNF were originally manufactured in Europe and the United States of America. Some of the countries and regions that implement nutrition interventions have now developed local manufacturing facilities for FBF and LNS.

During peak demand, global production capacity may be limited. Sourcing SNF locally may relieve global capacity constraints faced by producers. However, developing local production requires investment in suppliers. It also requires the buying organization to monitor quality locally. During emergencies, local producers may be overwhelmed if large quantities are needed urgently. More investment in local production capacity will help to improve SNF management and minimize delivery lead time.

1.2.4 SUBSTITUTION GUIDANCE

Good resource planning is crucial to limit interruptions to implementation and to ensure smooth programme functioning. Substitutions of SNF are a temporary measure to avoid disruption to programme implementation and ensure that affected populations receive the nutritional services they need. The standard SNF should be re-instated as soon as possible.

Every time there is a proposed SNF substitution the acceptance and appropriateness of the SNF for substitution must be ascertained. Specifically, is the proposed substitution acceptable to the target group and appropriate for the household? It might be necessary to organize a small acceptability **trial to verify which products** are culturally acceptable to substitute. Assess different variations (e.g. corn versus wheat versus rice FBF and peanut versus chick-pea based LNS) and different formulations (Super Cereal Plus versus Super Cereal) before substitution. At the household-level it is important to understand if there is access to cooking facilities and materials, safe storage methods for the SNF, and safe water.¹⁰

1.2.5 LEAD TIME

There are two types of lead time to consider.

- **Procurement and production lead time.** SNF are produced only on request and, due to other outstanding orders, production can sometimes take several weeks. Lead time depends on:
 - the capacity of selected suppliers to fulfil existing orders as well as new ones;
 - the amount of time the buyer needs to place the order and complete internal processing;
 - how long it takes for the manufacturer to receive materials, such as premix and packaging, from their suppliers, and produce the SNF;

¹⁰ Guidance Note on the substitution of specialized nutritious foods in situations of temporary commodity shortfalls. Online at: <https://docs.wfp.org/api/documents/WFP-0000099472/download/>

- the time needed for end product analysis and confirmation of quality before the product can be released; and
- how quickly the product can be palletized and shipping marks can be affixed.
- **Transport lead time.** Transporting SNF from international production facilities to the partner's warehouse in-country can take up to three months, and depends on:
 - contractual Incoterms®;¹¹
 - shipping and port handling capacities;
 - cargo clearance times;
 - customs clearance times;
 - inland transport infrastructure (e.g. transport market availability, road network, etc.); and
 - the inland transport environment, which may be affected by rainy seasons, security constraints, and border procedures, etc.

1.2.6 PRODUCT TRACEABILITY

SNF are processed foods and are manufactured in production batches.¹² Batch numbering facilitates product recalls in the event of food incidents (see Section 4.5 for further information). This level of traceability is especially important when large quantities are bought, shipped to the port of entry, then split into different consignments that are forwarded to different countries or destinations.

1.3 Why product quality management is important for SNF

To achieve the nutritional objectives, the SNF with the right nutrients needs to be consumed regularly in the right quantity. If nutritional quality has degraded, or if nutrient intake fluctuates, it may not be possible to reach the nutritional objectives, improve beneficiaries' health status, or reduce mortality. For details on specific hazards and defects see Section 4.1.

Beneficiaries are particularly sensitive to safety hazards as they are already physiologically vulnerable. If they are malnourished their immune system will be weak. If they are young children or PLW, then they will be in critical periods of life. Just like for other commodities there is a reputational risk associated with poor quality that has a huge impact to the organization.

SNF are expensive and any losses will have higher cost implications than losses of standard food commodities.

¹¹ The Incoterms® (see Annex 4, Incoterms®) define where ownership and risk transfers from the supplier to the buyer.

¹² For WFP, the WFP batch number includes, on average, four supplier production days.

1.4 Golden rules

- ✓ SNF covered in this guideline are: LNS, FBF and MNP. SNF are designed to support individuals meet their nutrient requirements, and used in programming to treat and prevent acute malnutrition, and to prevent stunting and MNDs, in specific target groups.
- ✓ Substitutions of SNF are a temporary measure to avoid disruption to programme implementation and ensure that affected populations receive the nutritional services they need. The standard SNF should be re-instated as soon as possible. Please refer to interim guidance note “substitution of SNF” in annex.
- ✓ Limited shelf life, suppliers’ stock availability, long lead-time, handling and storage requirements, batch number follow-up and high temperature exposures are the main constraints for managing SNF.

In this chapter

- 2.1** introduces the components of the SNF supply chain covered in this guideline
- 2.2** looks at overlaps for information sharing between different actors in the supply chain, and focuses on the main considerations regarding SNF
- 2.3** presents the golden rules

2.1 The supply chain for SNF

SNF supply chain management is a cross-functional process that encompasses the sourcing, planning delivery and transfer of SNF to beneficiaries.

It may also involve enabling beneficiaries to access SNF in the marketplace through cash or voucher schemes. Importantly, it also includes coordination and collaboration with partners.

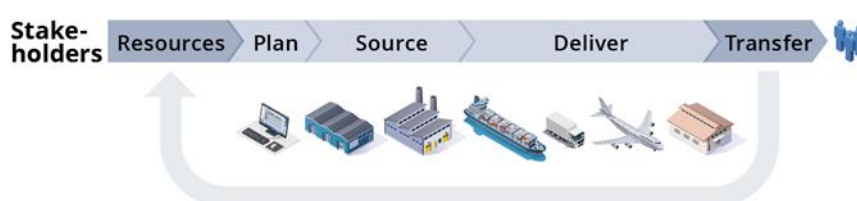
For a supply chain to be both efficient and effective, it must deliver the correct amount of the necessary SNF to the right place at the right time, and quality must be assured. All of this must be achieved in a way that reduces risk of food-borne illness and promotes the health and development of individuals.

An efficient supply chain for SNF is one that ensures that time and resources are not wasted. An effective supply chain is one that achieves the nutrition programme's intended outcomes.

As shown in Figure 3, supply chain planning consists of several steps.¹³ Responsibility for these steps cuts across different organizational functional areas. Therefore, planning and decision-making must be coordinated within and across country, regional and headquarter levels..

Smooth and continuous information flow back and forth between departments and across geographic levels is a critical enabling factor to ensure a timely, quality and efficient SNF supply chain. Planning often needs to be refined due to factors such as funding shortfalls, contextual changes that impact transport and warehousing options. In addition, changes or deterioration in nutrition situation also necessitate SNF supply chain review and adaptation.

Figure 3. **Supply chain management: an end-to-end process view**



Once Programme has identified that a nutrition intervention is needed, and has estimated the total number of beneficiaries and appropriate SNF to be used, these planning figures are translated into tonnages of SNF required for the duration of the nutrition intervention. If the SNF are purchased locally rather than internationally, steps within the chain shown in Figure 3 are skipped.

It is beyond the scope of this guideline to address resource mobilization; however, Programme, Procurement and Logistics are covered in detail in chapters 3, 5 and 6 respectively.

¹³ This supply chain management model was adapted from the Supply Chain Council's Supply Chain Operations Reference (SCOR) model. Online at: <http://www.apics.org/apics-for-business/frameworks/scor>.

2.2 Cross Functional Coordination

Several factors can jeopardize the timely distribution of any commodity, in both emergency and development contexts. The SNF supply chain is at a higher risk than other commodities due to limited number of suppliers; the specificity of use and target groups with limited option for substitution; and precise transport, storage and stock management requirements. Thus, cross-functional communication, and collaboration for SNF planning and delivery is essential.

The following points should be addressed closely when planning an operation.

2.2.1 IMPROVING AWARENESS ALONG THE SNF SUPPLY CHAIN: INTERNALLY AND EXTERNALLY

Various people, functional areas and organizations are involved in the management of the SNF supply chain. It is critical that they all understand the role and contribution of each of the internal and external actors in the supply chain process. For example:

- ✓ Individual processes may be handled on a global, regional and local level. For example, international procurement is handled by HQ. Complications may arise if staff are not fully briefed on where and how their tasks link into the overall chain. Each person must understand their role and responsibilities in the chain, the timescale for their task, and when and with whom they need to exchange information.
- ✓ It is helpful if all staff are aware of why and how SNF are used, the products' specificities, and the implications for the supply chain. This makes communication easier between departments — for instance, when ideal programme planning has to be translated into what is actually feasible.

Those individuals whose work involves communicating with government and other partners must have a basic understanding of SNF. They will need to promote appropriate use, and ensure that awareness-raising activities are undertaken to teach government, stakeholders and communities about the products.

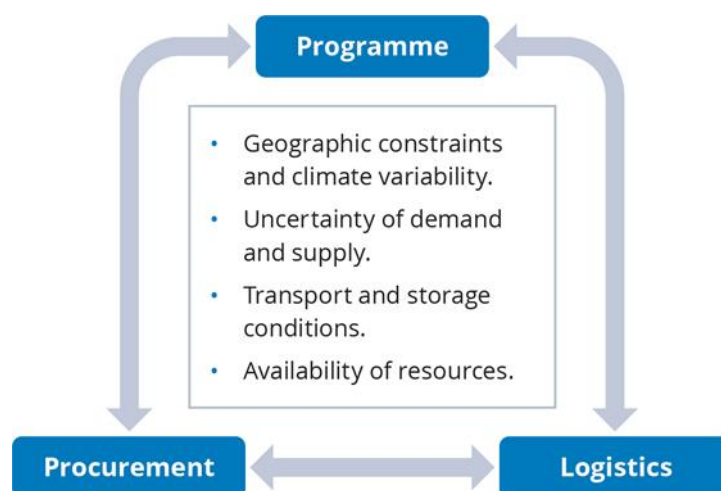
Staff must understand the management steps required to ensure food quality and to prevent and mitigate food-borne illness.

Field-level-agreements (FLAs) with cooperating partners (CPs) should clearly define the role of CPs and their obligations in relation to minimizing SNF loss and preserving quality.

2.2.2 EXCHANGING INFORMATION FOR ACTION

Once the type of nutrition intervention and the related SNF requirements have been decided, various departments will need to work together to plan the supply chain. Figure 4 shows examples of some of the topics that are likely to arise.

Figure 4. **Interdepartmental discussions in supply chain planning**



External stakeholders, such as donors, must also be considered. Their influence on the supply chain is considerable — particularly where funding is concerned because it affects operational budgets and procurement schedules. A well-managed supply chain is transparent, and feeds back up-to-date information that can be shared swiftly with donors.

2.2.3 ADDRESSING GEOGRAPHIC CONSTRAINTS AND CLIMATE VARIABILITY

Natural disasters, conflicts and normal seasonal changes can make the transport of SNF challenging. They can also influence the type and scale of nutrition interventions. The following points need to be considered:

Before pre-positioning, take into account shelf life and all lead times to ensure that the product will still be in date by the time it reaches beneficiaries.

Select SNF with a long shelf life if the food is likely to be pre-positioned for several months.

Be aware of possible variations in the number of beneficiaries requiring the nutrition intervention. This is especially pertinent in displacement situations, in countries prone to emergency, and in regions where acute malnutrition levels rise during the lean season.

When selecting warehouse locations, avoid areas prone to extreme weather, including flooding.

2.2.4 UNCERTAINTY OF DEMAND AND SUPPLY

As well as meeting current needs, supply chain management also focuses on forecasting and planning for future demand. In order to give accurate information for SNF, consider the following points:

- ✓ Production capacity is limited and lead times are long (it can take 3–4 months for the products to be manufactured and transported to an affected country).
- ✓ Overall supply needs should be shared and refined through the relevant nutrition cluster or sector coordination mechanism so that preparedness is improved and actors can respond to changes in supply and demand.
- ✓ Keep in mind that in emergency situations, particularly acute onset emergencies, calculating beneficiary needs can be challenging. It may be hard to access accurate information about the affected population and their nutritional status, and this will make programme design difficult.
- ✓ Take into account international/regional/local market availability. If a product is not available, refer to the substitution guidelines to determine the most appropriate alternative.
- ✓ Government-approved SNF may not be the most suitable products for the planned nutrition intervention or for the geographical or climatic constraints. This may limit supply options.
- ✓ Make sure that up-to-date information about the potential for local procurement is available.
- ✓ Develop a procurement plan as soon as possible.
- ✓ Maintain a six-month distribution plan outlining tonnage, location and timeline.
- ✓ Calculate a warning level for stock-outs for every SNF product used in the country. Take safety stock and lead time into account (see Section 5.1.2).

2.2.5 TRANSPORT AND STORAGE CONDITIONS

During transport and storage, temperatures are difficult to monitor and manage. Longer transit increases exposure to poor conditions. The following actions can mitigate the impact of temperature on SNF quality;

- ✓ In hot climates or transport conditions, plan for shortest possible transport times.
- ✓ If a delivery truck breaks down, consider unloading and storing items safely until a replacement vehicle arrives or the truck is fixed.
- ✓ Monitor and keep regularly recorded temperature during storage.
- ✓ Assure dedicated space for SNF in warehouses that have appropriate interior climate controls in place,
- ✓ Prepare and issue guidance for staff on what can be done to reduce temperatures in storage spaces (see Section 6.3.1. Selection and alteration of storage facilities).
- ✓ Assess partner storage capacity and make necessary adjustments to planning, transport, and storage given conditions.
- ✓ Give special attention to the 'last mile', meaning from the partners' warehouse to the beneficiaries. SNF have much stricter storage requirements than commodities such as rice or wheat. Work with partners to ensure temperature control processes are in place
- ✓ Prevent infestation at all costs. SNF fumigation is not feasible due to special airtight packaging. It is recommended, when feasible, to physically separate SNF storage from grains that are prone to infestation.

2.2.6 AVAILABILITY OF RESOURCES

Section 1.2.3 discussed issues around product availability. Two other types of resource are needed to implement a response that requires SNF.

- ✓ **Funding.** A change in the funding situation should be followed immediately by a meeting between representatives from Programme, Nutrition and Procurement. Changing rations and SNF products is a complicated process, and a pipeline break can put people receiving a nutrition intervention at serious risk.
- ✓ **Human resources.** SNF require special considerations, and staff along the supply chain must be trained accordingly. This could be done through information sessions for warehouse personnel as well as with hand-outs for transporters.

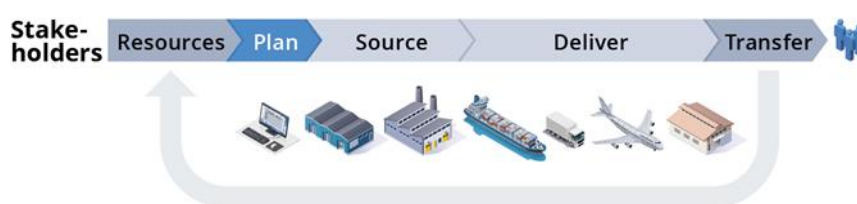
2.3 Golden rules

- ✓ All supply chain actors have a role and responsibility in maintaining the quality of SNF until it reaches beneficiaries.
- ✓ Ensure that staff involved in Programme, Procurement, Logistics, and Food Safety and Quality, as well as cooperating partners, are engaged in the planning process and are assigned clear roles and responsibilities.
- ✓ Ensure clear lines of communication between all players in the supply chain
- ✓ Anticipate the impact of the external environment (climate, security, infrastructure, etc.) on the operation.
- ✓ Make sure the SNF can be imported and/or are allowed for use in the country, and identify all relevant documents and processes required for their import and distribution.
- ✓ Ensure and plan proper stock management to meet anticipated needs, and avoid lengthy storage. Make sure that storage facilities meet the necessary conditions for preserving the characteristics and nutritional value of SNF.

CHAPTER 3

Managing the supply chain:
determining the SNF demand

In this chapter



This chapter focuses on step one of the supply chain: determining SNF demand. This requires selecting the right SNF for the nutrition intervention and estimating how much will be required for the duration of the programme. There are three components to consider:

- 3.1** determines whether a nutrition response is needed and, if so, which intervention and products are appropriate to the context
- 3.2** discusses how to estimate the number of beneficiaries and how to calculate the quantity of SNF required
- 3.3** looks at how to develop a procurement schedule that is appropriate to the context

For further information on nutrition situation analysis, please see the following resources:

- Updated SMART methodology and tools: Online at: <https://smartmethodology.org/>.
- Prudhon, C. (2011) *Module 7. Measuring Malnutrition: Population Assessment*, in IASC Global Nutrition Cluster's Harmonized Training Package (HTP). Online at: <https://www.enonline.net/httpv2module7>.
- WFP and UNHCR (2011) Guidelines for Selective Feeding: The Management of Malnutrition in Emergencies. Online at: <http://www.unhcr.org/4b7421fd20.pdf>.

WFP Food Security Analysis. Online at: <http://www.wfp.org/food-security> or at: <http://vam.wfp.org/>.

A summary of WFP nutrition interventions that use SNF, and selected non-nutrition interventions that may also use SNF, can be found in Annexes 3a and 3b respectively.

Further guidance for nutrition programming can be accessed via wfp.go Food and Nutrition page: <http://newgo.wfp.org/topics/food-and-nutrition>, which includes also the updated version of the Food and Nutrition Handbook.

Non-nutrition interventions have the potential to become nutrition-sensitive. Further information about this can be found in WFP (2017) *Unlocking WFP's potential | Guidance for Nutrition-sensitive programming*. This publication is available in two formats: a summary: <https://docs.wfp.org/api/documents/WFP-0000022216/download/>; and in full: [https://communities.wfp.org/sites/default/files/201703/21/Nutrition-Sensitive%20Guidance V1.0 FINAL.pdf](https://communities.wfp.org/sites/default/files/201703/21/Nutrition-Sensitive%20Guidance%20V1.0%20FINAL.pdf).

Recent decision-making guidance for MAM in emergencies can be found in the Global Nutrition Cluster's section on Moderate Acute Malnutrition management: *A Decision Tool for MAM in Emergencies 2014* (updated 2017). Online at: <http://nutritioncluster.net/resources/ma/>.

Although there are no international standards for caseload calculations, several tools have been produced to assist planning:

Save the Children-UK's *Community-based Management of Acute Malnutrition (CMAM) Toolkit* includes tools with which to estimate caseload and supply needs. Online at: <https://sites.google.com/site/stcehn/documents/cmam-toolkit>.

3.1 Determining the right product for the right response

Undernutrition is the result of a wide range of factors — most directly, an imbalance between an individual's nutritional requirements and the actual nutrients the individual receives and absorbs from what they eat.¹⁴ Food security programmes often focus on energy intake (kilocalories), but for many beneficiaries this is not sufficient to ensure healthy development or, indeed, survival. Nutrition interventions focus not only on meeting energy intake requirements, but also on ensuring that all the nutrients needed for individuals' recovery, growth and development are available.

For an effective response to nutrition problems, programmes are needed that address all drivers of undernutrition. Because so many factors — and combinations of factors — can contribute to undernutrition, situation analysis and programme decision making should be undertaken in coordination with relevant actors from other specialist organizations. This can be complex, and the level of participation in the analytical process will depend both on the context and on the degree of collaboration between stakeholders.

In emergency contexts, information will be urgently needed to answer key questions.¹⁵

These include:

- **What** nutrition problems are present or are likely to develop?
- **Which** aggravating factors exacerbate, or are likely to exacerbate, these nutrition problems?
- **Who** are the people affected by undernutrition?
- **When** does undernutrition occur? Is there a seasonal trend?
- **How** many people are undernourished?
- **Where** do the undernourished people live?
- **Why** are they undernourished?

Once it has been determined that a nutrition problem exists, and the driving factors (direct, underlying, and basic causes) are understood and potential responses are clear, further information is needed to refine programme options.

- Analyze the availability and affordability of a nutritious diet based on local foods for the most vulnerable individuals.
- The institutional environment needs to be understood because the programme must align with the national government's institutional framework of policies and priorities. Key areas to consider are the government's:
 - development policy;
 - legislation (including custom regulations) regarding importation of SNF;
 - emergency response framework;
 - sectoral plans for health and nutrition, food security, water, sanitation and hygiene (WASH); and
 - technical protocols and quality standards for SNF.

An important aspect of emergency preparedness is ensuring that the national government's food quality standards allow the use of SNF. If they don't then it will be necessary to advocate for appropriate technical inputs. Joint sensitization of government and partner staff may also be needed.

¹⁴ For an overview of the causes for undernutrition see Annex 1, Causes of undernutrition.

¹⁵ Refer to the Nutrition in Emergency User-Friendly Guide, online at Reference here to the nutrition in emergency user friendly guide. Online at: <https://docs.wfp.org/api/documents/WFP-0000102532/download/>

- Stakeholder analysis, and partnership and capacity assessment should be undertaken to identify who should participate in programme development and implementation, and how they can be engaged. Consider the following questions.
 - What other programmes are being implemented?
 - Can an existing programme be scaled up?
 - Are new programmes needed?
 - Are there gaps in coordination that can be addressed across sectors to ensure a holistic response?
 - Do partners have the technical capacity to deliver all the nutrition intervention's components (appropriate use of SNF, record keeping, social & behavior change communication (SBCC) strategy)?
 - Do partners have the logistical capacity to transport, warehouse and distribute SNF without breaks in the pipeline?
 - What does each organization feel they can contribute to the response?
- Monitoring and evaluation (M&E) and lessons learned analyses should be reviewed to gain an understanding of what works best in the context.

Of particular use in the programme design process is information on: targeting, coverage, SNF acceptability, programme acceptability and accessibility, population-level impact, effective engagement with the community, and effective inter-sectoral linkages. Useful resources include:

- M&E data from operational programmes;
- impact evaluations; and
- lessons learned documentation developed by partners.

This guideline covers the use of SNF in four nutrition interventions:

1. **Treatment of MAM** with targeted supplementary feeding programmes (TSFP) for:
 - children aged 6-59 months with MAM;
 - PLW with MAM;
 - children (aged 5-19 years) and adults with MAM who are on antiretroviral therapy (ART) for human immunodeficiency virus (HIV) and/or a Direct Observed Treatment Short-course (DOTS) for tuberculosis (TB).
2. **Prevention of acute malnutrition** with blanket supplementary feeding programmes (BSFPs) for PLW, and children aged 6-23 months or, under certain conditions, aged 6-36 months or 6-59 months.
3. **Prevention of chronic malnutrition** with complementary feeding for children aged 6-23 months and, increasingly, PLW and adolescent girls.
4. **Addressing MNDs** through point-of-use fortification (previously referred to as home fortification)¹⁶ for children aged 6-23 months and, increasingly, school-age children.

WFP's *SNF Sheet*¹⁷ (reproduced at the end of this section) show which SNF should be used in each type of nutrition intervention. There are three classes of SNF products: FBF, LNS and MNP. These are described in more depth in Section 1.1.1 and in the Glossary in Chapter 8.

16 'Point-of-use fortification is often referred to as "home fortification"; the word "home" has been substituted by "point-of-use", to reflect the variety of settings where this intervention may take place.' Comprehensive implementation plan on maternal, infant and young child nutrition. In: Sixty-fifth World Health Assembly, Geneva, 21–26 May 2012. Resolutions and decisions, annexes. Geneva: World Health Organization; 2012:12–13 (WHA65/2012/REC/1; http://apps.who.int/gb/ebwha/pdf_files/WHA65-REC1/A65_REC1-en.pdf)

17 WFP's Specialized Nutritious Food Sheet can be found at <https://newgo.wfp.org/documents/wfp-specialized-nutritious-foods-sheet>. **PLEASE NOTE: THIS SHEET IS CONTINUALLY UPDATED**

SNF should not be used for programmes for which they are not recommended.

The choice of SNF depends on several factors:

- **The household's ability to cook.** FBF can only be used in households that are able to cook. In emergencies, households often have no utensils, fuel or clean water. In these circumstances, LNS are recommended for treatment of MAM because they are ready-to-eat.

Once the situation has settled, and households can cook again, other SNF can be considered. However, switching beneficiaries from one product to another can be challenging, and requires additional logistical planning, and communication with local authorities and the community.

In the case of refugees and internally displaced persons (IDPs) in camps, it will be essential to advocate for the reestablishment of cooking facilities with UNHCR, the government and NGO partners.

- **Cultural practices and food preferences.** Improved FBF based on corn (maize), wheat and rice are available. LNS are usually peanut-based, but locally-produced chickpea-based LNS are available in some areas. Local consumption preferences should be taken into account, but this consideration should be balanced with the need to get SNF to beneficiaries as quickly as possible. Formative research should be undertaken as part of programme design to confirm acceptability and improve adherence.

As yet there is no global consensus on methodology; however, research is ongoing. The New Food Committee (NFC)¹⁸ has developed technical guidance for investigating new food acceptability, providing a clear set of minimum requirements for design and implementation of research.

- **Conformity with national standards.** Host governments may have no SNF-specific legislation on import requirements or food quality standards. SNF are rarely included in essential drug lists or in Ministry of Health procurement procedures. Thus, logistical capacity for handling nutrition programme inputs (SNF, anthropometric equipment, SBCC-related materials, routine medications) is often variable. Capacity to correctly conduct food safety tests at national level may also be limited.

Prior to programme planning, and as part of emergency preparedness, national standards for SNF should be assessed. Where these standards are at odds with programme needs, partners should engage in joint advocacy with the government.

National protocols may recommend specific products, or local formulations may be available. Where standards exist but are not implemented, technical support may be needed. Capacity development and training for technical, food quality and logistics staff may be a critical enabling factor for nutrition intervention quality.

- **Operational considerations.** Often, nutrition interventions are delivered in tandem with other programmes. In many cases, food security programming, such as general food assistance (GFA), is already in place and can be the delivery platform for nutrition interventions, such as programmes to prevent acute malnutrition programme.
- ✓ Alternatively, a GFA ration could include SNF to address the nutrient needs of a specific target group. In this case, it would be necessary to communicate to beneficiaries that SNF need to be given only to the intended individual, not shared with the whole family. SNF are not supplements to the household ration.

¹⁸ Under the leadership of the Directors of the Supply Chain and Nutrition Divisions, the NFC and TAG facilitates WFP's internal decision-making process to evaluate the suitability and support the development of new foods for use in WFP operations, in line with nutrition and supply chain requirements and capabilities. The committee is composed of internal experts from Nutrition, Food Safety and Quality, Food Procurement and Logistics. For more information please refer to NFC directive (attached + <https://docs.wfp.org/api/documents/WFP-0000102244/download/>).

Broader aspects of programme design include systematic risk assessment of nutrition programming, and forward planning to promote quality programming. The following should be considered:

- ✓ **Adequate human resources** must be available to deliver quality programming to beneficiaries. There must be enough people with enough training, experience and supervisory support to administer the programme safely and effectively.
- ✓ **Consumption of any nutrient in excessive quantities is very rare.** For each human life-stage, a Tolerable Upper Intake has been established for most nutrients. This is not a level at which adverse effects occur, rather, the UL has been defined as the maximum daily intake of a nutrient unlikely to cause adverse health effects in most individuals in that group, even if that intake is sustained over a prolonged period. Furthermore, those adverse effects are different from signs of acute toxicity, which occur at much higher levels. It is important to note that ULs were set for healthy individuals with adequate nutrient stores and no nutrient deficits, not for malnourished individuals. For some nutrients, intake levels recommended for malnourished individuals exceed the UL to some extent, in order to be able to rebuild nutrient stores, and those levels are only recommended during the period of recovery. The UL is well above the recommended nutrient intake (RNI) for most nutrients in SNF, including MNP. In summary, there is no immediate safety risk when an individual's intake occasionally exceeds the UL. Furthermore, consuming more than UL is very unlikely to occur for most micronutrients.
- ✓ **Proper use of SNF should not undermine optimal infant and young child feeding (IYCF) practices,** such as breastfeeding and complementary feeding of children. SNF are meant to be consumed in addition to the regular diet. A potential risk exists for SNF to lead to displacement of breastmilk consumption in children under 2; but, so far, little evidence has been gathered. Strategies for SBCC should include messages on the proper use of the SNF and should promote IYCF.
- ✓ **LNS contain allergens.** For example, peanut-based LNS contain the following allergens: peanut, milk, soy and they may contain gluten. Allergens are certain foods which may cause health reactions to some individuals. Although most food allergies cause relatively mild and minor symptoms, some food allergies can cause severe reactions, and may even be life-threatening. It is important to note that there is no cure for food allergies. Strict avoidance of food allergens—and early recognition and management of allergic reactions to food—are important measures to prevent serious health consequences. Therefore, correct labelling of allergens is crucial for food safety.¹⁹
- ✓ **SNF might not be consumed by the intended beneficiary,** due to errors in targeting, household-level sharing, or resale of the products in the market. Appropriate post-distribution monitoring is important.
- ✓ **Distribution or use of SNF may contribute to food-borne illness.** It is important to provide safe water and hygiene facilities during distribution days, and to educate recipients on how to prepare, use and store the SNF so that the risk of food-borne diseases is reduced.

Figure 5, on the following pages, are reproduced from WFP's *SNF Sheet*²⁰ and explain which SNF products might be used for particular types of food intervention. WFP is not specifically endorsing the brands mentioned. However, the SNF listed in the examples do meet WFP's quality management specifications for use, and they will be familiar to those currently in field operations.

19 UNHCR (2011), UNHCR Operational Guidance on the Use of Special Nutritional Products to Reduce Micronutrient Deficiencies and Malnutrition in Refugees Populations. Online at: <http://www.unhcr.org/4f1fc3de9.pdf>, pp. 46-47.

20 Taken from WFP's Specialized Nutritious Food Sheet, April 2019. Online at <https://newgo.wfp.org/documents/wfp-specialized-nutritious-foods-sheet>.
PLEASE NOTE: THIS SHEET IS CONTINUALLY UPDATED

Figure 5. WFP Specialized Nutritious Food Sheet

WFP Specialized Nutritious Foods Sheet

Programme

Treating Moderate

Product name

Ready-to-Use Supplementary Foods (RUSF)¹

Examples

E.g. eeZeeRUSF™, AchaMum, PlumpySup™ (not exhaustive)



Primary target group

Children 6-59 months

Key Ingredients

Peanuts/chickpeas⁵, soy, milk powder, sugar, oil, vitamins and minerals (V&M)

Daily ration

100g sachet

Nutrient profile

510 kcal, 13g protein (10%en), 31g fat (55%en). Contains EFA and meets WHO nutrient content guidance for MAM foods, incl PDCAAS $\geq 70\%$ ⁶

Avg. duration of intervention⁷

40-90 days

Shelf life⁹

24 months

Packaging (net weight)

Primary: 100g single dose sealed sachet.
Secondary: 15kg carton with 150 sachets.

¹Also referred to as point-of-use fortificants, i.e. can be mixed with usual complementary foods of the child and help to meet micronutrient energy 1005 kcal, 29g protein (12%en), 35g fat (32%en)). ³Where other SNFs are not available, SC can be an alternative option for children ment with food specifications. ⁵Available at: <http://newgo.wfp.org/documents/nutrition-at-wfp-programming-for-nutrition-specific-plements>, RUSF = Ready-to-Use Supplementary Food, FBF = Fortified Blended Food, MNP = Micronutrient Powders, EFA = Essential Fatty = Protein Digestibility-Corrected Amino Acid Score (min 70%), V&M = Vitamins and Minerals.

April 2018

Acute Malnutrition (MAM)

Fortified Blended Foods (FBF)

Super Cereal *Plus* (SC+)



Super Cereal (SC) ²



Children 6-59 months

Children above 5 years³, Pregnant and Lactating Women (PLW), other nutritionally vulnerable groups⁴

Corn/wheat/rice⁵, soy, milk powder, sugar, oil, V&M

Corn/wheat/rice⁵, soy, V&M (with/without sugar)

200g (includes provision for sharing)

200-250g (includes provision for sharing)

820 kcal, 33g protein (17%en), 20g fat (23%en). Contains EFA and meets WHO nutrient content guidance for MAM foods, incl PDCAAS $\geq 70\%$ ⁶

752-939 kcal, 31-38g protein (16% en), 16-20g fat (19%en). Same micronutrient premix as SC+.

40-90 days

Variable based on target group⁸

18 months

12 months

Primary: 15kg carton with 10 bags.
Secondary: 13.5kg carton with 9 bags.




25kg double layered bag (inner heat sealed bag, outer stitched bag).

requirements. 2Super Cereal may be mixed with oil and sugar prior to distribution in a ratio of 200g: 20g: 20g (estimated

above 36 months. 4The positive ingredient list may be further expanded to include other ingredients after confirmed acceptability and align-interventions. 6Shelf life indicated is valid for storage at temperatures less than 30 degrees C. Abbreviations: LNS = Lipid-based Nutrient Sup-Acids, % en = proportional nutrient contribution to the energy content of the food, RNI = Recommended Nutrient Intakes, (FAO/WHO); PDCAAS

Figure 5. WFP Specialized Nutritious Food Sheet

WFP Specialized Nutritious Foods Sheet

Programme	Preventing	
	Preventing Acute	
Product name	Lipid-based Nutrient Supplements—Medium Quantity (LNS-MQ)	Fortified Blended
Examples	<i>E.g. eeZee50™, WawaMum, PlumpyDoz™</i> 	Super Cereal Plus  
Primary target group	Children 6-23 months	Children 6-23 months
Other target groups	Children 24-59 months	Children 24-59 months
Key Ingredients	Peanuts/chickpeas ⁴ , soy, milk powder, sugar, oil, vitamins and minerals (V&M)	Corn/wheat/rice ⁴ , soy, milk powder, sugar, oil, V&M
Daily ration	50g sachet	100-200g (200g includes provision for sharing)
Nutrient profile	255 kcal, 6-8 g protein (10% en), 13-18g fat (55%en). Contains EFA, provides approx 1 RNI for young children, PDCAAS >70%	410-820 kcal, 16-33g protein (17%en), 10-20g fat (23% en). Contains EFA, 100 g provides approx 1 RNI for young children, PDCAAS >70%
Duration of intervention	Duration will be aligned with national guidelines and will vary with different situations, programming for Nutrition-Specific Interventions ⁵ for more information.	
Shelf life ⁶	24 months	18 months
Packaging (net weight)	Primary: 50g single dose sealed sachet. Secondary: 15kg carton with 300 sachets.	Primary: 15kg carton with 10 bags. Secondary: 13.5kg carton with 9 bags.

¹Also referred to as point-of-use fortificants, i.e. can be mixed with usual complementary foods of the child and help to meet micronutrient energy 1005 kcal, 29g protein (12%en), 35g fat (32%en)). ³Where other SNFs are not available, SC can be an alternative option for children ment with food specifications. ⁵Available at: <http://newgo.wfp.org/documents/nutrition-at-wfp-programming-for-nutrition-specific-plements>, RUSF = Ready-to-Use Supplementary Food, FBF = Fortified Blended Food, MNP = Micronutrient Powders, EFA = Essential Fatty = Protein Digestibility-Corrected Amino Acid Score (min 70%), V&M = Vitamins and Minerals.

Stunting

Malnutrition

Addressing Micronutrient Deficiencies¹

Foods (FBF)

LNS Small Quantity (LNS-SQ)

Micronutrient Powders (MNP)

Super Cereal²

E.g. eeZee20™, NutriButter™



Children above 5 years³
and Pregnant and
Lactating Women (PLW)

Children 6-23 months

Children 6-59 months/
School age children

General population

Corn/wheat/rice⁴, soy, V&M
(with/without sugar)

Peanuts/chickpeas⁴, soy,
milk powder, sugar, oil,
V&M

V&M

Up to 200g (includes
provision for sharing)

20g sachet

Max. 1g sachet for children 6-59
months / 8g sachet for 20 school
-aged children

376-752 kcal, 15-31g
protein (16%en), 8-16g fat
(19%en). Same
micronutrient premix as
SC+

108 kcal, 2.6g protein
(10%en), 7g fat (59%en).
Contains EFA, 1 RNI for
young children per sachet,
PDCAAS>70%

1 RNI for children 6-59
months /20 RNI for school-aged
children per sachet (an 8g sachet
is for 20 meals, providing 1 RNI
per child) (No energy, fat or
protein content)

contexts and objectives (e.g. prevention of acute vs. prevention of stunting) as well as target group. Please refer to Pro-

12 months

24 months

24 months

25kg double layered bag
(inner heat sealed bag,
outer stitched bag)

Primary: 20g single dose
sealed sachet.
Secondary: 10.9kg carton
with 546 sachets.

Primary: 1g / 8g sealed sachet.
Secondary: 30 / 20 sachets in 1
box.
Tertiary : 6kg / 8kg carton with
200 / 50 boxes.
*Packaging varies with supplier

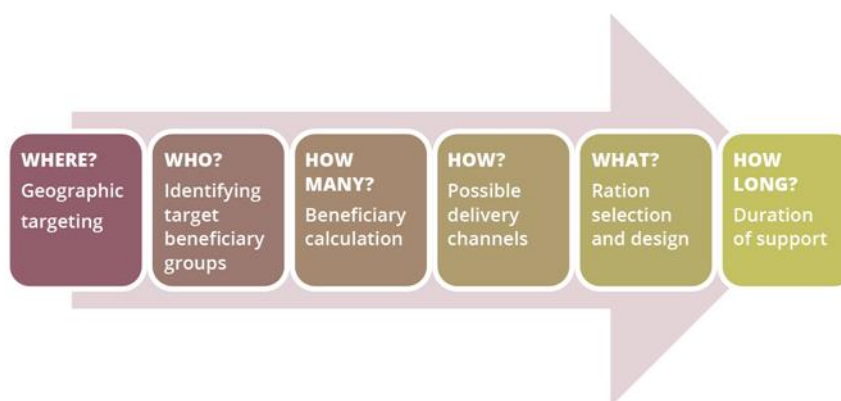
requirements. 2Super Cereal may be mixed with oil and sugar prior to distribution in a ratio of 200g: 20g: 20g (estimated

above 36 months. 4The positive ingredient list may be further expanded to include other ingredients after confirmed acceptability and align-
interventions. 6Shelf life indicated is valid for storage at temperatures less than 30 degrees C. Abbreviations: LNS = Lipid-based Nutrient Sup-
Acids, % en = proportional nutrient contribution to the energy content of the food, RNI = Recommended Nutrient Intakes, (FAO/WHO); PDCAAS

3.2 Calculating estimated beneficiary numbers

Estimated supply needs have to be calculated for each nutrition intervention. Calculations are based on the variables shown in Figure 6.

Figure 6. **Variables in the calculation of estimated beneficiary numbers**



First, geographic areas (Where) and beneficiary groups (Who) are identified. Then, the total number of planned beneficiaries are estimated for the entire duration of the programme. Targeting criteria used for programmes to treat undernutrition are different from those used for programmes to *prevent* undernutrition.

Coverage estimates and supply needs will differ, depending on the type of intervention.

- Programmes to treat MAM target only those individuals who are classified as having moderate acute malnutrition.²¹
- Programmes to prevent undernutrition target groups of people, regardless of their nutritional status. Groups may be delineated by age, for example, or family income, or whether or not they are pregnant or lactating. Ideally, as many people from the target group in that geographic area would be included (expected coverage), but then it may be difficult to cover all geographic areas as the overall caseload would be quite high. Programme staff can help advise on finding the balance between needs, geographic coverage, expected coverage and required resources.

Primary beneficiary target groups for each nutrition intervention are indicated in WFP's SNF Sheet in Section 3.1, Figure 5.

There is no standard international methodology for beneficiary calculations, although several tools are available. Key aspects to consider are summarized below in this section. It is important to remember that:

- Separate calculations should be made for each programme and each target group. This is because ration sizes and SNF differ.
- As the context changes, planning estimates will have to be refined.
- Where there have been nutrition interventions in the past, planning estimates can be cross-checked against historical planning figures and actual programme delivery figures.
- It is good practice to share beneficiary calculations through relevant nutrition coordination mechanisms. This ensures that relevant programme linkages are made and that planning estimates are as complete as possible.

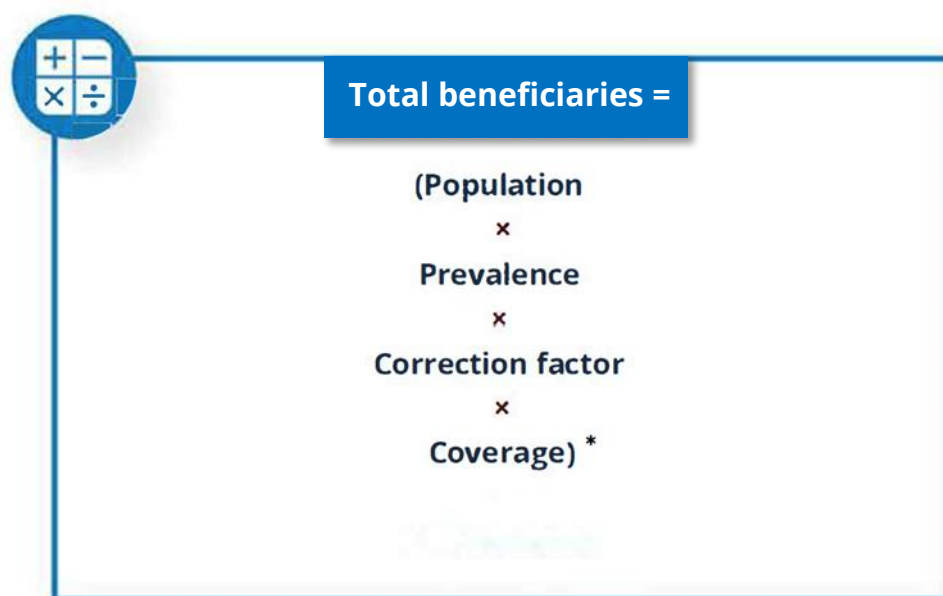
²¹ Similarly, programmes to treat SAM target only those individuals who are classified as having severe acute malnutrition.

3.2.1 TO TREAT MAM IN PLW AND CHILDREN AGED 6-59 MONTHS

To treat MAM in children aged 6-59 months and PLW, the estimated number of beneficiaries depends on:

- The **estimated population** of the target group in programme areas. This figure is usually derived from government census data. If population data do not include a breakdown by gender and age, and if there are no government recommendations, then estimates can be applied. Generally: 20 percent of a population are children under 5; 10 percent are children aged 6-23 months, and 5 percent are PLW.
- The **prevalence** of MAM in the **population** of the target group, as derived from recent nutrition surveys.²³ **Prevalence of MAM for children aged 6-59 months** is based on weight-for-height (WFH) or mid-upper arm circumference (MUAC). To reduce discrepancies between the estimated and actual caseload, the prevalence of MAM should be calculated based on the same anthropometric parameter used for programme admission. Prevalence estimates for PLW should be based on MUAC, though this information is rarely available. It may be necessary to base estimates for PLW on data from previous caseloads, or to extrapolate from information — based on Body Mass Index (BMI) — about the prevalence of acute malnutrition in women of reproductive age.
- The estimated number of new cases of malnutrition in the target group over the duration of the project (incidence). Incidence figures are rarely available, so a Correction Factor (K) is used instead. K is based on the duration of the planning period and the average duration of untreated MAM episode before the individual either dies, recovers or develops severe acute malnutrition (SAM).²⁴ It follows that the values vary from area to area. Local estimates of K are needed to predict the caseload. The values need to be agreed with key nutrition partners.
- The programme's **expected coverage**. It is generally not possible to reach all potential beneficiaries. The term **expected coverage** refers to the proportion that can be reached, and is based on context, funding and the capacity of partners to scale up the programme. In emergencies, Sphere standards recommend TSFP coverage of >50 percent in rural areas, >70 percent in urban areas, and >90 percent in camps.

Figure 7. Estimating beneficiary numbers for MAM treatment programmes



22 In the case of children under 6 months with MAM, the mother (rather than the child) is admitted into the programme, and exclusive breastfeeding is promoted. The mother is discharged once the child reaches 6 months. If the child still has MAM then he or she will be enrolled in the programme.

23 Prevalence refers to the number of individuals who are malnourished at a particular point in time. Incidence refers to the number of individuals expected to become malnourished over a specific period of time. At present, there is no global consensus on estimating incidence.

24 $K = 1 + (\text{time period} / \text{the average duration of an untreated MAM episode})$ where time and the average duration are specified in months.

It is also important to estimate how many SAM cases will be transferred to a TSFP at three-month follow-up to pursue recovery (if such a system is in place in the country). In this case, the caseload of SAM programmes should also be added to the calculation. To estimate the caseload transferred to a TSFP, Sphere standards for nutritional recovery (75 percent) can be applied to the total SAM caseload. If relevant, information from a previous year may help fine-tune estimates.

3.2.2 TO TREAT MAM IN INDIVIDUALS WITH HIV OR TB

This section refers to calculations for: children 5 years and older; adults; and women who are not pregnant or lactating. Please see the previous section (3.2.1) for calculations for children under 5 and PLW.

The estimated beneficiary number depends on:

- ✓ The estimated population of the target age group in programme areas. This is usually drawn from government census data.
- ✓ HIV prevalence and ART coverage, drawn from UNAIDS data. Note that caseload estimation is based on HIV prevalence not incidence.
- ✓ TB incidence and DOTS coverage, drawn from the World Health Organization (WHO) Global Health Observatory Data Repository.
- ✓ The prevalence of global acute malnutrition (GAM) for the target age group living with HIV or TB. Prevalence figures are unlikely to be available. Proxy figures may be used instead. For HIV and TB programming for adults, use the prevalence of GAM in children aged 6-59 months. Alternatively, studies indicate that, on average, 15-30 percent of adults on treatment for HIV or TB will be undernourished.
- ✓ As in other nutrition interventions, it is generally not possible to reach all potential beneficiaries. The term expected coverage refers to the proportion who can be reached, taking into account capacity and context.

Figure 8. Estimating caseload in HIV programming

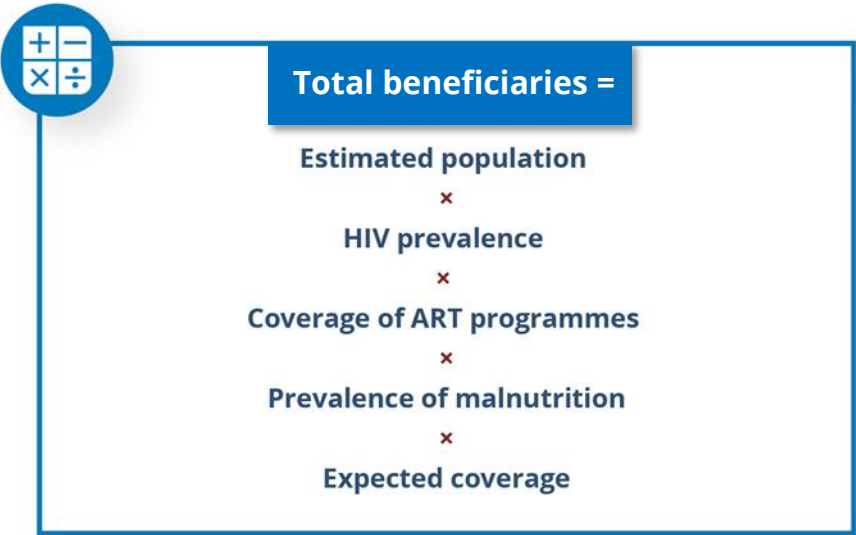
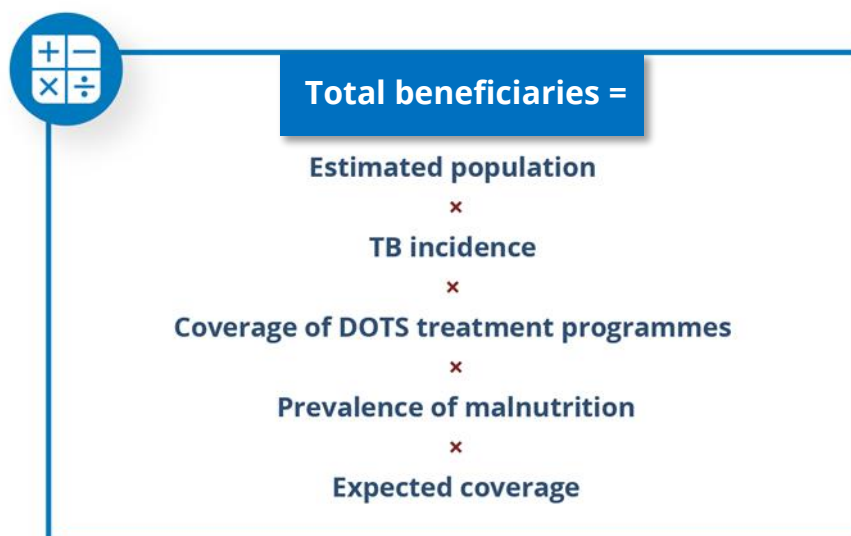


Figure 9. **Estimating caseload in TB programming**



Note that for HIV programming, prevalence is used in the beneficiary calculation. That is because HIV is a life-long disease and an individual may become undernourished at any point during its course.

For TB programming, incidence is used. With the exception of multi-drug-resistant TB, TB can be treated in a DOTS programme on a one-off basis. Therefore, new cases (TB incidence) are more relevant to the beneficiary calculation.

Beneficiaries of HIV and TB programmes are frequently provided with a household ration as well as SNF. The SNF is usually provided for treating acute malnutrition. The households ration is seen as an income transfer to compensate for lost income and increased illness-related expenses, and acts as an enabler for HIV or TB treatment adherence. The ration contains commodities similar to those provided in a GFA.

3.2.3 TO PREVENT ACUTE MALNUTRITION, PREVENT CHRONIC MALNUTRITION, OR TO ADDRESS MNDS

Estimated beneficiary numbers depend on:

- The **estimated population** of the target group in programme areas, usually based on government census data. If official data do not specify gender and age, and if there are no government recommendations, use estimates instead. Generally: 20 percent of a population are children under 5; 10 percent are children aged 6-23 months; 5 percent are PLW.
- The **expected coverage**. This is the proportion of the target population group that the programme can reasonably expect to reach, bearing in mind capacity, funding and context. Generally, it is impossible to reach all potential beneficiaries.

Figure 10. **Estimating beneficiary numbers for prevention programmes**



Programmes for the prevention of acute malnutrition tend to be fairly short compared to those designed to prevent stunting or address MNDs. Thus, they have different supply needs.

- **Prevention of acute malnutrition** programming usually takes place over a 3- to 6-month period. Participants should remain in the programme for its duration. The target group will depend on the context. It is usually children aged 6-23 months. However, when the food and nutrition situation is extremely insecure the age group can be extended up to 59 months. PLW can also be included in the programme.
- **Prevention of stunting** take place over longer periods, in some cases up to 18 months. The priority target groups are those most vulnerable to undernutrition through the first 1,000 days of a child's life, i.e. children aged 6-23 months and PLW.
- To **address MNDs in young children**, both the duration of the intervention and the dosage can vary. For example, the target group for MNP intervention should be individuals at greatest risk of inadequate micronutrient intake and mostly children 6-23 months when their food variety and quantity are limited. However, children 24-59 months may also be at risk of inadequate dietary intake of some nutrients, they may also be included in the intervention.
- Dosage of MNP should not exceed one sachet per day. Normally, for a six-month period, each individual will be issued with 90 sachets which equates to 15 per month, or 3-4 per week, and can therefore be taken every other day.
- **MNP** may also be used to fortify **school meals for school-age children** to improve their nutrient intake, especially when the micronutrient content of the meals is limited. The intervention usually covers 180-190 days per year. One sachet of MNP for school age children contain 8 grams of powder, providing 20 individual servings to be consumed once a day. For this target group the overall programme contributes about half the daily RNI, considering holidays and absence from school

3.2.4 THE USE OF SNF IN NON-NUTRITION PROGRAMMING

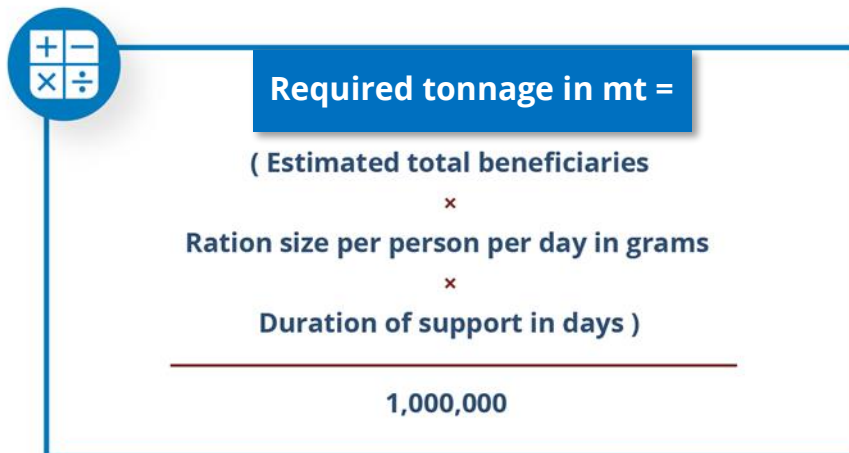
Some other, non-nutrition interventions also use SNF, and there is an opportunity to make these programmes more nutrition-sensitive. Two examples — GFA and school feeding — are covered in Annex 3b.

If SNF are added to food distributions before formal nutrition programming is in place, it is crucial to define SNF beneficiary calculations based on context. Ideally, SNF targeting should focus on households that only have children under 5 (or under 2) years old.

However, precise figures may not be available. Another approach is to assume that all households have a child under 5 (or under 2). This type of SNF use is essentially a stopgap until a nutrition intervention can be established or scaled up. Therefore, beneficiary calculations are best determined through dialogue and coordination with nutrition and food security staff/clusters.

3.3 Estimating overall SNF supply needs

Figure 11. WFP's formula to estimate overall SNF needs for a nutrition intervention


$$\text{Required tonnage in mt} = \frac{(\text{Estimated total beneficiaries} \times \text{Ration size per person per day in grams} \times \text{Duration of support in days})}{1,000,000}$$

In the calculation above, the formula's denominator (1,000,000) converts the total in grams to metric tons.

- Information for this calculation can be drawn from:
- Estimated total beneficiaries. See Sections 3.2.1-3.2.4, above.
- Ration size per person per day (in grams). See WFP's SNF Sheet in (Figure 5) at the end of Section 3.1.
- Duration of support (in days). In other words, how long the beneficiary will participate in the programme. See WFP's SNF Sheet. Note that duration will vary based on context.

Other organizations may have different methods for translating the number of targeted beneficiaries into SNF needs. For instance, they may base calculations on primary packaging (e.g. the number of sachets) rather than on weight.

3.4 Additional considerations for the order cycle

Because of shelf life constraints, keep the time SNF are stocked to a minimum. It is better not to order all the SNF for the intervention in one go, even if the programme is fully funded. An ordering cycle that takes into account both expected and unexpected fluctuations should be developed with Programme, Procurement and Logistics (see Chapter 5, Section 5.1.2).

3.4.1 EXPECTED FLUCTUATIONS

It may be evident from the context that amounts of SNF needed per month might vary.

It is critical to take into account the following:

- Existing pipeline including stock in country in transit, and in production.
- Shelf life is a key factor in the order cycle. It needs to be **balanced against** production and transportation **lead times**, as well as **programme demand**.
- Although ordering smaller quantities is recommended, multiple orders will need to be tracked and transported, **increasing workloads** for Procurement and Logistics.

- Programme, Procurement and Logistics staff need to consult on the **feasibility of the first-choice SNF** from a programme perspective. This will clarify whether it is possible to obtain enough of the preferred product. If not, substitution guidance must be followed.²⁵
- Annual needs should be reviewed and updated to identify periods in which programme needs will be greater. Use historical programme data to help forecast monthly fluctuations. This will lessen the risk of unforeseen peak demand. Seasonal caseload increases are common in MAM programmes. Large-scale BSFPs are often conducted during a specific part of the year to prevent increases in acute malnutrition.
- Seasonal changes may affect accessibility. Heavy rains and snow will restrict both pipeline and beneficiary access.
- Unpredictable access in insecure areas must also be taken into account. Contingency planning and pre-positioning strategies need to be pragmatic, striking a balance between access considerations and SNF shelf life.
- Only use one SNF for each target group in each nutrition intervention. Children should not be enrolled in more than one programme at a time; nor should they take more than one product at a time. For example, the LNS or FBF used to treat MAM, or to prevent acute malnutrition and stunting, have been developed to meet micronutrient needs. Children who are receiving LNS or FBF do not need to take MNP as well.

3.4.2 UNEXPECTED FLUCTUATIONS

Unexpected fluctuations are common in the humanitarian sector. Always keep other stakeholders informed about changes that could affect implementation. Examples of fluctuations are: changes in the funding situation, and changes in the context that may necessitate targeting adjustments.

The unit responsible for placing orders should communicate regularly with Programme staff. This will help them understand shifts in programme needs, and will give them an opportunity to inform Programme about expected time of arrival (ETA) of SNF stock.

Keep in mind the following:

- ✓ Planned beneficiary numbers — and thus, supply needs — may need to be revised if **funding availability** changes.²⁶
- ✓ **Potential pipeline breaks** will require contingency planning. Logistics staff should alert Programme staff so that they can put mitigation measures in place. For local pipeline breaks, such measures might include loans between organizations. For larger-scale breaks, loans from other country programmes might be needed. Changes in commodity and SNF distribution should also be discussed with local authorities and partners, and follow WFP substitution guidance. This will help determine what kind of mitigation is most appropriate. Programme should also communicate with communities and beneficiaries to explain the rationale for any planned changes.
- ✓ If beneficiary numbers need to be increased, it is likely that the existing supply will cover a limited number of additional beneficiaries. Therefore, prioritization might be required, until the pipeline can be appropriately adjusted (e.g. additional orders made). In WFP's system, country offices (Cos) could utilize the forward purchase facility (FPF) or loans from other programmes or countries to reduce lead time – especially when the context is life threatening.

²⁵ Guidance Note on the substitution of specialized nutritious foods in situations of temporary commodity shortfalls. Online at: <https://docs.wfp.org/api/documents/WFP-0000099472/download/>

²⁶ A procurement price list is available on <https://ipf.wfp.org/rfd/price/search/>. Other logistics-related costs can be found in the relevant Land, Transport, Storage and Handling (LTSH) matrix.

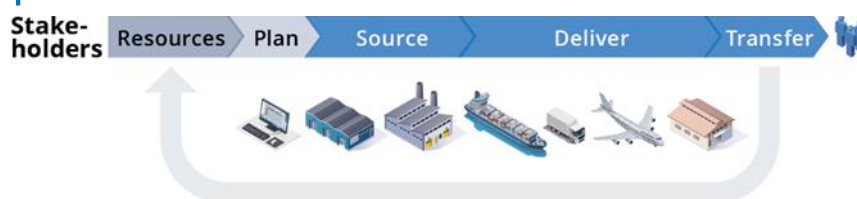
3.5 Golden rules

- ✓ The design of all nutrition interventions should be based on a clear understanding of both the nutrition situation and the capacity to respond.
- ✓ It is critical to gauge the government's awareness and standards concerning SNF, as well as their technical and logistical capacity for using these products. Advocacy and technical support can then be tailored accordingly.
- ✓ SNFs should not be used for programmes for which they are not recommended.
- ✓ Decision-making about which SNF to use must take into account: the target group; the context; cultural practices and food preferences; conformity with national standards; and operational issues.
- ✓ Estimated SNF supply needs are calculated from the total estimated number of beneficiaries, SNF ration size and programme duration. The formula used by WFP to estimate Required tonnage in mt can be found in Figure 11.
- ✓ There are many aspects of nutrition programming that can contribute to better nutritional status. These include linkages with other programmes, and appropriate SBCC strategies to bring about behavioural change.
- ✓ Communication between Programme, Procurement, Food Safety & Quality, and Logistics staff is essential — both for initial planning, and for predicting and mitigating the impact of pipeline breaks on a nutrition intervention.

CHAPTER 4

Managing the supply chain:
food quality

In this chapter



This chapter describes the quality management system through the supply chain. Keep in mind that to be effective, quality management requires resources, cooperation, strict rules and continuous improvement.

- 4.1** presents specific safety and quality issues associated with SNF
- 4.2** introduces quality management along the supply chain
- 4.3** deals with product analysis
- 4.4** discusses visual inspection during the handling of SNF
- 4.5** explains why SNF traceability is important
- 4.6** addresses food incidents and how to deal with them
- 4.7** summarizes the golden rules

For further information about quality and testing requirements for commodities, please refer to the Specifications section of WFP's Food Safety and Quality website: <http://foodqualityandsafety.wfp.org/specifications>

4.1 SNF Quality and Safety Concerns

Tables 1a, 1b and 1c, on the following pages, give an overview of issues related to food safety, acceptability and nutritional value that could lead to a food incident. Please see Section 4.6 for a detailed discussion.

Food incident triggers

Table 1a. **Food incident triggers: the main safety issues**

MAIN SAFETY ISSUES (hazards to health) Many of these hazards are linked to issues at production level. This is why supplier selection and monitoring the suppliers' performance is critical (refer to Chapter 5).	
Potential food safety issue and/or quality defects	Failures leading to the issue
Pathogens: microorganisms capable of causing disease or illness in their host. Examples are bacteria such as Salmonella, Staphylococcus aureus, Cronobacter sakazakii, and Bacillus cereus. Toxins: poisonous substances produced by or derived from living organisms. They can cause disease when introduced into the body — e.g. by a pathogenic strain of Escherichia coli.	<ul style="list-style-type: none"> Contamination of raw materials. Packaging breaches. High moisture content and high water activity of foods during processing — i.e. conditions that encourage growth of pathogenic microbes.
Mycotoxins produced by fungi: aflatoxin B and G, aflatoxin M, deoxynivalenol (DON), zearalenone (ZEA), and ochratoxin.	<ul style="list-style-type: none"> Contamination of a raw material, such as corn or peanuts, due to mold growth. Failures in selection and monitoring of the performance of suppliers of raw materials. High moisture content and high water activity of foods during processing — i.e. conditions that encourage growth of moulds.

Melamine: a toxic industrial chemical compound that can cause acute renal failure if ingested. It is illegally added to food products to inflate their apparent protein content.	<ul style="list-style-type: none"> • Adulteration of raw materials, such as milk. • Poor quality control of raw materials at processor level.
Heavy metals: e.g. lead, mercury, arsenic, cadmium and barium.	<ul style="list-style-type: none"> • Contamination of raw materials. • Poor quality control of raw materials at processor level.
Pesticides: carbamate group, organochlorine group, organophosphorus group, and pyrethroid group.	<ul style="list-style-type: none"> • Contamination of raw materials. • Poor quality control of raw materials at processor level.
Physical hazards: e.g. foreign bodies.	<ul style="list-style-type: none"> • Poor process control during and after manufacture and during packing.
Packaging hazards: mainly sealing issues leading to food contamination (this is particularly applicable for LNS products).	<ul style="list-style-type: none"> • Poor process control and machine sealing parameters during packing.

Table 1b. **Food incident triggers: the main acceptability issues**

MAIN ACCEPTABILITY ISSUES Many of these issues are addressed in the sections on programme design and supplier selection (Chapters 3 and 5).	
Potential food safety issue	Failures leading to the issue
Low/no SNF acceptability in beneficiary population.	<ul style="list-style-type: none"> • No relevant acceptability study shared by the supplier. • Selection of the SNF did not consider beneficiaries' sensory and sociocultural preferences. • Inadequate information on the use of SNF provided to partners and beneficiaries.
Rancidity or other sensory changes.	<ul style="list-style-type: none"> • Poor quality control of raw materials at processor level. • No relevant shelf life study performed at producer level. • SNF stored for too long. • SNF exposed to high temperatures beyond product tolerance levels.
Food is not convenient.	<ul style="list-style-type: none"> • Selection of SNF overlooked practical constraints related to beneficiaries' circumstances, e.g. provision of a product that requires cooking facilities when these are not available.

Table 1c. **Food incident triggers: the main nutrition issues**

MAIN NUTRITION ISSUES Many of these issues are addressed in the sections on supplier selection and logistics (Chapters 5 and 6).	
Potential food safety issues and/or quality defects	Failures leading to the issue
Incorrect vitamin and mineral mix or levels.	<ul style="list-style-type: none"> Poor quality control of raw materials, formulation or mixing processes at processor level. Poor quality control of raw materials, formulation or mixing processes at premix supplier level. No relevant shelf life study performed at producer level. SNF stored for too long. SNF exposed to temperatures greater than 30°C (in the case of vitamin degradation).
Incorrect protein, fat and energy content.	<ul style="list-style-type: none"> Poor quality control of raw materials, formulation or mixing processes at processor level.
Poor digestibility.	<ul style="list-style-type: none"> Heat treatment not sufficient to destroy anti-nutritional factors. Poor quality control of formulation and/or heat treatment at processor level.

4.2 Principles of quality management

Figure 12. **WFP's food safety and quality system**

<p>WFP's current food safety and quality system is based on:</p> <ul style="list-style-type: none"> approval of newly introduced products in WFP basket by the New Food Committee;²⁷ the inclusion of a precise product definition in specifications used for sourcing; regular audits of manufacturing sites; systematic inspection during processing; systematic product analysis (compliance testing) in parallel with producer release procedures; and management of food incidents (see section 4.6) throughout the supply chain.

It is important to note that to be effective, quality management requires resources, cooperation, strict rules, and commitment to continuous improvement.

The quality management system in place at WFP follows the standardized Codex General Principles of Food Hygiene and ISO standards which provide the standard definition for quality management in the commercial sector.²⁸

Table 2 on the following pages summarizes quality management processes and objectives at different steps in the SNF supply chain. At every stage, roles and responsibilities must be clearly defined.

27 Online at: <https://newgo.wfp.org/documents/new-foods-committee>

28 With some adaptation, these principles are applicable to any organization handling food and can be found in Codex Alimentarius, and ISOs 9001 (Quality Management) and 22000 (Food Safety Management).--- the last one needs to be checked by FSQ as it was included in the editor's revision

Table 2. **Quality management in the SNF supply chain**

Main operational process	Quality objectives	What to do.
Food specification. Please see WFP's specifications, which are published online at: http://foodqualityandsafety.wfp.org/specifications .	SNF characteristics are standardized.	<ul style="list-style-type: none"> Complement Codex standards, factoring in the organization and beneficiaries' specific constraints and objectives.
Supply chain planning. See Chapter 2 of this guideline.	Stocks and pipeline breaks are minimized.	<ul style="list-style-type: none"> Anticipate constraints on the operation, such as external environment, and need estimation.
SNF procurement. See Chapter 5.	The correct SNF is purchased.	<ul style="list-style-type: none"> Use specifications. Use only validated suppliers that can guarantee and deliver product quality compliant with Codex, and ISO standards, particularly ISOs 9001 and 22000.
Inspection Reports and laboratory analyses. See Section 4.3.3 and Section 5.2	SNF meet quality standards and are produced in the right quantity.	<ul style="list-style-type: none"> Ensure that cargo inspection and laboratory analyses are carried out by reputable inspection companies and qualified laboratories. Laboratory analyses may be either performed by inspection companies contracted by WFP or by suppliers.
SNF transport and storage. See Chapter 6.	The quality of SNF is maintained so that it remains fit for consumption by beneficiaries.	<ul style="list-style-type: none"> Take into account SNF specificity during transport and storage. Trace and track food to allow fast recall and efficient quarantine.
SNF distribution to beneficiaries. See Chapter 7.	Unsafe SNF does not reach beneficiaries. The correct SNF is received and consumed properly.	<ul style="list-style-type: none"> Monitor hygiene practices, food acceptability and food efficiency so that if an issue arises appropriate action can be taken. Provide beneficiaries with adequate information related to the preparation, consumption and storage of the SNFs.
Food incidents. See Chapter 4.	Beneficiaries are protected from unsafe SNF. The organization's reputation is protected.	<ul style="list-style-type: none"> Food incidents are properly detected and investigated. If any incident occurs, put appropriate actions, such as withdrawal or recalls, into place rapidly.

4.3 Principles of product analysis throughout the supply chain

Product analysis, the testing of finished products post manufacturing and, if necessary, along the supply chain; ensures compliance with quality requirements. WFP also uses the process to monitor the efficacy of the quality management system. WFP product analysis:

- is carried out initially at supplier level, and is a required step during the procurement process (see Section 5.2); and
- is used when a food incident occurs (Section 4.6).

4.3.1 HOW TO MANAGE THE SAMPLING PROCESS (WFP)

As it is impossible to test every SNF package, sampling plans exist for different SNF. Choosing the right plan ensures representative results are obtained

The chosen plan must be strictly adhered to; only then will samples be representative of the whole consignment. A consignment of SNF may seem more homogeneous than it actually is. For example: ingredients may have been drawn from different batches of raw materials; some bags may have defective seals; or some containers may have been exposed high temperatures, or other inappropriate storage or transport conditions.

To ensure proper sampling, whoever is collecting samples (WFP, or external contractor) must follow three key instructions:

- ✓ A detailed sampling plan must be in place specifying the number of primary units/packs to be sampled, and the quantity to ship to the testing laboratory.
- ✓ When bulk sampling, take samples during transfer of the food from one container to another.
- ✓ Primary units should be collected randomly, including different positions inside the warehouse, the stack, the pallet, the secondary pack, and primary pack.

4.3.2 HOW TO MANAGE THE ANALYSIS PROCESS

When dealing with a laboratory directly, or via an inspection/superintendent company, remember that laboratories and their analytical methods and protocols may differ substantially. To ensure reliable testing and meaningful results:

- ✓ Obtain full instructions for the laboratory from the appointed food safety and quality focal point at country level. These should specify which tests are required and which testing ('reference') methods must be used. Recommended target levels should be included for each parameter being measured.
- ✓ Note that at WFP, target levels at the point of purchase are included in the procurement specification. They may differ from targets at the end of shelf life.
- ✓ Only select testing parameters that will reveal whether there is a risk to safety and food quality.
- ✓ Use laboratories that are authorized by the local authorities and possess relevant accreditation.
- ✓ If local capacity is not sufficient, use accredited international laboratories to perform the analysis.

4.3.3 USE OF INSPECTION CERTIFICATE

At the point of purchase an Inspection Certificate is used to confirm that the SNF conforms with the contractual agreement. It should cover all agreed food composition and safety parameters, including nutritional values, vitamins and mineral content, etc., and state that the product is free of contaminants and harmful microorganisms.

Make sure the following points are reported on the Inspection Certificate:

- ✓ The method and the national or international standard used to analyse each parameter, and the accreditation for each method.
- ✓ The target limits for each parameter, as specified on the contract.
- ✓ The units in which numerical results are expressed.
- ✓ The result for each parameter tested.
- ✓ The degree of uncertainty (precision and bias) associated with the result, if possible.
- ✓ The number of samples taken, and a statement indicating whether the laboratory:
 - tested a composite sample; or
 - tested a pooled sample. (The Inspection Certificate must state which samples were selected for pooling).²⁹

If a food incident occurs, stock is quarantined until laboratory analysis determines whether it is safe for use or whether it should be destroyed. In these circumstances, the Inspection Certificate issued by the laboratory is fundamental to the decision as to whether stock can be released from quarantine.

In all cases, the quality focal point must be involved, and food incident management procedures must be strictly followed (see Chapter 5).

4.4 Visual inspection during handling

Some food defects or food deterioration signs can be detected during SNF handling. Examples are: damaged packaging and visible dirt, infestations, or mould.

- ✓ Examine food and packaging carefully for visible defects, including:
 - damage or excreta from insect or rodent infestations;
 - deterioration, including contamination with mould; and
 - breached or unsuitable packaging — look for leaks, and for possible ingress of other substances into the product.³⁰

The goal is to identify potential food incidents as early as possible during the supply chain, and to prevent unsafe products being distributed to beneficiaries.

²⁹ Composite testing involves mixing together equal amounts of all the product samples, or a series of comparable sets of samples, then analysing part of the mixture or mixtures. Pooling involves choosing a set of representative samples, from which equal amounts are taken, mixed together, and analysed as a whole.

³⁰ FAO (1993) Manual of food quality control. 15. Imported food inspection. Online at: <http://www.fao.org/docrep/014/t0867e/t0867e.pdf>.

4.5 Traceability

SNF are processed foods that consist of multiple raw materials with complex production formulae.

When a food incident the affected batch must be removed to prevent escalation and allow for the identification of exactly where in the supply chain the incident originates from.

Quality and safety defects involving nutrient or microbial levels require laboratory tests, which are often time consuming. Meanwhile, products from the same batches may still be moving through the supply chain and at risk of reaching beneficiaries.

SNF traceability is of particular importance to link lab results with batches of stored or distributed products.

BBD and production batch numbers must be noted and shared at all stages of the supply chain. If problems occur then it will be possible to determine where, how, and by whom mistakes were made.

Diligent tracking of all products, from the point of purchase through to distribution, enables supply chain managers to determine exactly which batch is where. They can then quickly issue quarantine or recall instructions to the CO or partner organizations.

Tracing the movement of products through the supply chain assists in identifying the cause of the food incident — for instance, mishandling, poor processing, or poor quality raw materials, etc. Tracing also enables warehouse staff to locate other stock from the affected batch and quarantine it.

4.6 How to react in the event of food incidents

According to WHO's Initiative to Estimate the Global Burden of Foodborne Diseases, worldwide, diarrhoeal diseases alone kill 2.2 million people every year.³¹ A considerable proportion of those diseases are foodborne.

To prevent defective SNF from contributing to this toll, any unanticipated issue associated with the products should be investigated, reported, notified and immediately addressed.

4.6.1 WHAT ARE FOOD INCIDENTS?

A food incident is defined as: any notified situation within the food supply chain where there is a risk — actual, potential or perceived — associated with the safety or quality of the food distributed and/or consumed.³² The primary purpose of intervention is to protect the welfare of those who consume the product. Intervention also helps to maintain — or, if necessary, restore — beneficiaries' and other stakeholders' trust in the organization.

A food incident may arise due to a major product quality defect, or a food safety hazard — i.e. the condition of the food, or a biological, chemical or physical agent in the food — that has the potential to harm health.³³

It is critical that — regardless of their magnitude — all food incidents are dealt with systematically, in terms of both food safety and communication with relevant authorities and stakeholders.

Food incidents can range from a minor quality defect to safety issues.

31 World Health Organization (2013) Baseline Information for Food Safety Policy and Measures. Online at: http://www.who.int/foodsafety/about/flyer_foodborne_disease.pdf.

32 Definition adapted from the Australian Government's Department of Health and Ageing (2009) National Food Incident Response Protocol, online at: <http://www.health.gov.au/> and the United Kingdom Food Standards Agency (2012) Food Standards Agency Incident Response Protocol, online at: <http://www.food.gov.uk>.

33 ISO 22000:2005 definition of food safety hazard.

Minor Incident (Low Risk)

Minor incidents are defects that are not likely to pose risk to the health of beneficiaries but require immediate attention and corrective actions. The defect can be sufficiently mitigated, if needed, using regular logistics/warehouse practices. Some examples of mitigation actions include fumigation, repacking, reconditioning, sorting and cleaning.

Examples of minor incidents include infested grains, and quality parameters being outside specifications.

Major Incident (Medium Risk)

Major incidents are defects which are not likely to pose risk to the health of beneficiaries but which render the food unacceptable. This affects a programme's nutritional objectives as well as WFP's reputation. WFP may reject the product, but that requires product validation and technical support to endorse an appropriate action plan, such as sampling and laboratory testing. This requires immediate action and all relevant stocks should be put on hold until further notice.

Examples of major incidents include deviations from specifications, for example protein or micronutrient content.

Critical Incident (High Risk)

Critical incidents are those in which food is likely to pose a hazard to the health of beneficiaries. Examples include a foodborne illness outbreak due to microbiological or chemical factors (salmonella or aflatoxins respectively) or foreign object contamination, such as glass or metal. They may also include defects such as incorrect labelling, non-compliance to regulations etc., which may pose a legal challenge or significant reputational risk. Rework or reprocess of the product to eliminate the defect is usually impossible or not advisable. All relevant stocks should be put on-hold immediately and a proper communication and action plan for the product defined in consultation with Senior Management and food safety and quality experts.

4.6.2 HOW TO SYSTEMATICALLY DEAL WITH SNF FOOD INCIDENTS

WFP has diversified its programme activities and now procures substantial quantities of more complex food products, such as SNF. The complexity of the food baskets increases the risk of potential food incidents.

A food incident can occur at any stage of the food supply chain including, but not limited to, activities during transportation and delivery to beneficiaries.

Food safety and quality is an integral part of supply chain operations. Food incidents may have crippling consequences on an operation, as they can result in pipeline breaks, present a reputational risk to the organization and – in worst scenario – pose a health hazard for beneficiaries.

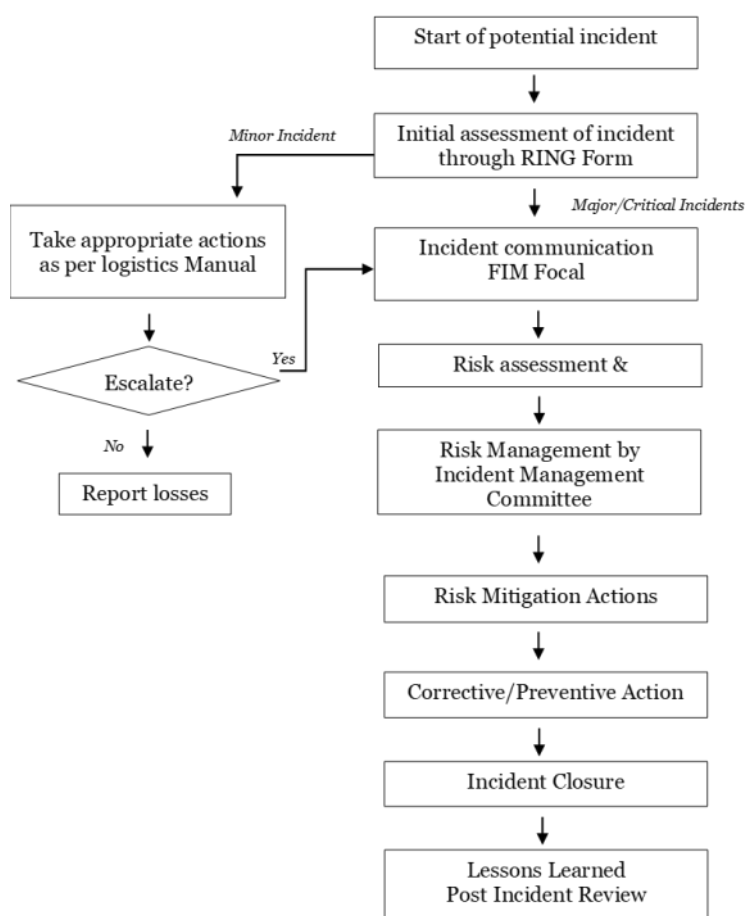
Risk-based frameworks for proactive communication and decision making need to be established at different levels (for more information on role and responsibilities, see Annex 7).³⁴

³⁴ For more information, please refer to the Memorandum on Food Incident Management (FIM) in WFP operations: <https://docs.wfp.org/api/documents/WFP-0000102840/download/>

4.6.2.1 Recommended steps

- Establishment of Food Incident Management (FIM) procedure (Annex 7), that provides coordinated and timely information to WFP operations in all regions, is important to manage and mitigate any food incident, and serves as a future prevention mechanism (corrective/preventive actions).
- Food Incident information should be reported using the Rapid Incident Notification Grid (RING form³⁵) at the earliest opportunity, to allow prompt and appropriate reporting of risk.
- Establishment of Food Incident Committee (FIC) to coordinate oversight of the incident management process in a situation.
- Information relevant to the potential food quality incident remains strictly internal to WFP until further investigation is conducted. Swift and decisive communication is critical. Any communication with external parties should be cleared by CO/RB/HQ Communications focal point and relevant management.
- Immediate involvement of food technologists/Food Safety and Quality unit whenever product quality/safety validation or investigation is required, to determine appropriate methodology, technical advice on sampling, analysis and external support.
- The overall responsibility for FIM rests with the Director of the Supply Chain Operations. A Country Director must always elevate major and critical incidents to RB and HQ.
- At all times, the FIC should ensure their best coordination to prevent incidents from escalating rapidly and causing damage to WFP's credibility and operation.

Figure 13. Food Incident Management Process



35 Online at: <http://newgo.wfp.org/documents/rapid-incident-notification-grid-ring-for-food-safety-and-quality>

4.6.2.2 Data Collection and Analysis—Rapid Incident Notification Grid (RING)

At the earliest opportunity, food technologists/ Food Safety and Quality focal point in respective COs should collect incident details and analyse risk calculation using RING to allow a prompt and appropriate response.

RING is an Excel based tool which consists of a risk assessment matrix table to determine risk type (quantitative information is expected in this form). Whenever possible photographs should be shared evidencing the issue.

Photographs should include:

- Bag/carton/packaging
- Supplier marking, with clearly visible traceability details
- Type of defect observed

To be properly prepared for sudden food incidents, relevant management need to be fully aware of this procedure.

4.6.2.3 Food loss/damage reporting to Risk and Insurance (OSCR)

Food loss or damage is the decrease in quantity of food at any stage of the supply chain due to operational conditions such as infestation, leakage spillage, etc.

The overall responsibility for loss and damage to food product commodities rests with Operational Risk Mitigation Services (OSCR)³⁶ whose mandate is to minimize WFP's operational risks exposure, alleviate the effects of uncertainty, and maximize physical and financial recovery in the event of loss. OSCR relies on the Food Safety and Quality unit for technical advice relating to food safety and quality. However, depending on the magnitude of the food incident, OSCR may engage external experts to investigate and respond.

36 OSCR overview and functions are available at: http://logistics.manuals.wfp.org/en/section-5-logistics-manuals-directives-and-guidance/#Section_5

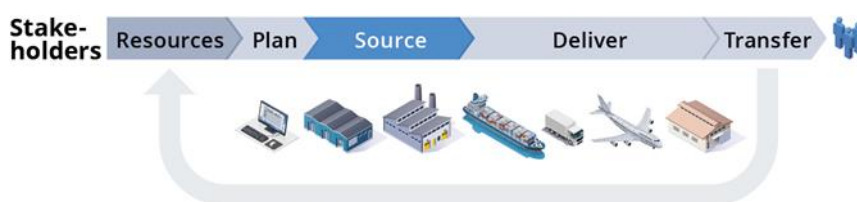
4.7 Golden rules

- ✓ Quality management is the only way to guarantee SNF quality and safety.
- ✓ Food safety is a key element of food quality.
- ✓ Quality management applies to the whole supply chain: from primary production to consumption.
- ✓ All actors in the supply chain share responsibility for food safety and quality. Staff should be encouraged to contact the quality focal point for technical advice when needed.
- ✓ Tracing and tracking of batch numbers is a prerequisite for an effective quality management system.
- ✓ Any incident or sign of deterioration or product defect should be reported to a technical expert within WFP and managed accordingly.
- ✓ Product sampling and testing are important elements of a quality assurance system. Usually, they take place early on in the supply chain, or when a food incident occurs.
- ✓ An effective quality assurance system must ensure that all staff are trained to be alert to potential problems, and that they are equipped to prevent defective products from reaching or harming beneficiaries.

CHAPTER 5

Managing the supply chain:
procurement of SNF

In this chapter



Well-organized procurement is key to ensuring that the right quantity of the product is in place at the right time. This chapter discusses the stages involved in purchasing SNF, and touches on the conditions of shipment / transport to the receiving country.

It is essential to be familiar with the basics of procurement and SNF peculiarities and challenging in terms of sourcing, production and sampling, so that supply problems can be remedied swiftly.

SNF are procured using the same process as other commodities. However, unlike other commodities, SNF have a long lead time and may not be immediately available during periods of peak demand, creating a significant bottleneck (see chapter 1 and 2 for additional details). In addition, SNF are highly sensitive to high temperatures, and the storage duration must be kept to a minimum. Clearly, in some contexts this presents a dilemma: in deep field locations, particularly in hot countries, it is extremely difficult to set up the right storage conditions. Nevertheless, storage time can be optimized.

- 5.1** presents standard procurement procedures, including: supplier selection, ordering strategies and optimizing the SNF order cycle. It uses WFP's procurement procedures as an example
- 5.2** describes end-product analysis prior to release of the products for delivery and distribution
- 5.3** focuses on monitoring supplier performance
- 5.4** discusses the corrective action and prevention action plan
- 5.5** describes WFP's Global Commodity Management Facility
- 5.6** presents the golden rules

WFP staff can access the *WFP Food Procurement Manual* at: <http://newgo.wfp.org/topics/food-procurement>. All food procurement must be undertaken in accordance with the Manual.

For information about Incoterms®, please see Annex 4. Incoterms® are a set of standardized contractual terms produced by the International Chamber of Commerce (ICC). They are used in delivery agreements to define the point at which risk and responsibility for the product passes from supplier to buyer. The terms are used worldwide and are available in many languages. ICC's Incoterms® microsite is at: <https://iccwbo.org/resources-for-business/incoterms-rules/incoterms-rules-2010/>

5.1 The procurement process

Procurement means purchasing appropriate commodities, goods and services on a competitive basis, and in a cost-efficient and timely manner, in local, regional and international markets. Procurement translates needs defined by Programme into actual orders, and defines the terms under which SNF continue to move through the supply chain through delivery and transfer. The *WFP Food Procurement Manual*³⁷ provides comprehensive guidance on vendor selection, the appropriate solicitation methods, the evaluation and issuance of awards, contracting and contract management.

37 Online at: <https://newgo.wfp.org/documents/wfp-food-procurement-manual>

Figure 14. **Procurement process components**

The procurement process includes:

- evaluating suppliers on an ongoing basis in order to maintain an approved supplier list;
- confirming quantities, timing and food specification;
- confirming the budget;
- selecting the appropriate supplier;
- defining contractual terms, including defining relevant Incoterms (see Annex 4);
- signing the supply contract between buyer and supplier;
- clearing the release of products through end-product inspection and analysis;
- monitoring the performance of the SNF producer; and
- paying for goods and products that have been received.

5.1.1 SELECTION OF THE SUPPLIER

- ✓ SNF suppliers are responsible for guaranteeing that their product's ingredients and characteristics conform with order specification. It is the buyer's responsibility to make sure that producers match their quality expectations. Criteria for supplier selection includes: **Reliability**. Producers must be able to demonstrate that they are reputable manufacturers and can meet the organization's requirements for validation (see below). They should be registered and accredited by local authorities. They must provide references from other buyers, along with proof of financial stability, credentials, etc.
- ✓ **Capacity**. Can the producer fulfil the organization's order?
- ✓ **Facilities and equipment**. Do they have the necessary set-up to produce SNF that complies with the organization's quality requirements?
- ✓ **Food Safety and Quality management**. Do they have an effective food safety and quality management system in place to ensure that their product is correctly formulated and labelled, safe to eat, of the required standard, and packaged and stored correctly? See Chapter 4.
- ✓ **Transport**. Are their transportation arrangements adequate to protect these sensitive products?

SNF must only be purchased from validated suppliers.

The validation process includes regular audits. These visits constitute an important process in the organization's quality management system: some of the potential quality issues associated with SNF can only be controlled at production level. Some organizations appoint technical specialists directly. Others may rely on technical visits carried out by other organizations, or they may organize joint visits.

For the audit, ensure that:

- ✓ A quality focal point at either CO or HQ level is involved throughout the process;
- ✓ a technical specialist is appointed by WFP and will conduct the technical visit, using applicable WFP standard methodology;
- ✓ the production line for the SNF of interest is being run that day; and

- ✓ the WFP HQ quality focal point has been contacted before a visit to the supplier is initiated. When an audit raises concerns WFP can:
 - propose that the supplier takes remedial action;
 - follow up on remedial actions and re-evaluate the supplier's standing in the organization's approved supplier list;
 - decline to add the supplier to the validated supplier list; or
 - immediately remove the supplier from the approved supplier list until they are able to meet quality standards.

5.1.2 ORDERING STRATEGY

Procurement negotiates the terms of the contract governing the deal. The contract must always include the agreed Incoterms. These define the point at which risk and responsibility for the product changes from supplier to buyer (see Annex 4, Incoterms®).

Procurement must ensure that when the organization takes delivery of the SNF the products have the latest possible expiry date. Always include a minimum acceptable shelf life in the contract.

Close collaboration between procurement officer (s) with Programme and Logistics teams will ensure coordination throughout the supply chain such that all stakeholders are aware of needs and have the latest stock reports on hand.

Procurement is responsible for the development of an order strategy, to meet the SNF monthly demand. This must take into account production and transport lead times (see Section 1.2.4) balanced against shelf life, monthly demand, and Programme's need for safety (i.e. buffer) stock.

- ✓ Shelf-life: The time from production to the BBD as printed on the packaging is the products shelf-life. All SNF must be distributed before the end of their shelf life, taking into account lead times and a safety margin.
- ✓ Buffer Stock: For procurement purposes, the buffer stock is the quantity of SNF required to cover unexpected events such as late or lost delivery, or sudden increase in demand. When calculating how much safety stock is needed, factor in consumption and supply constraints (purchase, transport, security, etc.). Buffer stock that has been used must be restocked immediately. Levels must be re-evaluated on a regular basis, taking into account BBDs.

5.2 Inspection and analysis at supplier level (WFP)

WFP needs to protect from the risk of sub-standard goods being shipped to distant locations. Therefore, WFP's procurement process for SNF includes an important safeguard. Prior to dispatch, and prior to gaining ownership of the goods, WFP appoints an independent inspection company to perform Quantity and Quality surveying of the SNF cargo.

The overall inspection for foods includes three main activity groups: 1) inspection at the supplier premises, 2) laboratory analysis 3) reporting.

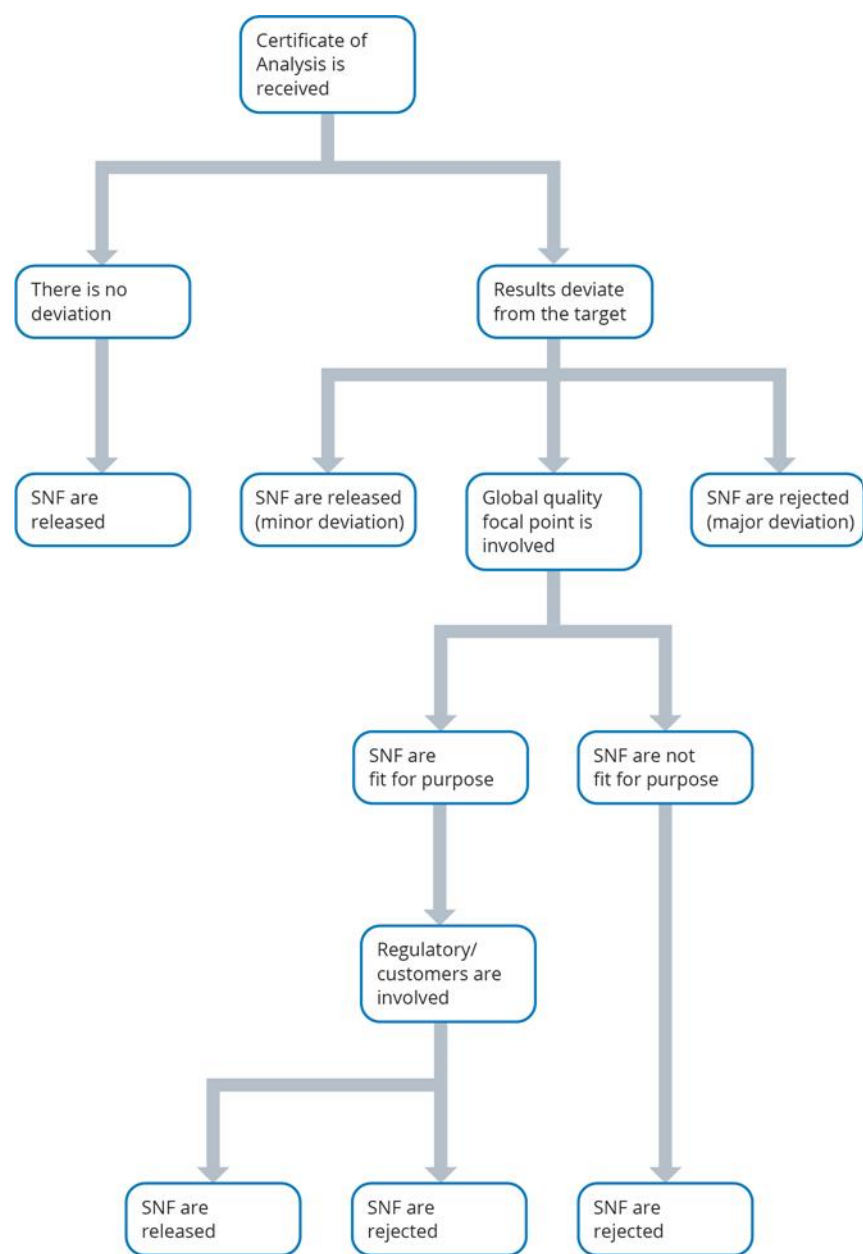
The company:

- visually inspects the product and manufacturing premises to ensure that both comply with international standards;
- withdraws samples from the goods allocated to WFP, using a international standardized sampling system (see section 4.2.1);
- has the samples analyzed in an authorized lab, and forwards the Inspection Certificate to WFP (see Section 4.3.3).

The inspection is carried out at WFP's expense and must be completed by the delivery date stated in the order.

Once the Inspection Certificate is received, the organization can take the following decisions in relation to accepting and distributing the SNF.

Figure 15. **Inspection Certificate evaluation decision tree**³⁸



38 Online at <https://foodprocurement.manuals.wfp.org/en/>

5.3 Supplier performance monitoring (WFP)

Assessment by buyers of suppliers' performance helps to continuously improve the quality of SNF. At WFP, assessment is based on trend analysis — of deviations from expected standards, corrective actions taken by manufacturers, and remedial action required later in the supply chain.

Deviations are reported to the supplier. If a supplier does not take action to correct deviations and prevent them from recurring (see 5.4, CAPA plan, below), the organization assists the suppliers in addressing the problems identified. If the company is unwilling to cooperate, WFP finds an alternative supplier.

WFP staff involved in monitoring supplier performance should ensure that all communications, including negotiations to resolve supplier performance issues, and the application of liquidated damages, follow the procedures set out in the Food Procurement Manual.³⁹

Note: be transparent and document all exchanges with the supplier.

5.4 Corrective Action and Preventive Action (CAPA) plan

When supplier audits are carried out, the manufacturer is given a report that includes a list of non-conformities discovered during the inspection. The manufacturer must then provide a CAPA plan stating how they will improve their quality management system.

The manufacturer's CAPA plan should specify actions and a timeframe during which non-conformities will be addressed.

5.5 Global Commodity Management Facility (GCMF)

Under WFP's "conventional" business model, food procurement can only start upon confirmation of a contribution; from that moment until distribution to beneficiaries, up to 120 days are needed. Over the last decade, efforts have been made to reduce this lead-time, by starting the procurement process before funding materializes.

5.5.1 WHAT IS GCMF?

GCMF is a strategic financing mechanism under which WFP purchases food commodities (including SNF) in advance of contributions' confirmation, with the objective to:

- reduce delivery lead-time;
- shorten emergency response time;
- purchase food when market conditions are more favorable; and
- increase local and regional purchases where and when possible.

³⁹ Online at <https://newgo.wfp.org/documents/wfp-food-procurement-manual>

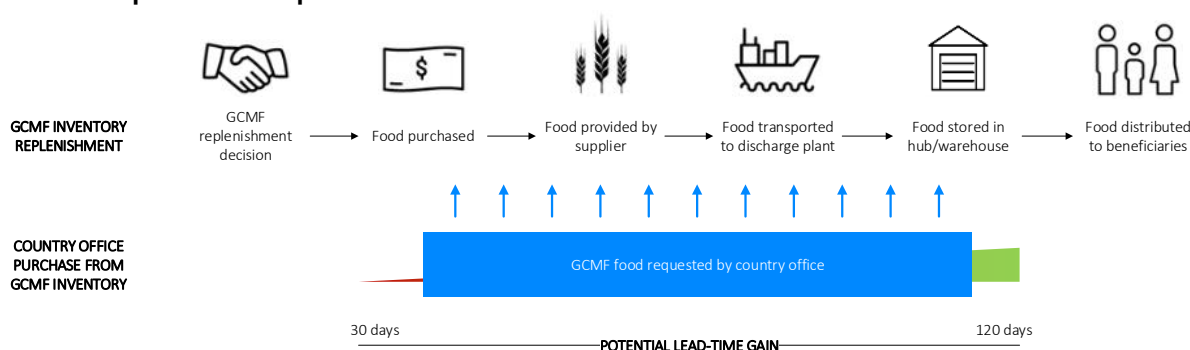
5.5.2 HOW DOES IT WORK?

Based on implementation plans outlined by COs in their “pipeline” reports (reviewed against historical resourcing information), WFP forecasts the amount of food that COs using common logistics corridors will be able to buy with expected resources over a given time horizon; a share of this amount is purchased with corporate funding and delivered to strategic handover locations before contributions are confirmed.

From the procurement point of view, these corporate purchases follow the very same procedure of any other food purchase at WFP (Import Parity Form, PR release, PO release, etc.). Batches are regularly monitored under GCMF in terms of ETA, quality, BBD, etc.

When funding is confirmed, the CO will purchase the food from the corporate inventory (likely to be already available at the selected handover point, or on its way towards it), reducing the food delivery lead-time.

Figure 16. **GCMF procurement process**



5.5.3 FINANCIAL MANAGEMENT

The GCMF is administered through a Special Account with a capital of US\$560 million (food + associated costs), out of which:

- US\$440 million are allocated to active supply lines in East, West, Southern Africa and the Middle East, plus a global inventory of nutritious food (including SNF) serving all WFP COs;
- US\$20 million are reserved for procurement from smallholder farmers (SHFs), to provide an initial support towards the achievement of the target to source 10 percent of WFP’s cash-funded purchases from SHFs; and
- US\$100 million are set aside to expand or open supply lines should in case of unfolding emergencies.

The US\$560 million is a rotating capital, i.e.: once food purchased through corporate funding is absorbed by WFP COs additional purchases are made to replenish stocks and ensure an adequate quantity of food is always available at designed handover locations. The capital rotates on average 2.5 to 3 times per year.

All costs for corporate food purchases up to handover locations⁴⁰ are pre-financed by the GCMF Special Account through a fund reservation and recovered from buying projects through an internal sales mechanism. Costs incurred after the handover point are covered by the buying project. This process is valid for all commodities procured under the facility.

5.5.4 MANAGEMENT OF SNF

SNF are one of the most critical components of WFP’s food basket; in case of funding shortages, COs often prioritize nutrition activities, which address immediate food needs. In such context, one single day saved in the delivery of these commodities can already make a difference.

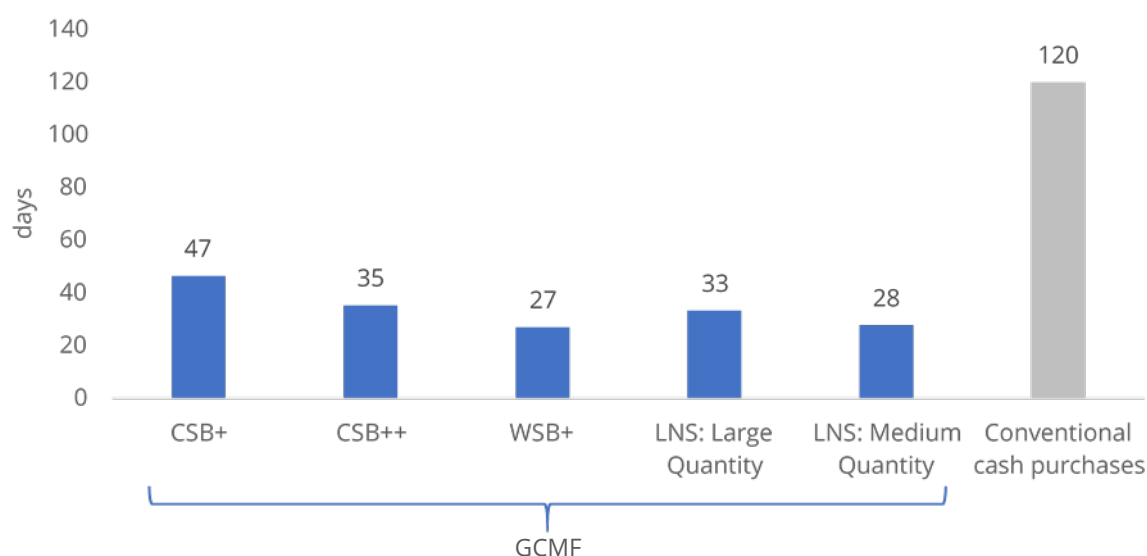
⁴⁰ Food, transport, storage, port operations, other food-related costs.

5.5.5 HIGHLIGHTS

In 2018, more than 220,000 mt of FBF and LNS were transferred to 43 COs through GCMF; this quantity accounts for almost 80 percent of the total volume of SNF procured through cash contributions. COs purchasing SNF from the GCMF inventory received their food after an average 39 days, with a 68 percent reduction of the 120 days needed under the “conventional” procurement process.

Countries facing L2 or L3 emergencies benefitted from even higher lead-time gains, receiving SNF after 31 days on average; remarkable results were achieved in West Africa, where this type of food was delivered in less than 20 days.

Figure 17. **2018 SNF average lead-time, GCMF vs conventional cash purchases**



5.5.6 THE GLOBAL INVENTORY OF NUTRITIOUS FOOD

The demand for SNF is relatively stable in WFP COs' pipelines; these food commodities have limited sourcing options, are generally expensive, sensitive to storage and bear similar specifications globally. For this reason, a share of the US\$560 million GCMF capital is allocated to a global inventory of nutritious food, which ensures that all WFP COs, including those currently not served directly by the facility, can benefit from reduced lead times for SNF. This global inventory enables long-term visibility on demand, better planning for production and reduced risk of price volatility.

5.5.7 STORAGE SOLUTIONS

SNF purchased through GCMF are available for immediate dispatch in WFP hubs and warehouses throughout all active supply lines (East, West, Southern Africa, Middle East, Latin America). In these warehouses, the temperature is monitored in order to ensure adequate quality of the food is maintained, and the SNF is kept in storage for the shortest possible time to avoid exposures to high temperature and limit product deterioration. More than 60 percent of SNF is sold to WFP COs before arrival at designed handover locations, while the remaining 40 percent is usually sold by two months and a half after arrival at destination. This helps limiting risks associated to prolonged storage.

5.5.8 MAIN SUPPLIERS

In terms of main suppliers, Super Cereal is normally sourced internationally (from Italy and Belgium) and on local/regional markets in Southern and East Africa (e.g.: South Africa, Malawi, Zambia and Rwanda), while LNS is most commonly purchased from France and USA.

WFP is currently expanding its sourcing options for LNS to local and regional markets in Ethiopia, Kenya, Madagascar, Niger and South Africa; this will enable further reductions in the delivery lead-time by alleviating demand on international suppliers (which have a limited production capacity) and producing the food closer to the buying countries. LNS sourced on local and regional markets will be stored in WFP warehouses under each supply line, as close as possible to the sourcing origin, in order to safeguard the quality of the stocks.

5.5.9 SUPPORTING COS' PLANNING FOR SNF

GCMF takes into consideration forecasted demand for SNF over a 6 to 10 months forward-looking time horizon, out of which:

- 3 to 4 months represent the average lead-time to source and deliver SNF to selected handover locations: any pipeline shortfall falling within this lead-time can only be fulfilled through the portion of GCMF inventories that is already available at handover location (or on its way towards it);
- 3 to 6 months generally represent the time horizon, i.e.: the amount of demand that food purchased through corporate funding aims to cover.

Such long-term visibility on projected demand makes GCMF a key enabler for CO planning for SNF, informing on availability under corporate inventories and expected additional food purchases to be delivered over the upcoming 6 to 10 months. In addition to this, the magnitude of purchases made by GCMF when replenishing corporate inventories often leads to price reductions due to economies of scale.

When purchasing food with corporate funding, the shelf life of the commodity is duly taken into consideration; the relatively long shelf life for LNS and Super Cereal Plus allows prolonged storage, and for this reason the time horizon considered is 6 months; on the contrary, Super Cereal has a limited shelf life, with a consequently shorter time horizon (3 months), to mitigate the risk of unsold commodities expiring.

5.5.10 HOW TO PURCHASE SNF FROM THE GCMF

To purchase from GCMF, no Import Parity Form (IPF) is needed from the CO side, as the facility is the primary line of supply for commodities available under corporate inventories (ref. ED circular OED 2015/013).

If a CO wants to purchase SNF from the GCMF, an e-mail should be sent to the HQ GCMF mailbox (hq.gcmf.team@wfp.org), specifying the SNF commodity to be purchased, the requested quantity and the final destination. Figures for available stocks by location will be shared by the Supply Line Manager (also disseminating the GCMF inventory overview report on a weekly basis), and the two counterparts will agree on the best location to serve the country from.

An Assignment Plan will then be submitted by the CO, based on which the Programme Services Branch (RMBX) will release an Internal Purchase Order (IPO). Finally, the Strategic Financing Branch (RMBF) will issue a Sales Order (SO), which will make the transfer of ownership effective; the related sales certificate will allow the CO to withdraw the food from GCMF inventories.

The entire process (from assignment plan to sales order release) takes no more than five working days.

40 Food, transport, storage, port operations, other food-related costs.

5.6 Golden rules

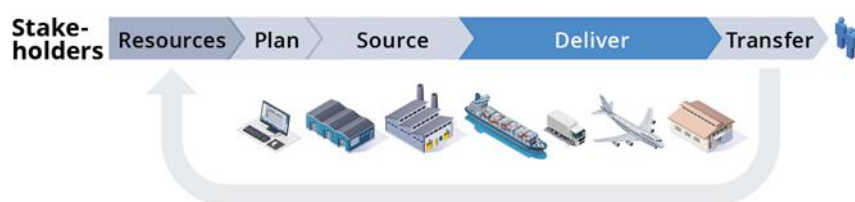
- ✓ Know the product specifications and standards. Latest versions of the specifications are available on WFP's Food Quality website.⁴¹
- ✓ Suppliers are responsible for guaranteeing that their product's ingredients and characteristics conform with the buyer's order specification.
- ✓ Choose an appropriate inspection company to inspect the SNF.
- ✓ Confirm procured SNF have an Inspection Certificate, issued by the inspection company, confirming that standards are met. The Inspection Certificate should include all compulsory analyses of the specification.
- ✓ Know the market for SNF, and remain informed of lead times and availability of locally, regionally, and/or internationally procured SNF stock.
- ✓ Know the suppliers and purchase only from validated suppliers with the necessary quality management systems, capacity, traceability, and financial stability.
- ✓ Monitor suppliers' performance, and regularly re-evaluate their status within the approved supplier list.

41 WFP's product specifications are online at: <http://foodqualityandsafety.wfp.org/en/specifications>.

CHAPTER 6

Managing the supply chain:
logistics

In this chapter



This chapter focuses on reception (transferring goods from one mode of transport to another), loading, and transporting them to where they will eventually be stored. For much of the supply chain, SNF will be either on the move or stored in warehouses. At each stage, certain actions and precautionary measures must be taken. Many of the actions that are described in this chapter are also applicable to standard food commodities.

- 6.1** gives general recommendations for reception and handling of SNF, and provides general advice on customs clearance
- 6.2** discusses transporting SNF by air, sea and land
- 6.3** focuses on storage and warehouse management for SNF
- 6.4** provides advice and maths formulae for stock management
- 6.5** deals with delivering SNF to partners
- 6.6** presents the golden rules

For updated information on dimensions and packaging of SNF, please see the product specifications on WFP's Food Quality website at: <http://foodqualityandsafety.wfp.org/en/home>.

WFP staff can refer to the organization's transport manual for further guidance on transport and storage. This is on the intranet at:

<http://logistics.manuals.wfp.org/en/linktransport-manual-logistics-manuals-directives-and-guidance/>

6.1 Reception and handling

6.1.1 RECEPTION AND HANDLING — GENERAL RECOMMENDATIONS

In this guideline, reception refers to the physical handing over of products when the mode of transport changes. Handling refers to loading and unloading, as well as movements of products within the warehouse.

For most organizations procuring SNF internationally, loading at the port of departure is the point at which the SNF comes into their possession. However, the exact point at which ownership changes from supplier to buyer depends on the Incoterms® (see Annex 4). If, for example, SNF are manufactured locally, and the organization picks them up from the factory, then the organization could own the goods immediately according to the Incoterms®.

To mitigate the risk of potential delays in onward transport, leading to wasted product shelf life, the following actions are recommended: .

- ✓ Ensure all SNF supply chain actors have the right information and capacity regarding SNF requirements for receiving and handling.. This includes, WFP teams throughout the supply chain, , local authorities, and third-party service providers — such as the superintendent, forwarding agent, shipping agent, handling operator, etc.
- ✓ Clearly define the roles and responsibilities of all staff involved along the supply chain (from reception to final distribution) to ensure optimum monitoring and coordination.
- ✓ Provide regular updates for all actors involved in the SNF supply chain on the pipeline situation.

- ✓ Ensure that special handling systems are planned on time.
- ✓ Have packing lists and up-to-date information about the ETA.
- ✓ Estimate the required capacity for reception, i.e. how many staff and trucks will be needed, and what off-loading equipment and storage will be required at the port.
- ✓ Make sure that customs procedures are clearly understood and that the contact list is up-to-date.
- ✓ Prioritize clearance of SNF when multiple commodity consignments simultaneously received. Clearing SNF first will protect products from heat or moisture damage at the quayside.
- ✓ In the case of ocean freight, if unforeseen events such as port congestion block the goods at the quayside, and the goods are exposed to high temperatures for an extended period, inform relevant actors along the supply chain that the stock has been exposed to heat. They should prioritize the cargo for distribution while it is still fit for consumption.
- ✓ At every stage, the person in charge should inspect the cargo by visually verifying that the transport conditions were in order and that there is no product deterioration. Any anomalies should be documented and reported immediately.
 - Inspect the outside of the container before opening it to ensure that the seal is intact.
 - Inspect the cargo itself for damaged boxes, leakage, etc. This is difficult as SNF have primary and secondary packaging. See: Chapter 9; Hand-out 1, Food Incident Management; and Annex 9, Checklist for reception.
- ✓ Note that when planning for storage and onward transport by truck or train, SNF need more space as they cannot be stacked as high as conventional commodities. Take this into account when calculating stowage space requirements.
- ✓ To minimize loss of the SNF in transit, the transport contract should include details of trucks' capacity and payload. At WFP, the organization's own fleet should be used whenever possible as it can be difficult to monitor commercial trucking companies.
- ✓ Make sure you have the latest national disposal regulations for all relevant countries in case any products are rotten or damaged and need to be withdrawn from the supply chain (see Chapter 4).
- ✓ Organize all necessary reconditioning materials for the stocks of SNF so as to minimize qualitative and quantitative loss in their onward journey.
- ✓ Replace any cartons that are too damaged to hold or protect the SNF for the rest of the supply chain.

Staff involved need to be informed about proper handling procedures at all stages before loading or unloading the products:

Handle with care!

- ✓ Do not throw the cartons.
- ✓ Do not put the products on wet surfaces — the cartons will soak up water and become very weak. Moisture will also encourage mould to form.
- ✓ WFP staff should refer to the *Storage Manual*⁴² to determine the maximum stacking height for storage.⁴³ For further information see the *Warehouse Manual*.⁴⁴
- ✓ Do not stack SNF against walls. Leave a gap of at least 40 cm between walls and stacks.
- ✓ Use plastic tarpaulins on concrete floors and put dunnage on it to protect the cartons from humidity.

⁴² Online at: https://logistics.manuals.wfp.org/en/food_storage_manual/

⁴³ Several factors influence stacking height, and they differ from country to country. For example, in very humid places, cartons will become less robust: therefore, stacking as high as 3 m is not recommended. The stacking method (cross-stacking vs column-stacking) will also influence the height to which cartons can be stacked.

⁴⁴ Online at: <http://logistics.manuals.wfp.org/en/linkwmh-logistics-manuals-directives-and-guidance/>

- ✓ Store SNF only with other food products. Never store them with non-food products, and do not use rodenticide or insecticide chemicals in the storage facility.
- ✓ Do not step or walk on the cartons, including during stacking. If necessary, use planks to avoid damaging the cartons.
- ✓ Provide spare cartons and tape for any re-packaging that may be required. Remember that only secondary (outer) packaging can be replaced.

To preserve the carton strength as much as possible, the best stacking option is to column stack the bottom first 3 layers (to preserve carton strength) and then cross stack the rest of the load (for load stability) – see Figure 18 below. It is critical that the cartons are well aligned on top of each other.

Figure 18. **Stack configuration**



Make sure that the pallets are in good condition, and that they are placed close together, so that stacks are properly supported.

Figure 19. **Damage to cartons resulting from poor quality or poorly installed pallets—examples of poor quality pallets**

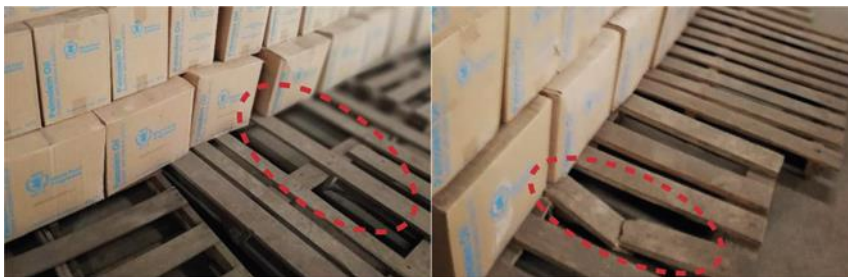


Figure 20. **Example of the impact on products of non-joined pallets**



SNF should be segregated, **at least, by BBD and producer — and, if possible, by batch number**. This makes it possible to locate a specific supplier batch if a safety issue arises.

6.1.2 A WORD ABOUT CUSTOMS

Customs procedures for imports and exports differ from country to country. Note that some countries have not yet adapted their procedures and regulations for new types of products such as SNF. Nonetheless, the following actions are generally applicable to all country contexts:

- ✓ Have a sound understanding of customs procedures. If in doubt, or for the first SNF delivery, verify the appropriate procedures with customs authorities in advance. Note that a certificate of origin is usually required.
- ✓ Develop and maintain a good working relationship with customs officers at all levels.
- ✓ If SNF have not previously been used in the country, and are not specifically included in national food quality standards, it is essential to introduce the SNF to local customs officials, health authorities, the bureau of standards, etc. prior to import. This will involve providing them with copies of the products' composition and Inspection Certificate to ensure that the SNF comply with national food safety standards. It may also be necessary to provide proof that the products do not contain GMOs.
- ✓ Be aware that customs may require quality control testing, either prior to arrival or in-country.
- ✓ Communicate the relevant procedures to all parties in a timely manner. If the supplier or donor is arranging the documentation, make sure they have completed all documents required by the loading port.
- ✓ If the organization is exempt from paying import taxes, start the clearance procedures early to prevent delays.
- ✓ If any problems are encountered, alert the organization's procurement and shipping units so that corrective measures can be taken to solve potential issues ahead of the shipment's arrival.

How well customs regulations are managed will directly influence the speed with which the SNF are cleared and beneficiaries' needs are met. In a rapid-onset emergency, the organization might not have sufficient — or any — buffer stock in place, so it is absolutely critical that goods are cleared quickly.

Whether in an emergency or a development context, understanding the basic customs management issues is essential: the effectiveness of the response often depends upon it. Pipeline breaks must be avoided: the effectiveness of nutrition interventions relies on timely distributions.

As well as being familiar with these general points, staff carrying out import and export activities must understand the procedures, rules and regulations for movement of goods in and out of specific countries.

If a Carrying and Forwarding agent is used, determine whether they have experience with SNF. If not, some training may be needed.

6.2 Transport

6.2.1 AIR, SEA OR LAND — GENERAL CONSIDERATIONS

During an operation, there will be several different transport phases: from the factory to the port or land entry point; from the factory or entry point to the main warehouse or hub; from the main warehouse or hub to partners; and from partners to beneficiaries.

Transport planning for SNF needs to consider the following:

- ✓ If the supply plan involves local production, do not confirm the transport contract until the proposed factory's manufacturing standards, hygiene and storage processes have been inspected and found to be satisfactory.
- ✓ Make sure that transporters and partners are aware of the cargo's value. If losses occur, a claim will need to be made for reimbursement.
- ✓ Ascertain the number and locations of different delivery and warehousing points that must be reached.
- ✓ Analyse roads and other infrastructure, and the security situation, to determine which primary and alternative routes are available for transport.
- ✓ When choosing the mode of transport, balance timeliness and cost-efficiency.
- ✓ Work out how many vehicles will be needed to deliver products to their destination.
- ✓ Obtain up-to-date information about network congestion and/or delays to distribution.
- ✓ Understand the likely weather conditions and put in place measures to protect the cargo from water, direct sunlight, and heat.
- ✓ Follow the handling principles outlined in Section 6.1.1: handle SNF with care, do not walk on boxes, and, when stacking boxes on pallets, column-stack the first three layers then cross-stack upper layers.
- ✓ Note that for SNF there is a different transport order: BBD breaks the FIFO rule.

Cargo should be loaded according to its BBD as this will facilitate stock management by BBD at the final destination. It will also help staff track and identify the affected batch of SNF in the event of a food safety incident.

6.2.2 BY AIR

In emergency situations with difficult access, it may be necessary to transport SNF by air. In these cases, usually SNF are first flown on a charter flight from the supplier to a staging area. They are then transported from the staging area to the FDP either by road or by local air services.

For local transport on cargo planes, note the following.

- ✓ If there is enough time before the aircraft is loaded, palletized cargo may be removed from the pallets to reduce its weight.
- ✓ Cartons and boxes of SNF and palletized SNF cannot be airdropped. Only bagged SNF can be airdropped, and then only after applying extra protection, such as several layers of bags. Note that as much as 10 percent of the load may be lost during airdrops.

For transport on helicopters, note the following.

- ✓ Make sure the staging area for SNF is protected from extreme temperatures. Use a proper, climate-controlled warehouse or a place that offers shade and is well ventilated.
- ✓ Because helicopter journeys between the helipad (staging area) and the delivery site and back again do not take long, the usual concerns about exposing SNF to extreme ambient temperatures can be ignored during the flight.
- ✓ Be aware of the aircraft's precise payload and its rotation capacity. These data are needed when estimating lead time and costs for the entire operation.
- ✓ If the staging area has handling equipment and the cargo is palletized, reduce the weight of the cargo by removing it from the pallets as it is being loaded onto the helicopter.
- ✓ Do not load damaged cartons onto the helicopter. They may not be accepted by the helicopter crew.
- ✓ Make sure the staging area for SNF is protected from extreme temperatures. Use a proper warehouse or a place that offers shade and is well ventilated.
- ✓ In some situations, goods are loaded into slings, as opposed to being stacked inside the cargo hold.
- ✓ Make sure that the SNF are well secured when loaded.
- ✓ An overview of the most commonly used helicopters can be found in Annex 1o.

6.2.3 BY SEA

Incoterms® in the shipping contract (see Annex 4) define where the ownership and risk transfers from the supplier to the buyer. They establish financial liability in the event of an accident or other mishap during the journey.

Table 3 demonstrates how much SNF can be transported in a typical container, compared to standard commodities.

Table 3. **Comparison of container loads of conventional commodities and SNF**

Product	Capacity of 20-foot container
Yellow split peas	23 mt
Wheat flour	21.5 mt
Vegetable oil	18.2 mt
SNF: FBF, such as Super Cereal Plus or Super Cereal	17–22 mt
SNF: RUSF	10.5 mt (704 cartons)
SNF: LNS-MQ	10.3 mt (800 cartons)

Note also that pallet dimensions may vary between different, pre-palletized SNF. For example:

- RUSF pallets measure 1.00 x 1.20 x 1.872 m;
- LNS-MQ pallets measure 1.00 x 1.20 x 2.17 m.

If products are palletized, fewer metric tons of SNF can be carried in the container.

- ✓ Once the cargo has arrived at the port:
- ✓ Check the container on arrival. See Annex 9, Checklist for reception.
- ✓ When containers carrying SNF have been discharged from the ship, make sure that they do not linger in the sun.
- ✓ Do not use containers as storage facilities for SNF. The temperature inside a container can easily rise above 40°C.

If goods are transported on rivers:

- ✓ Make sure the captain knows how to handle SNF properly.
- ✓ Inspect the boat or barge for leaks before loading begins.
- ✓ Make sure the boat's cargo deck or hold is lined with a tarpaulin, especially if it is made of wood.
- ✓ Ask the captain to put a layer of pallets on top of the tarpaulin lining. This reduces the risk of SNF being damaged if water enters the deck or hold.
- ✓ Ensure that the SNF are stored on top of other commodities and, if possible, in the middle of the boat to protect the SNF cartons from getting wet.
- ✓ Ensure that the products are covered by a tarpaulin.
- ✓ Make sure that the necessary capacity is available for offloading, and that infrastructure is adequate in the place at which the boat or barge will be offloaded.

6.2.4 BY LAND

Conditions in the field are challenging for optimal transport of SNF. The following measures can be taken to reduce the impact of high temperatures on product quality.

- ✓ Make sure the cargo is covered.
- ✓ When feasible and appropriate, transport SNF during cooler hours of the day. Cargo must not be left in the sun — particularly at ports, but also when drivers stop to refuel, eat or rest.
- ✓ Remember that cartons at the top of stacks will be exposed to more direct heat than the others.
- ✓ Stacks should not be higher than the maximum recommended height for storage.

6.3 Warehouse management, and storing SNF

Due to the high value of SNF, storing these products in a safe and protected environment is essential. Managing the warehouse is different from managing the actual stock. The former involves finding the right warehouse and ensuring that it provides the necessary climate conditions for storage. The latter involves maintaining product flow and documentation. Done correctly, both actions ensure that the SNF's quality is maintained.

6.3.1 WAREHOUSE CONSIDERATIONS

As with any food commodity or product, standard warehouse guidelines — such as those concerning rodent barriers, drainage and flood water disposal — need to be in place. WFP staff will find further guidance in WFP's *Warehouse Manual*.⁴⁶ See also the Logistics Cluster's Logistics Operational Guide on Warehouse and Inventory Management at: <http://dlca.logcluster.org/display/LOG/Warehousing+and+Inventory+Management/>.

When goods are in transit, short-term exposure to high temperatures is unavoidable. However, during their journey from manufacturer to beneficiaries, SNF are stored in a series of warehouses and, cumulatively, these periods amount to more than half the entire journey time. SNF must be stored in the right conditions. The most fundamental of these is temperature control, which is essential to keep the nutritional value as high as possible.

Note that if warehousing is subcontracted, the contractor must be fully informed of the procedures and conditions necessary for SNF handling and storage, and of the potential consequences of not adhering to these rules.

Warehouses for SNF storage must be suitably secure and structurally sound, and they must have enough capacity to allow safe storage and handling. Premises should be clean and dry, and ambient temperature must be maintained within acceptable limits.

When choosing a warehouse, several factors may help in identifying facilities that have lower ambient temperatures. Some are listed below:

- ✓ Location and orientation
- ✓ Building envelope (see 6.3.2.3)
- ✓ Entrances and exits, windows and doors
- ✓ Insulation
- ✓ Ventilation
- ✓ Air conditioning system
- ✓ Dimensions and distribution of the stock.

For further information, please see Sections 6.3.2 and 6.3.3.

WFP staff should contact wfp.engineering@wfp.org or wfp.engineeringarchive@wfp.org if they require more detail or a more in-depth assessment if adequate facilities cannot be identified, or if alteration of existing facilities or construction of new ones is required.

⁴⁶ WFP's Warehouse Manual for staff is at: <http://logistics.manuals.wfp.org/en/linkwmh-logistics-manuals-directives-and-guidance/>

6.3.2 FACTORS THAT AFFECT TEMPERATURE IN STORAGE FACILITIES

6.3.2.1 Location

Location is the single biggest factor influencing storage temperatures. Local climate, the warehouse's design and its situation within its built or natural environment must all be considered:

- ✓ **Local temperatures.** Throughout the supply chain, choose storage facilities in locations where temperatures are as low as possible.
- ✓ **Shaded buildings.** The temperature inside a building is significantly impacted by 'solar gain'. This refers to the temperature gain inside that is caused by solar radiation passing through windows and skylights, etc. If windows are shaded by awnings or eaves, or by adjacent buildings or trees, then less solar radiation will penetrate the building.

6.3.2.2 Orientation

To reduce solar gain, the warehouse should be orientated to the north in the northern hemisphere, or to the south in the southern hemisphere.

This means that the longest façade, the doors and windows, and the sloped part of the roof should all face in the direction indicated above.

6.3.2.3 Building envelope

The building envelope is the building's outer shell, consisting mainly of walls and the roof. The type of construction and building materials, and the quality of construction and materials all influence temperature within a building. The following factors are especially important.

- ✓ **Airtight.** The building envelope should be hermetically sealed to reduce the transfer of heat into the building by convection, i.e. hot air that enters, circulates and raises the overall temperature. Ideally, once SNF have been placed in storage, the facility should be kept as airtight as possible. This will help maintain cooling that has been achieved, even if external temperatures rise.
- ✓ **Twin skin.** In this type of construction, buildings have two outer walls. Air is sandwiched between the two layers and acts as an insulator. Sunlight heats up the outer skin, and the heat radiates into the air between the layers. As that air gets hotter, it rises and leaves the structure through vents, sucking in cooler air behind it. This diverts heat away from the building's inner wall, thus keeping the interior cool.
- ✓ **Colour.** The colour of roofs and façades can have a very significant impact on the temperature inside a building. Light colours reflect thermal radiation; dark colours absorb it. Thus, warehouses with light-coloured exteriors will be cooler inside than dark-coloured buildings.
- ✓ **Eaves.** Roof eaves with extended overhangs help to prevent direct sunlight from entering windows, thus reducing solar gain.

6.3.2.4 Entrances and exits, windows and doors

External daytime temperatures are often considerably higher than the temperature indoors. It is important to control building openings to prevent the entry of hot air.

- ✓ It is preferable to use facilities with separate pedestrian doors because most traffic in and out of the building will be on foot. If large loading dock doors are kept shut most of the time, less hot air will enter the building.
- ✓ Gaps between doors and walls, particularly around loading dock doors, should be sealed to stop hot air leaking through from outside.
- ✓ Windows or translucent panels invite solar gain, and thus high interior temperatures. Warehouse staff need some daylight; however, windows should be situated away from direct sunlight — ideally, beneath the eaves.

6.3.2.5 Insulation

Insulation moderates the effect of external temperature on internal temperature. Certain materials and construction properties insulate buildings naturally.

Note that even a perfectly insulated building will, at best, only achieve the average whole-day temperature for that location.

Insulation comes in a number of forms: that which reflects heat (thermal radiation); that which prevents the transmission of heat in the air (convection); and that which prevents the transmission of heat through the building fabric (conduction).

The following is a brief guide to insulation commonly found in storage facilities.

✓ Inherent insulation qualities

Buildings with thick, heavy walls are naturally insulated. Due to their mass, thick walls do not conduct heat well, and so they take a long time to heat up and cool down.

Facilities that are well constructed and have complete building envelopes, including well-sealed doors and windows, limit the convection of heat into the building.

A continuous air cavity between twin-skin walls provides good insulation. The void reduces heat conduction to the inner wall.

✓ Modern insulation materials

In more developed locations, modern insulation materials may be installed to improve the building's capacity to self-regulate temperature. U-value is the term given to thermal resistance to heat flow. The lower the U-value of an insulation product, the more effective its properties. Common insulation materials include the following.

- **Sandwich panels** consist of a core of insulating material sandwiched between metal foil or plastic facings. They are commonly used in modern storage facilities.
- **Mineral wool** is a lightweight material made of natural or synthetic fibres that partition air, preventing heat conduction.
- **Foil insulation** is a lightweight reflective material that reflects radiant heat, preventing it from conducting into the building.
- **Polystyrene insulation** consists of extremely light polymer foam blocks that are installed into the fabric of the building.
- **Spray foam** is commonly used to retrofit existing buildings. Polyurethane foam is sprayed onto the inside of the structure, and expands to provide a layer of insulation and seal gaps.

The presence of any or all of these materials in a building will assist in improving the facility's capacity to self-regulate temperatures.

6.3.2.6 Ventilation

Proper ventilation provides an energy- and cost-effective means of reducing the temperature inside a facility. It achieves this by moving cooler air into the building when external temperatures are lower.

Note that if the temperature outside is hotter than it is inside, ventilation does not lower the temperature inside. In fact, it is counterproductive: although the increased air flow makes it feel cooler, hot air entering the building will actually raise the temperature.

There are two main types of ventilation, and warehouse staff must be trained on how to make the best use of them.

✓ **Natural ventilation**

- When air becomes warm, it expands and becomes less dense. This makes it float above cool air and rise, allowing it to be channelled out of the building through high vents. Cool air is drawn in behind it at a lower level. This is a very effective means of temperature regulation and can be achieved very simply through the use of high-level ridge vents and low-level louvers.
 - The simplest form of ventilation uses natural, cool breezes to reduce the temperature of air inside a building, and can be achieved by opening doors and windows during the coolest part of the night. To create maximum airflow, openings should be located at opposite ends of the building. As in the previous example, hot air will rise above the cooler air, and exit via vents or high windows.
- ✓ **Powered ventilation** uses fans to increase air circulation. As long as the fans draw cool air into the building, they will speed up convective heat loss and thus reduce the temperature. However, if they draw in hot air, they merely create a wind chill effect; the actual temperature will increase.

When selecting a warehouse building, it is important to note ventilation systems and determine whether they are effective. Because warm air rises, the temperature will be highest just under the roof ridge. For there to be any prospect of temperature control, the building should have ridge vents or ventilation chimneys to allow hot air to escape.

6.3.2.7 Air conditioning system

To preserve the nutritional value of specialized nutritious foods the temperature control WickHall can be implemented in the field of operation to store goods. This solution is large enough to store mass amounts of goods, it is modular and can be configured to be up to 10x32 m in surface area, and keep goods below 25°C. Air conditioning units are installed outside the tent to maintain the appropriate internal temperature.

Although the solution needs a power source to provide cooling, it can run off a renewable energy source (solar power, wind energy) to function and produce zero CO₂ emissions.

The solution can use little to no fuel and is completely self-sufficient when equipped with an alternative energy system. The inner temperature is monitored by temperature sensors. The solution's structure and materials are durable in the harshest climates including: high speed winds, tropical outside temperatures and rain.⁴⁷



Temperature controlled Mobile Storage Unit

47 For more information on mobile, temperature controlled storage units, visit UNHRD's website at <https://unhrd.org/>

6.3.2.8 Dimensions and distribution of stock

It is important to consider the dimensions of a facility relative to the required storage area.

- ✓ Warehouse space must be greater, in terms of both floor space and height, than the volume of SNF stock to be stored. Staff need to be able to move around to shift stock, and air needs to be able to move freely around the stock to facilitate climate control. However, space requirements should be calculated carefully. If too much space is rented then costs will escalate due to increased energy requirements for cooling.
- ✓ If mixed stocks are stored then the temperature of all the stock should be maintained at the lowest temperature required by any individual product.
- ✓ Due to temperature fluctuations in the building, the temperature of the stock itself will fluctuate. When air is hot, the stock will absorb heat; when air is cool, the stock will emit the heat it has stored. If possible, stacks of stock should be segregated to help warehouse cooling systems work more efficiently.
- ✓ Plan storage configurations carefully to accommodate access requirements. If stock needs to be regularly accessed then consider segregated storage areas. This allows operations to take place in one storage area without raising the temperature in another.

Given the very specific needs of SNF, it is preferable to choose a warehouse that offers compartmentalized storage. This makes separate climate control for SNF more feasible.

6.3.3 IMPROVEMENTS AND MODIFICATION OF STORAGE FACILITIES

As previously noted, a perfectly insulated building will achieve only the average temperature of its external environment.

With good ventilation and management, the temperature can be further reduced. However, in contexts in which SNF are usually required, the quality of storage facilities is often poor.

Sometimes new construction is required. More often, building alterations and/or mechanised cooling will be needed to sufficiently reduce temperatures. Where this is the case, expert advice should be sought from specialists.

If alterations are likely to be needed then consider the following guidance, which expands on the points made in Sections 6.3.1 and 6.3.2.

6.3.3.1 Climatic conditions

Before planning alterations, refer to local seasonal temperature records, if available, to establish minimum/maximum/average temperatures. Measure temperatures inside and outside the building at regular intervals over a 'typical' day/night cycle so as to understand the change in temperature over time. Ideally these measurements should be taken on a continuous basis, throughout the year, to establish the seasonal variability; however, this is often not possible in the context of WFP's operations.

At the very least, measurements should be taken until minimum/maximum/average internal readings correlate with the local seasonal temperature records. In locations with little temperature variation, such as tropical environments, this can be accomplished fairly quickly. However, in locations that experience wider temperature variation, a longer period of measurement may be required. In all cases, temperature readings should be taken for at least one month. When taking measurements, exceptional weather events should be avoided as these will skew the results.

Analysis of these data will assist in selecting the most appropriate cooling technologies.

Temperature should be measured and recorded:

- ✓ inside the storage facility — at the entrance, in the middle and at the far end of the warehouse, and at the maximum recommended stack height;
- ✓ outside the storage facility — at a distance of at least 1 m from each of the building's walls;
- ✓ three times per day — at the hottest, coolest and mid-point of each 24-hour cycle.

Note that these are minimum requirements. Gather as many readings as possible, especially in larger warehouses where internal temperatures may vary considerably in different parts of the building.

6.3.3.2 Techniques to improve climate conditions inside storage facilities

The building should be assessed to ascertain whether it can be retrofitted with the following, in order of priority.

- ✓ Natural ventilation — could the roof accommodate ridge vents/ventilation chimneys and wall louvres?
- ✓ Minor changes in doors and windows?
- ✓ Insulation to reduce heat conduction — could a second skin be fitted to the roof, or could mineral wool or spray foam be applied internally?
- ✓ Subdivision — would it be possible to separate SNF stock?
- ✓ Mechanised cooling — is there adequate power to meet the energy requirements of mechanised cooling?
- ✓ Air conditioning climatization and insulation — is there adequate power to meet the energy requirements of climatization machines?

6.3.3.3 Local capacities

When assessing a facility for alteration, it is critical also to investigate whether the local market has the capacity to provide the materials, manpower and skills to implement the measures.

6.3.3.4 Permissions and cost effectiveness

In most cases the facilities will be leased. Gaining permission from the owner and possibly sharing the cost with the owner is often a critical constraint on implementing alternations.

The cost effectiveness of implementing these measures should be considered in the context of the overall supply chain relative to alternative options.

Achieving an efficient facility that self-regulates temperature is a complex challenge requiring input from specialist engineers.

6.4 Stock Management

6.4.1 CALCULATING STOWAGE FACTOR

Each type of cargo has what is called a stowage factor. Generally speaking, this is the volume per metric ton of a particular commodity. For example, bulk wheat has a different stowage factor from bulk maize.

Because every SNF product contains a different mixture of commodities, each has a different stowage factor.

Some SNF are packed in cartons and some are packed in sacks.

1. If the SNF are packed in little sachets, pots or packs inside a carton, measure the gross weight and the dimensions of a fully packed carton of the product, not its contents.
2. If the SNF are packed in sacks, measure the weight and volume of one full sack of the product. If the manufacturer or your organization cannot provide a figure for the volume, use the method shown below in 6.4.1.1, ii to estimate the volume. Record the result and share it with the manufacturer, your organization's head office and with relevant partner organizations to prevent future wastage.

6.4.1.1 Determining the volume of the SNF

i. If the SNF are packed in cartons:

Measure a carton's height, width, and length in metres, then perform the calculation shown in Figure 21, below.

ii. If the SNF are packed in sacks:

Because sacks are irregularly-shaped, it is extremely difficult to estimate their volume mathematically. Instead:

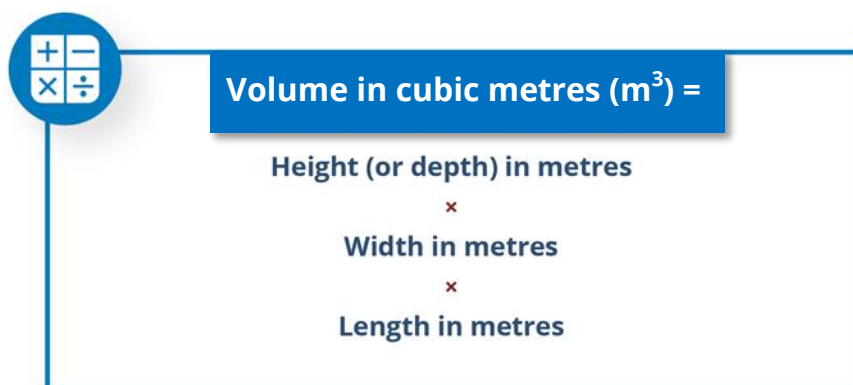
Tip the contents of a sack of SNF into a sturdy box and shake the box until the surface of the product is level.

Slide a ruler down the side of the box and measure the depth of the SNF in metres.

Measure the internal width and length of the box in metres.

Perform the calculation shown in Figure 21 below.

Figure 21. **Calculating the volume of a unit of SNF**



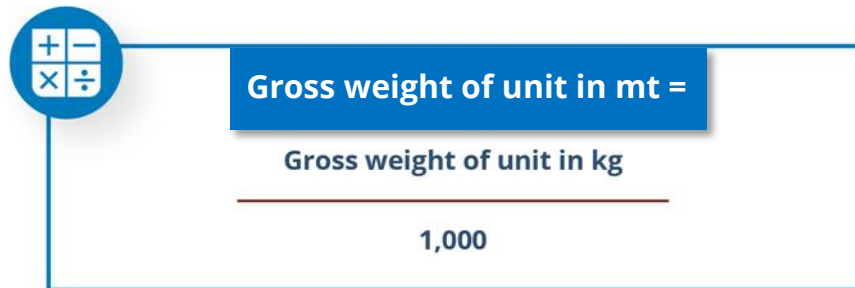
If measuring in centimetres, use the same formula but divide the result by a million (1,000,000) to convert cubic centimetres into cubic metres:

$$\text{Volume in cubic metres} = (\text{height in cm} \times \text{width in cm} \times \text{length in cm}) \div 1,000,000.$$

6.4.1.2 Measuring the gross weight of SNF

Weigh one unit of the SNF — i.e. one full carton or one full sack — in kilos. Then perform the following calculation to convert the weight of the unit from kilos to metric tons. (Note that 1 metric ton = 1,000 kilos).

Figure 22. **Converting weight from kilos to metric tons**

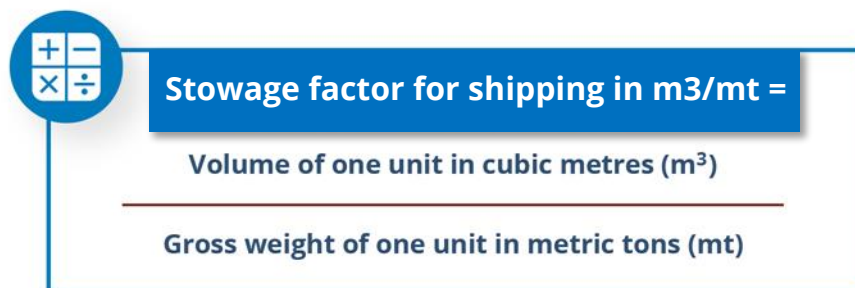

$$\text{Gross weight of unit in mt} = \frac{\text{Gross weight of unit in kg}}{1,000}$$

6.4.1.3 Calculating the shipping stowage factor

For shipping purposes, the stowage factor indicates how many cubic metres of space one metric ton of a particular type of cargo occupies in a hold of a cargo ship.

Use the results of the calculations in Figures 16 and 17 to work out the stowage factor, as follows.

Figure 23. **Calculating stowage factor for shipping**


$$\text{Stowage factor for shipping in m}^3/\text{mt} = \frac{\text{Volume of one unit in cubic metres (m}^3\text{)}}{\text{Gross weight of one unit in metric tons (mt)}}$$

Worked example

Calculate the stowage factor for LNS-SQ.

- Carton volume: $0.385 \text{ m} \times 0.29 \text{ m} \times 0.208 \text{ m} = 0.0232232 \text{ m}^3$
- Gross weight per carton: $11.95 \text{ kg} \div 1,000 = 0.01195 \text{ mt}$
- Stowage factor: $0.0232232 \text{ m}^3 \div 0.01195 \text{ mt} = 1.94 \text{ m}^3/\text{mt}$.

6.4.2 DETERMINING WAREHOUSE SPACE REQUIREMENTS

In warehousing, storage requirements for SNF are based on how much floor surface area, measured in square metres, is needed to store each metric ton of SNF.

WFP's formula for the stowage factor for warehousing is based on the stowage factor for shipping, as calculated in Section 6.4.1.3 above. The objective is to convert a product's volume per metric ton to its floor area per metric ton.

This is accomplished by dividing the shipping stowage factor by the maximum stack height for the SNF.⁴⁸ Cancelling out the dimension of height leaves the product of the other two dimensions, length and width, i.e. area. Thus, the stowage factor for shipping, in *cubic* metres per metric ton, is converted from three dimensions to two — to the stowage factor for warehousing, in *square* metres per metric ton.

Figure 24. Calculating stowage factor for warehousing


$$\text{Stowage factor for warehousing in m}^2/\text{mt} = \frac{\text{Stowage factor for shipping in m}^3/\text{mt}}{\text{Maximum stack height for SNF}}$$

To estimate how much floor space is required for a shipment of a specific SNF product, simply multiply the product's stowage factor for warehousing by the weight of the shipment in metric tons. The result is expressed in square metres.

Worked example

Calculate the storage space needed for a 400 mt shipment of SNF. For this example we shall use a maximum stack height of 3 m.

The shipping stowage factor for this product is 0.13 m³/mt.

- Calculate the warehouse stowage factor:
 $0.13 \text{ m}^3/\text{mt} \div 3 \text{ m (max. stack height)} = 0.0433 \text{ m}^2/\text{mt}.$
- Multiply the warehouse stowage factor by the shipment volume to give the area of floor space required: $0.0433 \text{ m}^2/\text{mt} \times 400 \text{ mt} = 17.32 \text{ m}^2.$

⁴⁸ Note: WFP is constantly seeking to improve storage efficiency. Therefore, the recommended maximum stack height for each commodity may change over time. WFP staff should check recommendations in an up-to-date edition of WFP's Warehouse Manual, available at: <http://logistics.manuals.wfp.org/en/linkwmh-logistics-manuals-directives-and-guidance/>.

Table 4. **Example of stowage factors and warehouse factors for the most frequently-used SNF products**

Product	Carton dimensions — LxWxH (m)	Carton Volume (m ³)	Gross weight/ carton (kg and [mt])	Shipping stowage factor (m ³ /mt)	Warehouse floor space needed per mt of SNF product (m ² / mt) if max stack height is 3 m	Warehouse floor space required (m ²) for a 400 mt shipment
LNS-SQ	0.385 x 0.290 x 0.208	0.0232232	11.95 [0.01195]	1.94	0.65	259.12
LNS-MQ	0.402 x 0.306 x 0.253	0.0311220	12.70 [0.0127]	2.45	0.82	326.74
RUSF	0.385 x 0.290 x 0.208	0.0232232	14.70 [0.0147]	1.58	0.53	210.64
Super Cereal Plus	0.400 x 0.280 x 0.210	0.0235200	19.25 [0.01925]	1.22	0.41	162.91

Note that figures in Table 4 merely demonstrate use of the formulae discussed previously. The warehouse stowage factor and warehouse floor space calculations in the right-hand columns are based on a maximum stack height of 3 m.

6.4.3 MANAGING STOCKS

Due to their comparatively short shelf life, SNF require very careful stock management. A plan needs to be established to prevent food incidents and wastage. Training on basic knowledge on warehouse and quality control system is also key to ensure a better result.

One way to limit storage time is to prepare an order cycle consisting of several deliveries (see Section 5.1.2).

If circumstances permit, another way to preserve shelf life is to keep the SNF in a warehouse with the right conditions for as long as possible, and only move it to the next node when necessary.

Make sure that the products entering the warehouse are segregated, at least, by BBD and producer. If possible, separate SNF by batch number.

Consider the following.

- ✓ How long will the cargo stay in the warehouse?
- ✓ What is the BBD of the incoming SNF?
- ✓ Remember that for SNF, FEFO is more important than FIFO.

Pre-positioned stocks require meticulous BBD follow-up.

- ✓ During the monthly inventory exercise:
- ✓ check quantities of SNF and the products' BBDs;
- ✓ highlight stock that will expire within the next three months; and
- ✓ pass on the stock report to Programme and Procurement, and discuss which actions should be taken.

6.5 Delivering and storing at partner level

This step usually involves local, national and international organizations as well as government entities, which are the main partners. Delivery to partners needs to be planned well in advance to enable the partner to organize the warehouse and distribution. It may take them some time to make these arrangements because the requirements for assuring the quality and integrity of SNF are so specific.

Remember the important relationship between dispatch timing and shelf life. Try not to deliver products that have a BBD of less than 3 months without prior agreement with the partner.

- ✓ Planning the delivery
 - Meet face-to-face with the partner well ahead of the planned delivery. This allows both parties to prepare the delivery in detail and to fine-tune the operation.
 - Make sure the SNF are in stock and alert the partner immediately if there are problems.
 - Ask the partner for their distribution plan and go through it step-by-step with the person from the programme unit responsible for implementing it.
 - If possible, provide the partner with one month's buffer stock in order to prevent pipeline breaks. Make sure the buffer stock is rotated, i.e. that the stock with the earliest BBD is given to beneficiaries first.
 - Create a contingency plan in advance in case the partner cannot distribute as much SNF as expected. If the plan needs to be implemented, let all relevant departments and subcontractors know immediately; deliveries for the coming month might be affected.
- ✓ Ensuring the right capacity
 - Make sure the partner is aware of the documentation process — for instance, signing waybills or reporting losses.
 - If possible, try to see the partner's warehouses and set-up, and confirm that they can guarantee the required temperature conditions. This goes both ways: it is important to build a relationship founded on mutual trust in one another's professional abilities.
 - When working with partners, it is important that their staff clearly understand the logistical aspects of storing SNF. This includes storage capacity and layout, shelf life, batch numbers, and temperature control. Provide documentation and technical support as needed.
 - Liaise with programme staff to ensure that relevant trainings and technical support in logistical aspects of SNF are incorporated into capacity-building plans by the organization or the relevant nutrition coordination forum.
- ✓ Making the delivery
 - Make sure the partner has proper security in place for the storage and distribution of SNF.
 - Deliver the SNF to the partner's main warehouse. This limits the number of deliveries to FDPs.
 - Provide stock management templates.

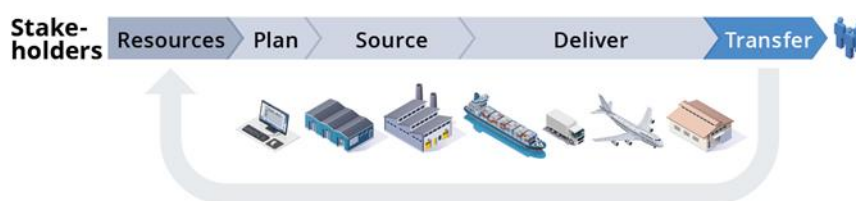
6.6 Golden rules

- ✓ Know the necessary customs procedures and identify the right focal points. Be up-to-date with any changes in customs regulations.
- ✓ Have the latest ETA on hand and communicate any changes to other colleagues, because ETA might have consequences for Programme.
- ✓ Use the SNF product's shipping stowage factor as the basis for calculating the amount of warehouse floor space required to store a shipment of the SNF.
- ✓ At all stages of the supply chain from receipt of the SNF to distribution, try to ensure that the first three layers are always column-stacked.
- ✓ Choose warehouses that can maintain the low temperatures needed for storing SNF. If the available storage facility cannot control temperature satisfactorily, consider modifications to the building (see Section 6.3.1).
- ✓ Measure and record the temperature in all warehouses storing SNF to ensure a transparent decision-making process (see 6.3.3.1, above).
- ✓ Segregate SNF entering the warehouse at minimum by BBD and producer. If possible, segregate products by batch number.
- ✓ Follow the FEFO rule when planning deliveries.
- ✓ Make sure that all staff following proper handling and transport guidance.
- ✓ Provide Programme with regular updates on stock availability and accessibility. For example, rainy seasons or shifts in the overall security situation may delay delivery or transportation.
- ✓ Share necessary documentation and procedures regarding transport, stock and storage management of SNF products with partners.
- ✓ Inform partners as far in advance as possible about any known or anticipated breaks in the pipeline, and provide support to minimize risks.

CHAPTER 7

Managing the supply chain:
distribution to beneficiaries

In this chapter



This chapter focuses on the last leg of the supply chain: distribution of SNF to the beneficiaries. In WFP programmes, this last leg is usually undertaken by cooperating partners, as only on rare occasions does WFP directly implement a nutrition intervention. Nevertheless, it is important to ensure that these issues are addressed in programme planning by partners.

- 7.1** gives general guidance on **food safety** and **action** to be taken at the **distribution**.
- 7.2** deals with **stock replenishment** at partner level.
- 7.3** discusses considerations for **waste management**.
- 7.4** presents the **golden rules**.

7.1 Food safety

While the programme is being designed, it is essential to consider all the steps that are needed to ensure that SNF reach the beneficiaries, and that the products are stored and consumed safely and correctly at both household and community levels.

LNS require no preparation and can be eaten directly from the package. FBF and MNP require food preparation facilities. FBF have to be prepared before they are eaten, requiring clean water and cooking facilities. MNP are added directly to food after preparation.

Nutrition interventions can be delivered through different mechanisms, including the public health system, GFA, or community-based structures. Food safety risks (such as end of shelf life, loss of nutrients, loss of packaging integrity, etc.) and potential mitigation actions vary depending on the mechanism.

Delivery mechanisms must be designed taking into account the strengths and limitations of delivery channels. Considerations include:

- ✓ the partner's warehouse capacity and storage conditions, and their technical and logistical capacity to safely manage the SNF and deliver the nutrition intervention;
- ✓ geographic coverage;
- ✓ physical access to targeted beneficiaries; and
- ✓ the potential impact of the programme on the delivery mechanism — in other words, does the partner have enough human and financial resources to deliver the nutrition interventions as well as carrying out their usual function?

During programme design it is important to be aware of specific food safety risks associated with each delivery mechanism. Measures can then be put in place for capacity building, intersectoral coordination and technical support where necessary.

Regardless of the delivery mechanism or programme, SBCC is a critical component of nutrition interventions. SBCC helps enable beneficiaries to use and consume SNF appropriately. SNF should always be distributed with information in the local language on:

- the objective of the nutrition intervention, how often SNF will be distributed, and how long beneficiaries will need to participate in the programme;
- proper use of the SNF — it is especially important to ensure that SNF do not displace optimal infant and young child feeding practices;
- the importance of giving the SNF only to the intended beneficiary in the household, and the importance of other preventive measures such as vaccination and health-seeking behaviour;
- basic food and safety recommendations on how best to store and consume the product; and
- the importance of recycling and reusing SNF packaging to reduce pollution and avoid wasting materials (see Section 7.3).

The individual receiving the SNF will need to participate in the nutrition intervention for a pre-agreed period — or, in the case of treatment of MAM, until discharge criteria are met. Be aware that caregivers may be reluctant to continue the full course of treatment if they think a child is beginning to show signs of recovery from MAM. It is critical that all caregivers are informed that if they stop giving the child SNF, his or her condition may deteriorate again.

Acceptability tests for SNF should be undertaken at the design phase. Programme planning should also include: dissemination of information on SNF; sensitization of the community, especially mothers and community leaders; and training of all staff involved at the Food Distribution Point level. This training should cover handling and use of SNF, and the accountability and responsibilities of staff in the distribution process.

Key messages for food safety include the following.

- ✓ Use safe water when preparing FBF and foods to which MNP are added.
- ✓ Prepare FBF and foods to be consumed with MNP hygienically. This includes washing hands before food handling, and using clean bowls and pots.
- ✓ Food to which MNP have been added should be consumed straight away.
- ✓ FBF, once prepared, should be consumed immediately.
- ✓ Once opened, a sachet of LNS does not require refrigeration, but it should be covered and protected, and consumed within the same day.
- ✓ Do not leave SNF anywhere in which it might be exposed to direct sunlight.
- ✓ Store the SNF in a cool and a dry place. This could be a cold room or area without direct sunlight, identified in the household or at community level.

Those in charge of the nutrition intervention must make every effort to ensure that safe water and hygiene facilities are available during SNF distributions. This is especially important in the treatment of MAM because beneficiaries' immune systems are very weak. In practice, this aspect of distribution can be difficult due to the context, as well as partners' capacity and facilities.

To facilitate distribution and to safeguard the product, the SNF should be handed out in a secondary, preferably reusable, package, such as a small cardboard or plastic box.⁴⁹

To reduce the risk of SNF being sold, some organizations request that the caregiver return all empty packages of LNS when they attend the next distribution. This measure can also be adopted for reducing the waste of the packaging. Suppliers may also be asked to print a '**NOT FOR SALE**' message on primary and secondary SNF packaging.

49 WFP/UNHCR (2011) Guidelines for Selection Feeding: Management of Malnutrition in Emergencies. Online at: <http://www.unhcr.org/4b7421fd20.pdf>.

Surveillance mechanisms to detect food-borne illnesses would help organizations identify and respond to any negative events related to the use of SNF in the community. However, in practice there are no formal food safety surveillance systems at community level, nor any protocol for determining whether an illness is linked to the product. Complaints lodged by beneficiaries during the distribution should be communicated to food incident management immediately (see Section 4.5, Traceability).

7.2 Stock replenishment

Partners need to regularly and accurately communicate up-to-date information on how many beneficiaries have been reached and how much SNF has been used.

If the partner has managed to distribute as much SNF as expected in the partnership agreement then planning can proceed for the next delivery. In many cases, however, cooperating partners are not able to distribute exactly the amount planned. This may be because some beneficiaries do not attend distributions, or because the number of beneficiaries requesting assistance is greater than anticipated. In both cases, appropriate action has to be taken.

- If there is a surplus of SNF at the end of the distribution:
 - adjust the delivery plan for the following period; and
 - investigate whether other partners in the same area have experienced a similar shift in demand.
- If there was not enough SNF to meet demand:
 - analyse shifts in demand;
 - if necessary, look into options to augment deliveries for the following period; and
 - identify new sources from which SNF can be bought — for instance, through local procurement — to satisfy immediate need.

Records provided by the partner need to be cross-checked with delivery records in the organization's tracking system to make sure there have been no mistakes. If discrepancies are discovered then Logistics, Programme and the partners should work together to determine the cause.

7.3 Considerations for waste management

Two different kinds of waste need to be considered.

The first is waste connected to a food incident, where SNF cannot be used and must be disposed of. This is covered in Section 4.5, and a product disposal checklist is provided in Annex 6.

There is currently no global consensus on the proper disposal of SNF. In the interim, contact the WFP food quality focal point.

The second type is waste that accumulates during a distribution or at beneficiary households. This consists mainly of packaging materials. Households may wish to keep cartons for re-use for other purposes. The real issue is the waste from non-biodegradable sachets.

When setting up a disposal system, remember the following points.

- ✓ Are there national or local guidelines for waste management that must be applied?
- ✓ The following mechanisms are suggested for efficient disposal of sachets and pots.
 - Collect used or empty sachets from households and bring them to a central place.
 - Ask beneficiaries to return used sachets at each distribution through, for example, a system that offers new sachets in exchange for used ones. (This can be linked to a monitoring component).
 - Do not incinerate sachets: they are plastic, and when they burn they generate toxic fumes.
 - Promote recycling initiatives in the communities, whenever possible (e.g. involve women in income generating activities that recycle packaging).

7.4 Golden rules

- ✓ Provide training, where necessary, for partner staff on warehousing, distribution practices and reporting. Agree a stock replenishment strategy with partners.
- ✓ If waste management needs to be addressed, follow national/local guidelines where they exist.
- ✓ Beneficiaries need to understand: the objective of the nutrition intervention; how to use SNF safely; how to use SNF properly; and how long they will need to use the SNF.
- ✓ SBCC is a critical component of nutrition interventions. It should be linked to sensitization of local authorities and to acceptability trials undertaken during programme design. Key instructions and SBCC must be translated into local languages, and these messages must be given alongside SNF as part of nutrition interventions.
- ✓ Programme staff should be open to dialogue and feedback from partners and beneficiaries. Concerns about the use or safety of SNFs should be followed up immediately so that appropriate action can be taken, either to clear up misunderstandings or investigate a potential food safety incident.
- ✓ Do not sue SNF without sensitization of beneficiaries on issues such as use, consumption and home storage etc.

CHAPTER 8

Annexes

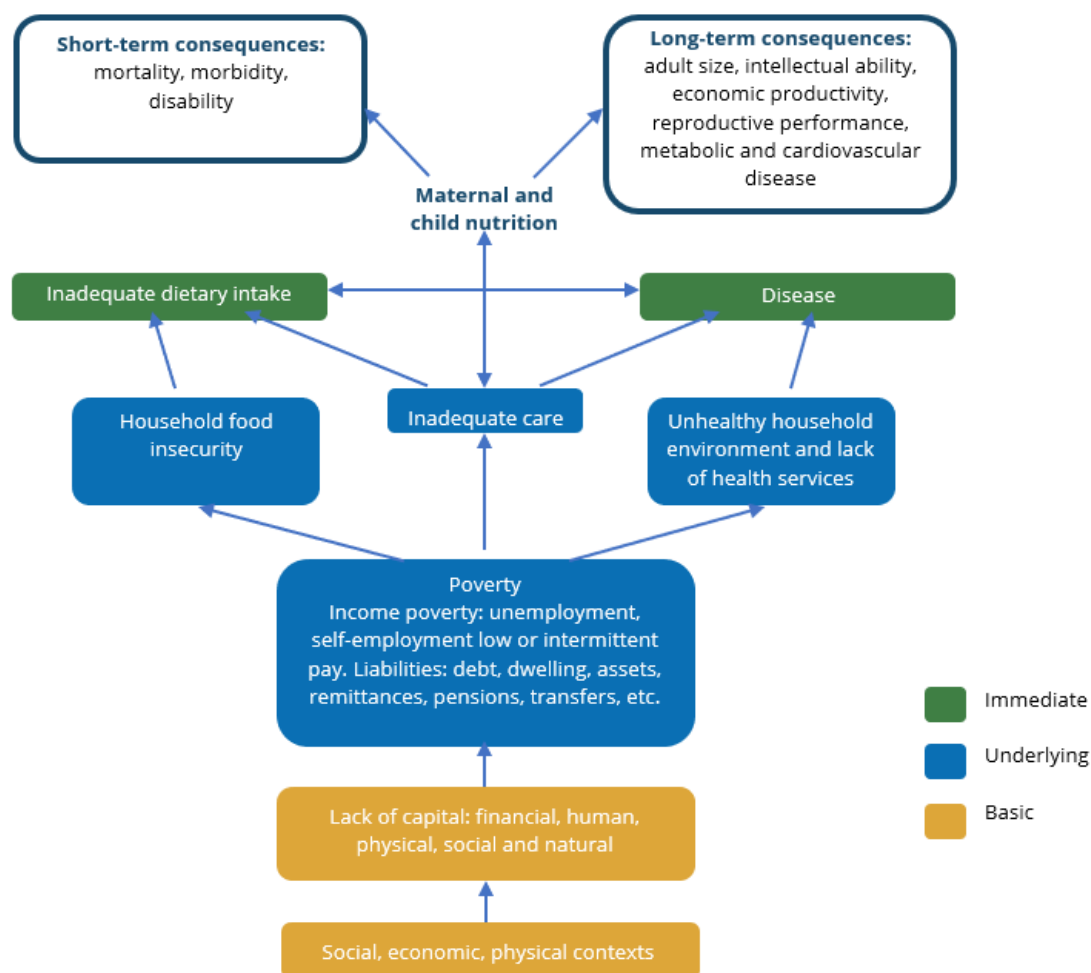
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Annex 1: Drivers of undernutrition

Undernutrition results from a wide range of factors. At its most basic, undernutrition is an imbalance between the nourishment an individual's body needs and the nourishment it actually receives from what the person eats.

Figure 25. **Drivers of undernutrition**



Annex 2: Thresholds

When using thresholds to assess the prevalence of acute malnutrition, remember the following.

- ✓ National thresholds may differ from and supersede global norms.
- ✓ Interpretation depends on the context. For example, in some areas prevalence may double in the short term but not necessarily exceed a threshold.

ASSESSING THE PREVALENCE OF ACUTE MALNUTRITION

Treatment of MAM with TSFPs can be considered in these situations:

- **Non-emergency settings:** where GAM prevalence is at least 10 percent among children aged 6-59 months, or where GAM is 5-9 percent but aggravating factors exist.
- **Emergency settings:** the context, including pre-existing GAM levels and the risk of deterioration, should guide the decision to include TSFP in the emergency nutrition response (see the Global Nutrition Cluster's *MAM Decision tool*)⁵⁰.

Prevention of acute malnutrition with BSFPs can be considered in the following situations.

- **Non-emergency settings:** when wasting increases seasonally in a predictable manner, usually during the agricultural lean season.
- **Emergency settings:** when the prevalence of GAM is high — more than 15 percent, or 10–14 percent with aggravating factors — and/or expected to increase.
- **Operational issues:** BSFPs can also be considered if there is poor access to programmes to treat MAM and SAM, or when other key activities — such as food security or health interventions — are greatly needed but not in place.

ASSESSING THE PREVALENCE OF STUNTING

Prevention of stunting with complementary feeding interventions can be considered in these situations:

- **Non-emergency settings:** where stunting prevalence is at least 30 percent. Note that other criteria may be used. These include: food security and food intake information; prevalence of anaemia or other MNDs; and social safety net information.
- **Emergency settings:** emergency nutrition interventions need to be developed with the understanding that nutritional needs that are not met during the emergency may increase the prevalence of stunting and micronutrient deficiencies.

ASSESSING MICRONUTRIENT STATUS AND FOOD INTAKE INFORMATION

- In **non-emergency** and **emergency settings**:⁵¹ point-of-use fortification⁵² is recommended where the micronutrient requirements of children aged 6-23 months are not met by the typical diet, and where appropriate complementary foods with sufficient macronutrients are locally available and affordable but lack essential micronutrients. Another factor that influences decision-making on initiating point-of-use fortification interventions is the role of national governments. They may have included these interventions in their national micronutrient guidance and/or policies.

Operational issues: where anaemia is greater than 40 percent among the most vulnerable groups, such as children and PLW, WFP may need to review the nutrient content of its general food distribution rations.

50 Global Nutrition Cluster. Moderate Acute Malnutrition: A Decision Tool for Emergencies, 2014 (updated 2017). Online at: <http://nutritioncluster.net/resources/ma/>.

51 Recommended in countries with previous experience of point-of-use fortification programmes.

52 The Home Fortification Technical Advisory Group (HF-TAG) is a global network that provides technical guidance on how to implement HF interventions at scale. HF-TAG members include UN agencies, NGOs, manufacturers of HF products, and academic institutions. Online at: <http://hftag.org/>

Annex 3a: Summary of nutrition interventions at WFP

TREATMENT OF MODERATE ACUTE MALNUTRITION WITH TSFPS

Objectives. Community Management of Acute Malnutrition (CMAM) frameworks may include a TSFP component designed to treat moderate acute malnutrition. TSFPs have several objectives:

- i. to rehabilitate individuals with MAM from specific target groups;
- ii. to prevent individuals with MAM from developing SAM;
- iii. to prevent mortality associated with MAM;
- iv. to provide follow-up support for individuals who have been treated for SAM, to prevent a relapse; and
- v. to prevent deterioration of maternal nutritional status and subsequent poor birth weight.

Target groups. Children aged 6-59 months with MAM; PLW⁵³ with MAM (up to six months after giving birth); and malnourished children aged 5-19 years and adults on ART for HIV and/or DOTS for TB.

TSFPs provide SNF to individuals on a regular basis. Programme admission and discharge criteria are based on nutritional status. Treatment generally takes 3-4 months. TSFPs should include screening for medical conditions that may need further treatment, routine health-related interventions (supplementation with vitamin A, deworming), and nutrition education programmes for caregivers to promote healthy behaviour. If the recipient's nutritional status deteriorates or stays the same, they should be referred for SAM treatment or to medical services to address underlying illnesses.

PREVENTION OF ACUTE MALNUTRITION WITH BSFPs

Objectives. To prevent nutritional deterioration and related mortality in vulnerable populations and high-risk groups.⁵⁴

Target groups. Children aged 6-23 months. Under conditions of extreme food insecurity, or if treatment of MAM is limited, programme scope can be extended to children aged 6-35 months or 6-59 months. PLW can be included if maternal undernutrition is high and the provider's resources/capacity are adequate.

THE FOOD-BASED ELEMENT OF PREVENTION OF CHRONIC MALNUTRITION WITH COMPLEMENTARY FEEDING

Objectives. To prevent stunting in children aged less than 24 months, and to promote the nutritional status of adolescents and women in their reproductive years⁵⁵.

The purpose is to:

- i. address the intergenerational cycle of undernutrition;
- ii. bring about a positive impact in health, education and productivity during the life cycle; and
- iii. support social and economic development at country level.

Target groups. Children aged 6-23 months; PLW, and, when possible, adolescent girls.

ADDRESSING MICRONUTRIENT DEFICIENCIES THROUGH POINT-OF-USE FORTIFICATION

Objectives. To improve the quality of the diet, and thus nutrient intake, for nutritionally vulnerable groups to the point at which the combination of the existing diet and the point-of-use fortificant meets the daily RNI for all nutrients. The purpose of improving nutrient intake, and of IYCF practices, is to enhance micronutrient status, thereby promoting the growth, development and health of target groups.

Target groups. The primary target groups are children aged 6-23 months, and, in the case of high prevalence of MNDs, children aged 6-59 months. Secondary target groups are school-age children, adolescents, and adults.

⁵³ In the case of children under 6 months with MAM, the mother (rather than the child) is admitted into the programme, and exclusive breastfeeding is promoted. The mother is discharged once the child reaches 6 months. If the child still has MAM then he or she will be enrolled in the programme.

⁵⁴ Evidence is being compiled on alternative responses; WFP's programming options may expand in future.

⁵⁵ Note that a comprehensive programme to prevent stunting can have other components. These may include promotion of IYCF, nutrition-sensitive approaches, and strengthening the capacity of national governments to assess, identify, deliver, monitor, and evaluate intersectoral programming that directly prevents stunting.

Annex 3b: Non-nutrition interventions that may use SNF

GENERAL FOOD ASSISTANCE (GFA)

Objectives

- To meet immediate and medium-term food needs.
- To improve access to food for refugees, IDPs and returnees in a specific area.
- To support the improved nutrition and health status of children, pregnant and lactating women, people living with HIV/AIDS, and other vulnerable groups.
- To protect the food security, livelihoods, and nutrition status of vulnerable household members

Overview

GFA typically takes place during lean, harsh and/or extended lean seasons, after a natural disaster or in conflict/displacement situations. Its purpose is to make up for shortfalls in household food access — in other words to make up the difference between a household's food consumption requirements and what they can provide for themselves without adopting distress (damaging coping) strategies.

GFA is always targeted at a specific geographic area, or areas, where a shock or crisis has disrupted people's normal means of access to food.

GFA can be in the form of in-kind, or cash-based transfers (either cash or voucher). In-kind is normally provided in the form of dry rations, distributed every 15 days or once a month, and enables households to prepare meals at home. Exceptionally, cooked meals or other ready-to-eat foods or biscuits may be provided for a period during an acute emergency until beneficiaries can cook for themselves.

SNF implication

Generally, the staple food commodities distributed in the GFA do not meet the nutritional needs of the most vulnerable groups, such as young children, PLW, adolescents, and people with chronic diseases (e.g. HIV and TB). It may be possible to target households with children under 2 to receive SNF through the GFA, in which case including SNF in the ration can be a viable distribution mechanism. Where it is not feasible to target SNF only to households with children under 2, SNF may still be added to the GFA. However, it may be more cost-efficient to establish a separate SNF delivery mechanism so that under-twos in the beneficiary population can be specifically targeted.

When cash-based transfers or commodity vouchers are distributed, pre-calculated transfer values can factor in the prices of nutrient-dense foods (animal source foods, fruit and vegetables) that are available in the market. However, emergency or crisis situations may impact the availability and affordability of these foods. If so, opportunities can be explored to provide SNF to households with vulnerable members to ensure that the nutrient gap is filled.

SCHOOL FEEDING

Objectives

- To reduce short-term hunger of children attending school.
- To improve attendance, enrolment and concentration.
- To contribute to household food security.

Overview

Typical school feeding programmes distribute food to schools for on-site (wet) feeding. Some programmes provide a ration to the household as well, to encourage school attendance and participation in the programme. School meals can be started quickly if the school is well established and able to prepare the food.⁵⁶

SNF implication

FBF are generally used in school feeding programmes to help meet micronutrient needs. Worldwide, MNP are increasingly being distributed in school feeding programmes. They are useful in areas in which locally available foods do not meet micronutrient intake needs and levels of anaemia are high.

⁵⁶ More information, including WFP's report *State of School feeding Worldwide 2013*, is online at: <http://www.wfp.org/school-meals>.

Annex 4: Incoterms®

Incoterms® are a set of standardized contractual terms produced by the ICC. They are used in delivery agreements, and in contracts that include delivery agreements, to define the point at which risk and responsibility for the product changes from supplier to buyer.

The terms are used worldwide and are available in many languages.

They are summarized in Figure 26, overleaf. Note the codes in the second row, which are abbreviations for charge and fee categories.

For more information, please see ICC's Incoterms® microsite at: <https://iccwbo.org/resources-for-business/incoterms-rules/incoterms-rules-2010/>.

Figure 26. **Incoterms® 2010 rules**

	Any transport mode		Sea/ inland waterway transport			
Code	EXW	FCA	FAS	FOB	CFR	
Charges/ Fees	Ex Works	Free Carrier	Free Alongside Ship	Free On Board	Cost & Freight	
Packaging	Buyer or Seller	Seller	Seller	Seller	Seller	
Loading Charges	Buyer	Seller*	Seller	Seller	Seller	
Delivery to Port/Place	Buyer	Seller	Seller	Seller	Seller	
Export Duty & Taxes	Buyer	Seller	Seller	Seller	Seller	
Origin Terminal Charges	Buyer	Buyer	Seller	Seller	Seller	
Loading on Carriage	Buyer	Buyer	Buyer	Seller	Seller	
Carriage Charges	Buyer	Buyer	Buyer	Buyer	Seller	
Insurance						
Destination Terminal Charges	Buyer	Buyer	Buyer	Buyer	Buyer	
Delivery to Destination	Buyer	Buyer	Buyer	Buyer	Buyer	
Import Duty & Taxes	Buyer	Buyer	Buyer	Buyer	Buyer	

* Seller is responsible for loading charges, if the terms state FCA at seller's facility.

		Any transport mode				
	CIF	CPT	CIP	DAT	DAP	DDP
	Cost Insurance & Freight	Carriage Paid To	Carriage Insurance Paid To	Delivered at Terminal	Delivered at Place	Delivered Duty Paid
	Seller	Seller	Seller	Seller	Seller	Seller
	Seller	Seller	Seller	Seller	Seller	Seller
	Seller	Seller	Seller	Seller	Seller	Seller
	Seller	Seller	Seller	Seller	Seller	Seller
	Seller	Seller	Seller	Seller	Seller	Seller
	Seller	Seller	Seller	Seller	Seller	Seller
	Seller	Seller	Seller	Seller	Seller	Seller
	Seller		Seller			
	Buyer	Seller	Seller	Seller	Seller	Seller
	Buyer	Buyer	Buyer	Buyer	Seller	Seller
	Buyer	Buyer	Buyer	Buyer	Buyer	Seller

Annex 5: ISO 9001 in relation to SNF

Table 5. ISO 9001 principles and definitions of quality management and applications to SNF

Principle 1. Customer focus
<p>Definition. Organizations depend on their customers and therefore should: understand current and future customer needs; meet customer requirements; and strive to exceed customer expectations.</p> <p>Application. Customers in this case are the beneficiaries receiving SNF. They have specific needs related to their age, habits and nutritional status that must be taken into account in SNF definition.</p>
Principle 2. Leadership
<p>Definition. Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.</p> <p>Application. Food quality management of SNF requires deep involvement of all actors in the supply chain, and can only be achieved with strong commitment and leadership from the organization's top management.</p>
Principle 3. Involvement of people
<p>Definition. People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.</p> <p>Application. Food quality management of SNF relies primarily on staff. They must be equipped with the tools they need, such as this guideline and other reference and training resources.</p>
Principle 4. Process approach
<p>Definition. A desired result is achieved more efficiently when activities and related resources are managed as a process.</p> <p>Application. Examples of processes related to food quality management of the SNF are listed below. For instance: specification management is one process, storage management is another.</p>
Principle 5. System approach to management
<p>Definition. Identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.</p> <p>Application. Processes that contribute to an overall objective are part of a collaborative effort, and those involved in designing and delivering them must interact. In SNF specification management, for example, there is interaction between specification and storage processes: storage conditions are used to design shelf life studies; and storage losses related to SNF quality are used to determine whether specifications are adequate.</p>
Principle 6. Continual improvement
<p>Definition. Continual improvement of the organization's overall performance should be a permanent objective of the organization.</p> <p>Application. This involves learning from successes and failures, and is linked with monitoring and evaluation. For example, one of the key performance indicators for SNF is supplementary feeding recovery rate.</p>

Principle 7. Factual approach to decision making

Definition. Effective decisions are based on the analysis of data and information.

Application. An example of this is in storage management where temperatures used during a shelf life study must be based on warehouse temperatures and profiling. Losses must be accurately tracked so that the resulting data can be used to adjust specifications.

Principle 8. Mutually beneficial supplier relationships

Definition. An organization and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value.

Application. For example, SNF product development is managed in cooperation between the private sector and food assistance organizations.

Annex 6: Product disposal checklist

Checklist for product disposal

- ☐ Have the damaged goods been recorded on the stock/stock card?
- ☐ Have the potentially affected/damaged goods been marked?

Include the initials of the inspector or observer and the date and time at which marking was observed.
- ☐ Have the damaged/suspect products been put in quarantine and separated from non-affected goods? (See Annex 8, Quarantining SNF.)

Until properly disposed of, spoiled commodities remain the responsibility of the storekeeper. They must be accounted for in the records.

Segregate damaged/suspect goods, storing them well away from other goods — if possible, in a separate area. Damaged goods can attract pests. Take measures to protect all stock from rodents and insects, but do not use rodenticide or insecticide chemicals anywhere near food.
- ☐ Has the type and severity of the damage been confirmed prior to any decision?

Inform your supervisor or designated FIM focal point.
- ☐ Has a Rapid Incident Notification Grid (RING) been completed?

A RING template is available online at:
<http://foodqualityandsafety.wfp.org/incident-management>
- ☐ Does the public need to be notified, for example to mitigate health risk?

(This step should be applied if the product has already reached consumers.)
- ☐ Can the damage be mitigated?
- ☐ Has a laboratory certificate and/or a condemnation certificate been obtained to confirm that the product is unfit for consumption?

A condemnation certificate must be obtained stating how much of the product is affected and the reasons why the goods cannot be used for the purpose intended. Note that spoiled food must not be disposed of until official instructions have been received from a competent and recognised authority.
- ☐ Have all affected commodities been located (if at various sites)?
- ☐ Have the local authorities been notified of the scope and reason for the disposal?
- ☐ Have either the local authorities or the product manufacturer provided instructions on a suitable disposal method?

Local authorities and the manufacturer need to be informed. They should be consulted about destruction modalities. Some of the spoiled food products may constitute a biohazard (pathogenic microorganisms) or other environmental hazard (chemicals, toxins, heavy metals, etc.). Therefore, disposal restrictions may be applicable (check the product sheet or manufacturer's disposal guidelines). Unless official approval and necessary authorization have been received for the disposal method, no action should be taken.
- ☐ Are public or commercial high-temperature incinerators available?

In some countries, destruction is organized and must be done in specially designated facilities.
- ☐ Is there an authorized destruction point?

Check your Emergency Response contacts list for designated local destruction point(s).
- ☐ Has transport to the destruction point been planned?
- ☐ Have all organization and/or donor markings and logos been removed/obliterated?

Before re-sale or prior to transporting the goods to the destruction point, all markings must be removed/obliterated.
- ☐ Are organization staff and local authorities present to supervise the destruction procedure?
- ☐ Do you have a copy of the destruction records?

The waybill for removing food to the destruction site serves as a stock adjustment document. The local authority representative present at the disposal must issue a destruction certificate stating the quantity destroyed and the method of destruction. A destruction certificate must be kept for audit purposes, even if ownership of the commodities has been transferred.
- ☐ Does the Disposal Committee include all relevant actors, such as government, donors, and representatives from all relevant WFP Units?
- ☐ Is the authorization capacity of country and HQ offices clearly identified in the disposal procedure at country level?
- ☐ Do the stack cards include all relevant and necessary information?

Annex 7: Incident Management Committee (IMC) for the Management of Risk

WFP operations shall take all necessary and reasonable precautions to ensure that products delivered to beneficiaries and information provided to authorities, by ourselves or implementation partners acting on our behalf, meet all applicable regulatory and WFP's requirements regarding beneficiaries' safety and quality. This obligation is fulfilled through compliance with the WFP food safety and quality requirements.

1) **COs** must establish means to detect potential incidents. This may include but is not limited to feedback from food aid monitors, WFP/partner warehouses, complaints received through beneficiary feedback mechanisms, complaints from distribution centres, school staff, or official notifications by donors, regulatory bodies or relevant partners. RB should establish means to aggregate country and sourcing data to detect larger trends (e.g., if the same food was delivered to several countries in the region). The Incident Initiator is the person who receives information on potential food-related incident at a given CO. Head of Sub-Office/Head of Programme may also report any possible incident as notified from donors, government authorities or relevant partners.

Responsibilities of the incident initiator:

- The Incident Initiator is responsible for observing the food at receipt, discharge or transfer. The person should report any perceived incidents to the respective Food Incident Management (FIM) Focal Point/Food Technologist/Food Safety and Quality (FSQ) to support investigation, including issues highlighted by beneficiaries and partner organizations.
- When the CO detects a potential incident, the IMC must be assembled to review the case and management of risk involved. Country Director (CD) can decide how incidents will be elevated from CO to RB and possibly HQ senior Management. All major and critical incidents must always be elevated to RB and HQ levels, which can include specific additional people to be informed.

- CD must appoint a **focal point in charge of incident management**, the focal point must inform the CD or his/her deputy when an incident arises. In many operations, Head of Supply Chain is operationally responsible at CO level.

Responsibilities of FIM focal point:

- The FIM Focal Point is responsible for collecting of all data necessary to initial incident information (Purchase Order and SI numbers, geographical locations and total quantity affected). The responsible person should liaise with the Food Technologist to fill in the RING form, classification of a potential food incident and conduct (minor/major/critical⁵⁷) communication among stakeholders. If required, a visit to the site of the perceived incident needs to be visited. First information collected through the RING form should be shared within 24-48 hours with the FSQ focal point for technical assessment of the situation.
- The IMC can assign an **Incident Coordinator** depending on the severity of the incident. The assigned person must have background of supply chain operations or food safety and quality assurance.

Responsibilities of Incident Coordinator:

Coordinate the organization of a food incident response and management under this protocol and assigning tasks, roles and responsibilities.

Country Office Incident Management Committee (Operational Level)

Who: CD/Deputy Country Director (DCD), Head of Supply Chain, FSQ focal point/Food Technologist, any additional function if required.

Responsibilities:

- Collecting of all data necessary to initial incident information
- Assess severity of the incident based on available information
- If the severity is minor, lead the CO response with inputs from RB and/or HQ if required

⁵⁷ Minor incident (Low Risk) are defects that are not likely to pose risk to the health of beneficiaries but require immediate attention and corrective actions. Major incident (Medium Risk) defect that are not likely to pose risk to the health of beneficiaries but render the food unacceptable and may affect the WFP image/reputation as well as nutritional objectives. Critical Incident (High Risk) when food is likely to pose a hazard to the health of beneficiaries.

- If the severity of the incident is assessed as a major or critical escalate the incident to RB and HQ immediately of the first report
- Provide regular incident management summary reports to the RB and HQ Incident terms

2) **RBs** must establish an IMC. It must be chaired by the senior person or someone appointed by him/her. The core members of the IMC must cover supply chain (i.e. logistics, procurement), programme and Regional Food Technologists (if available). Other persons or functions may be added according to the nature of incident.

RB and CO must establish and maintain emergency contact lists. Every person identified as a member of the IMC or as focal point at RB and CO level must be included in this list and must have a nominated deputy. Deputies contact details must be included in the list. The details in the list must ensure that every IMC member of their deputy is contactable 24 hours/7 days.

RB and CO must maintain lists of key external contacts. This could include but it is not limited to: food safety authorities, public health department, Ministry of Health and key third parties. This should include out-of-hours contact details where possible. RB and CO must identify and assure provision of the resources they will require to manage incidents.

Regional Bureau Incident Management Committee (Tactical Level)

Who: RB Management (Regional Director /Deputy Regional Director (RD/DRD); Relevant Head of Units; Regional Food Technologist; Regional Supply Chain Manager/Regional Procurement Officer or person delegated by him/her.

Responsibilities:

- Provide technical inputs to the CO for major and critical incidents
- Disseminate information to the other COs that may be affected by the incident
- Coordinate the on-ground response for major or critical incidents with inputs for the HQ supply Chain and the Food safety and Quality Assurance Unit.

HQ Food Safety and Quality Assurance Unit must establish a list of laboratories and subject matter experts that could be consulted for their technical/scientific advice or could be sent on mission for their independent expertise.

3) **HQ** Supply Chain and Food Safety and Quality Assurance must establish an IMC. It must be chaired by the Director of Supply Chain Operations or someone appointed by him/her. The core members of the IMC must cover supply chain Division (i.e. logistics, procurement, risk mitigation), Chief Food Safety and Quality Assurance and may include other persons or functions according to the nature of the incident.

HQ incident Management Committee must establish and maintain emergency contact lists of key stakeholders in case to contact when required for some special cases.

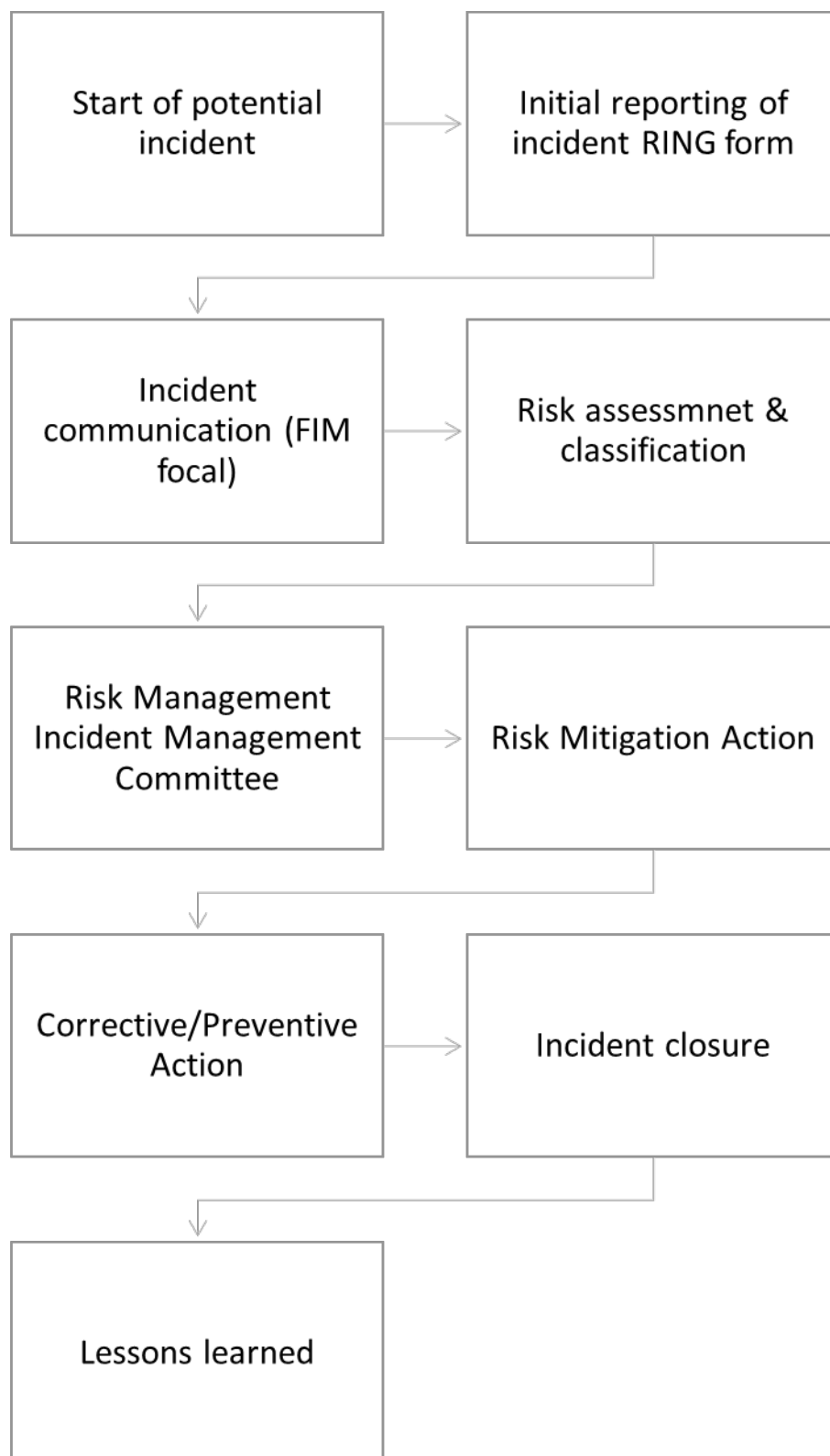
Headquarters Incident Management Committee (Strategic Level)

Who: Director of the Supply Chain or the most senior person in the Supply Chain or person delegated by him/her to supervise. Relevant Unit Chief; Food Safety and Quality Assurance Unit (OSCQ), OSCI, Operational Risk Mitigation Services (OSCR); other persons or functions may be added according to the nature of the incident.

Responsibilities:

- Provide technical inputs to RB and HQ management major and critical incidents as needed
- Collect and disseminate information to all relevant regional bureau and COs that may be affected by incidents
- Coordinate response for all critical incidents
- Periodic review of global incident trends and analyses
- Periodic review of standard operating procedures
- Timely intervention with relevant governments and media outlets to disseminate information in a transparent and synchronized manner, as needed on the case of multi country response.

Annex 8: Food Incident Management Process



Annex 9: Quarantining SNF

- ✓ Identify all suspected/affected batches (in and out of the premises).
- ✓ Make sure that the release of all the suspect/affected batches has been suspended.
- ✓ To avoid cross-contamination, segregate and store the suspect/affected batches separately from unaffected products.
- ✓ Protect the suspect/affected goods against further degradation. Keep them cool and protect them from pests. However, do not use rodenticide or insecticide chemicals.
- ✓ Keep a record of the quarantined batches on stock/stack cards, and note the quantity.
- ✓ Mark the quarantined goods with a quarantine label and yellow-and-black striped hazard tape, so that staff can easily identify them.

Figure 27. **Marking quarantined goods**

Figure 27.a. **Quarantine label example**

NOT FOR RELEASE	
GOODS IN QUARANTINE	
Date (dd/mm/yy):	_____
Name/Surname:	_____
Signature:	_____
<i>Not valid unless signed by authorized officer</i>	

Figure 27.b. **Yellow and black hazard tape used to mark quarantined stock**



Annex 10: Checklist for reception

When receiving a container, carry out the activities in this list.

- ☐ Inspect the cargo before it is unloaded to determine whether it was properly secured while in transit.
- ☐ Note the general state of the arriving container. Is it dirty? Do you see any apparent leakages? Does it have a suspicious odor?
- ☐ Note the transport conditions, including: how long the cargo was in transit; whether the cargo was covered and protected during transportation; what temperatures the goods were exposed to during the journey, etc.
- ☐ Check that the transport capacity was utilized as expected, and not overloaded.
- ☐ Check that the quantity of products that has arrived is correct.
- ☐ Ensure that goods are on pallets or slip sheets (extremely tear- and moisture-resistant sheeting that can be used as a substitute for wooden pallets).
- ☐ Check that the pallets are covered in plastic.
- ☐ Visually inspect the packaging. How many cartons are damaged? Are the cartons dry? Is the packaging intact? Are the labels readable? Have any of the cartons been opened?
- ☐ If anomalies are noticed, continue by inspecting the primary packaging inside.
- ☐ If there is a temperature recorder (LogTag®), download the data and review the temperature fluctuations during transport. (LogTag® software can be downloaded from <http://logtagrecorders.com/software/>).

If a food incident is confirmed, see Chapter 4 for further information.

Annex 11: Cargo details required for air transport

- Cargo description and cost
- Origin and destination
- Cargo Net and gross weight - kg
- Cargo dimensions (length, width, height) – cm
- Temperature control requirements

List of Hand-outs

- Hand-out 1. **FOOD INCIDENT MANAGEMENT**
- Hand-out 2. **STORAGE RECOMMENDATIONS FOR SMALL STORAGE AREAS: KEY POINTS FOR ADEQUATE STORAGE OF SPECIALIZED NUTRITIOUS FOODS**
- Hand-out 3. **SPECIALIZED NUTRITIOUS FOODS. GOLDEN RULES**
- Hand-out 4. **SUPPLY CHAIN PLANNING. GOLDEN RULES**
- Hand-out 5. **MANAGING THE SUPPLY CHAIN: DETERMINING THE SNF DEMAND. GOLDEN RULES**
- Hand-out 6. **MANAGING THE SUPPLY CHAIN: FOOD QUALITY. GOLDEN RULES**
- Hand-out 7. **MANAGING THE SUPPLY CHAIN: PROCUREMENT OF SNF. GOLDEN RULES**
- Hand-out 8. **MANAGING THE SUPPLY CHAIN: LOGISTICS. GOLDEN RULES**
- Hand-out 9. **MANAGING THE SUPPLY CHAIN: DISTRIBUTION TO BENEFICIARIES. GOLDEN RULES**
- Hand-out 10. **TEMPERATURE CONTROL OVERVIEW**

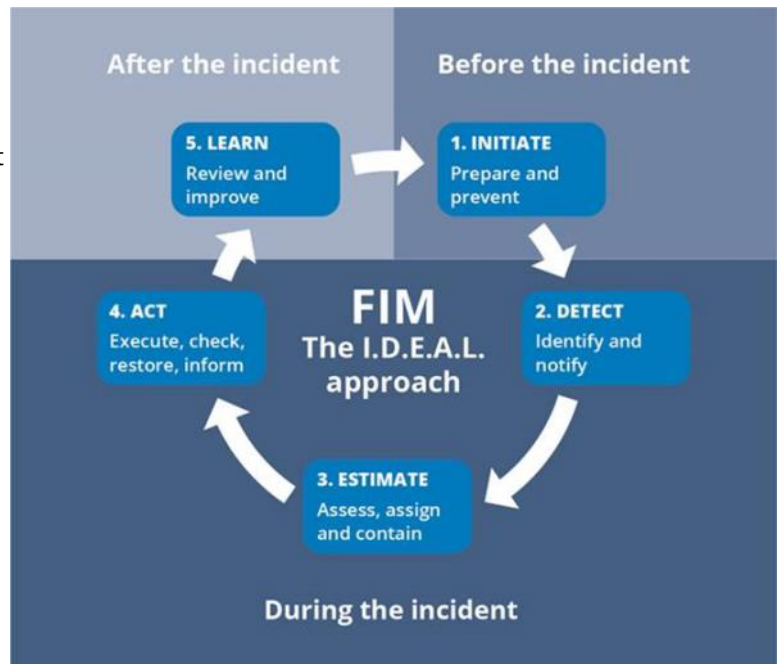
Hand-out 1. Food Incident Management

Before the incident

1. INITIATE

Have the right people in place to facilitate an incident response:

- Create a proper reporting structure within your organization.
- Identify a focal point at field level in each country.
- Establish Food Incident Management Committee in each country
- Make sure the focal point is acquainted with the specificities of SNF and incident reporting (e.g. RING form)
- Focal points should be knowledgeable/trained on how to use a risk matrix tool



During the incident

2. DETECT

Abnormal episodes can be detected at various levels of the supply chain if the right structure is in place to filter possible triggers.

3. ESTIMATE

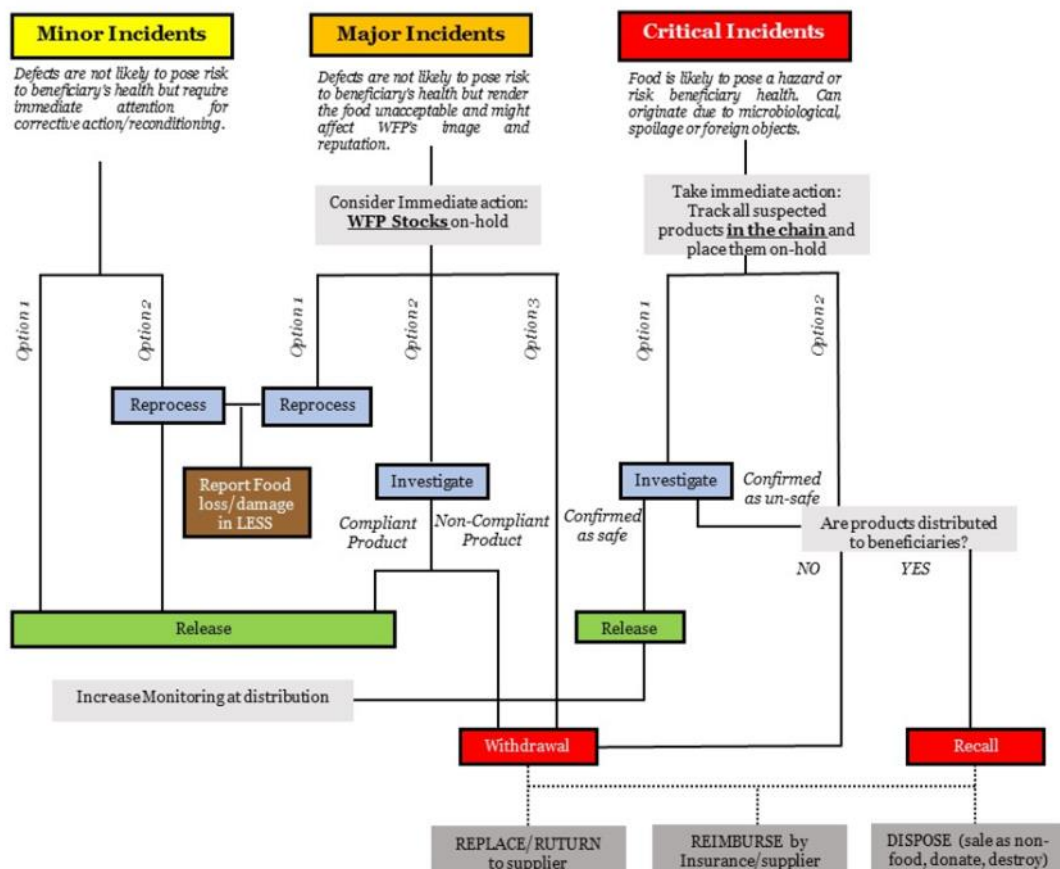
To evaluate the severity of an incident/situation, certain frameworks must exist to allow the qualitative and quantitative analysis, and, eventually, classification of a risk. Most incident management protocols define a matrix for the severity estimation.



$$\text{Severity} = \text{Impact} \times \text{Likelihood}$$

Impact					
Critical 5	5	10	15	20	25
Severe 4	4	8	12	16	20
Moderate 3	3	6	9	12	15
Minor 2	2	4	6	8	10
Negligible 1	1	2	3	4	5
	1 Very Unlikely	2 Unlikely	3 Moderately likely	4 Likely	5 Very likely
Likelihood					

4. ACT



After the incident

5. LEARN

Prevent issues from reoccurring and be better prepared for the next incident:

- Make sure you have a proper incident tracking system in place, and that records of all past incidents are kept.
- At the end of the year, evaluate your incidents.
- Link them to root causes, for example: a supplier issue, transport or storage problems.
- Take action to mitigate those risks.
- Use the organization's stock card system to monitor all actions undertaken in the supply chain process, and make sure to include all related sources of information.

Hand-out 2. Storage recommendations for small storage areas: key points for adequate storage of specialized nutritious foods

1. STORAGE AREA PREPARATION

- Plan the layout of stacks for each type of SNF before the goods arrive.
- Clean the floor and the walls before receiving cargo, and ensure there is ventilation in the storage facility.
- Be sure that water will not leak or flood into the storage facility.
- Prepare pallets and plastic sheets, and check the facility's main entrance lock.

2. STORING SNF

- Keep in mind that SNF need to be stored in a clean, ventilated and dry space.
- SNF must be protected against prolonged exposure to humidity, sunlight and high temperatures. Warm and humid conditions in warehouses and/or factories promote the growth of mold.
- SNF need to be palletized. At WFP, the organization's plastic pallets are preferable.
- The pallets need to be well aligned with no gaps between them.
- Stacks of SNF must not exceed the maximum height indicated in the *WFP Warehouse Manual*.
- To preserve carton strength, always column-stack the first three layers and then cross-stack the layers above (see the diagram below).



- The cartons in the bottom layers should be carefully aligned for maximum stability.
- Never stack SNF against walls. Always ensure that there is a space of at least 40 cm between the walls and the stacks of SNF.
- Make sure that SNF cartons are handled with care to avoid damaging the products inside them.
- SNF goods should only be stored next to food items. They must never be stored near chemicals, fuel or other non-food items. Never use rodent poison or insecticides in the storage facility.
- Use a block stacking system. This is standard in WFP for all food items.

3. TRANSPORTING SNF

The principles for stacking and handling palletized SNF for, during, and after transport are essentially the same as those for storage:

- To preserve the carton strength, always column-stack the first 3 layers and then cross-stack the layers above (see the diagram below).



- The cartons in the bottom layers should be carefully aligned for maximum stability.
- Make sure that SNF cartons are handled with care to avoid damaging the products inside them.
- The cartons are very sensitive to humidity: carefully check that the tarpaulins used to cover the trucks don't have holes or tears, and that the stacks are well protected.
- Porters should not walk directly on the cartons. Instead, use wooden planks, or similar, to distribute the porters' weight and avoid compressing the cartons.

4. MANAGING SNF STOCK

- SNF should be segregated by producer and BBD (Best Before Date) and, if possible, by batch number.
- The rule for managing SNF stock is FEFO.
- BBD should be followed on stock cards.
- Stock inspection and physical inventory should be done regularly: at least twice a month.
- If visible food defects are detected, stock must be put in quarantine. Quarantined stock must be clearly marked with a quarantine label and yellow and black hazard tape.
- All SNF defects must be reported to the organization that delivered the food so that they can mitigate the defect.
- If any SNF needs to be destroyed, the organization that delivered them should be informed.
- All SNF defects must be reported to the organization that delivered the food so that they can mitigate the defect.
- If any SNF needs to be destroyed, the organization that delivered them should be informed.

5. SPACE CONSIDERATIONS

- The spaces between stacks should be wide enough to allow a person to walk between stacks and around every stack in the layout.
- Access space must allow easy loading and unloading.
- Ensure there is enough space for loading trucks/cars outside the storage facility and that there is vehicle access to the storage facility.

Hand-out 3. Specialized nutritious foods. Golden rules

- ✓ SNF covered in this guideline are: LNS, FBF and MNP. SNF are designed to support individuals meet their nutrient requirements, and used in programming to treat and prevent acute malnutrition, and to prevent stunting and MNDs, in specific target groups.
- ✓ Substitutions of SNF are a temporary measure to avoid disruption to programme implementation and ensure that affected populations receive the nutritional services they need. The standard SNF should be re-instated as soon as possible. Please refer to interim guidance note “substitution of SNF” in annex.
- ✓ Limited Shelf life, suppliers’ stock availability, long lead-time, handling and storage requirements, batch number follow-up and high temperature exposures are the main constraints for managing SNF.

Hand-out 4. Supply chain planning. Golden rules

- ✓ All supply chain actors have a role and responsibility in maintaining the quality of SNF until it reaches beneficiaries.
- ✓ Ensure that staff involved in Programme, Procurement, Logistics, and Food Safety and Quality, as well as cooperating partners, are engaged in the planning process and are assigned clear roles and responsibilities.
- ✓ Ensure clear lines of communication between all players in the supply chain
- ✓ Anticipate the impact of the external environment (climate, security, infrastructure, etc.) on the operation.
- ✓ Make sure the SNF can be imported and/or are allowed for use in the country, and identify all relevant documents and processes required for their import and distribution.
- ✓ Ensure and plan proper stock management to meet anticipated needs, and avoid lengthy storage. Make sure that storage facilities meet the necessary conditions for preserving the characteristics and nutritional value of SNF

Hand-out 5. Managing the supply chain: determining the SNF demand. Golden rules

- ✓ The design of all nutrition interventions should be based on a clear understanding of both the nutrition situation and the capacity to respond.
- ✓ It is critical to gauge the government's awareness and standards concerning SNF, as well as their technical and logistical capacity for using these products. Advocacy and technical support can then be tailored accordingly.
- ✓ SNFs should not be used for programmes for which they are not recommended.
- ✓ Decision-making about which SNF to use must take into account: the target group; the context; cultural practices and food preferences; conformity with national standards; and operational issues.
- ✓ Estimated SNF supply needs are calculated from the total estimated number of beneficiaries, SNF ration size and programme duration. The formula used by WFP to estimate Required tonnage in mt can be found in Figure 11.
- ✓ There are many aspects of nutrition programming that can contribute to better nutritional status. These include linkages with other programmes, and appropriate SBCC strategies to bring about behavioural change.
- ✓ Communication between Programme, Procurement, Food Safety & Quality, and Logistics staff is essential — both for initial planning, and for predicting and mitigating the impact of pipeline breaks on a nutrition intervention.

Hand-out 6. Managing the supply chain: food quality. Golden rules

- ✓ Quality management is the only way to guarantee SNF quality and safety.
- ✓ Food safety is a key element of food quality.
- ✓ Quality management applies to the whole supply chain: from primary production to consumption.
- ✓ All actors in the supply chain share responsibility for food safety and quality. Staff should be encouraged to contact the quality focal point for technical advice when needed.
- ✓ Tracing and tracking of batch numbers is a prerequisite for an effective quality management system.
- ✓ Any incident or sign of deterioration or product defect should be reported to a technical expert within WFP and managed accordingly.
- ✓ Product sampling and testing are important elements of a quality assurance system. Usually, they take place early on in the supply chain, or when a food incident occurs.
- ✓ An effective quality assurance system must ensure that all staff are trained to be alert to potential problems, and that they are equipped to prevent defective products from reaching or harming beneficiaries.

Hand-out 7. Managing the supply chain: procurement of SNF. Golden rules

- ✓ Know the product specifications and standards. Latest versions of the specifications are available on WFP's Food Quality website.
- ✓ Suppliers are responsible for guaranteeing that their product's ingredients and characteristics conform with the buyer's order specification.
- ✓ Choose an appropriate inspection company to inspect the SNF.
- ✓ Confirm procured SNF have an Inspection Certificate, issued by the inspection company, confirming that standards are met. The Inspection Certificate should include all compulsory analyses of the specification.
- ✓ Know the market for SNF, and remain informed of lead times and availability of locally, regionally, and/or internationally procured SNF stock.
- ✓ Know the suppliers and purchase only from validated suppliers with the necessary quality management systems, capacity, traceability, and financial stability.
- ✓ Monitor suppliers' performance, and regularly re-evaluate their status within the approved supplier list.

Hand-out 8. Managing the supply chain: logistics.

Golden rules

- ✓ Know the necessary customs procedures and identify the right focal points. Be up-to-date with any changes in customs regulations.
- ✓ Have the latest ETA on hand and communicate any changes to other colleagues, because ETA might have consequences for Programme.
- ✓ Use the SNF product's shipping stowage factor as the basis for calculating the amount of warehouse floor space required to store a shipment of the SNF.
- ✓ At all stages of the supply chain from receipt of the SNF to distribution, try to ensure that the first three layers are always column-stacked.
- ✓ Choose warehouses that can maintain the low temperatures needed for storing SNF. If the available storage facility cannot control temperature satisfactorily, consider modifications to the building (see Section 6.3.1).
- ✓ Measure and record the temperature in all warehouses storing SNF to ensure a transparent decision-making process (see 6.3.3.1).
- ✓ Segregate SNF entering the warehouse at minimum by BBD and producer. If possible, segregate products by batch number.
- ✓ Follow the FEFO rule when planning deliveries.
- ✓ Make sure that all staff following proper handling and transport guidance.
- ✓ Provide Programme with regular updates on stock availability and accessibility. For example, rainy seasons or shifts in the overall security situation may delay delivery or transportation.
- ✓ Share necessary documentation and procedures regarding transport, stock and storage management of SNF products with partners.
- ✓ Inform partners as far in advance as possible about any known or anticipated breaks in the pipeline, and provide support to minimize risks. Know the necessary customs procedures and identify the right focal points. Be up-to-date with any changes in customs regulations.

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Hand-out 9. Managing the supply chain: distribution to beneficiaries. Golden rules

- ✓ Provide training, where necessary, for partner staff on warehousing, distribution practices and reporting. Agree a stock replenishment strategy with partners.
- ✓ If waste management needs to be addressed, follow national/local guidelines where they exist.
- ✓ Beneficiaries need to understand: the objective of the nutrition intervention; how to use SNF safely; how to use SNF properly; and how long they will need to use the SNF.
- ✓ SBCC is a critical component of nutrition interventions. It should be linked to sensitization of local authorities and to acceptability trials undertaken during programme design. Key instructions and SBCC must be translated into local languages, and these messages must be given alongside SNF as part of nutrition interventions.
- ✓ Programme staff should be open to dialogue and feedback from partners and beneficiaries. Concerns about the use or safety of SNFs should be followed up immediately so that appropriate action can be taken, either to clear up misunderstandings or investigate a potential food safety incident.
- ✓ Do not sue SNF without sensitization of beneficiaries on issues such as use, consumption and home storage etc.

Hand-out 10. Temperature control overview

REMEMBER TEMPERATURE REQUIREMENTS

PRODUCT TRANSPORT / STORAGE TEMPERATURE	< 30°C	More than 180 days (6 months) above 30°C	More than 90 days (3 months) above 40°C
RISK	Nutritional content and taste remain satisfactory.	Nutritional content and taste may not be satisfactory anymore. It is recommended to contact your quality focal point.	

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