FEED Safe

Functional Eating EDucation

A guide to safe and satisfying mealtimes for family caregivers of children with feeding challenges.

ZAMBIA

Training Manual

ACCESS TO HEALTH
ZAMBIA
A member of the CMMB community

SPOON

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FOREWORD

The 2015 National Disability Survey estimates that 7.7% of the Zambian population is disabled. Of these, 10.9% are adults, 18 years and above and 4.4% are children aged between 2 and 17 years. The report indicates that 40% of disabilities were due to birth or congenital effects and 31% were due to diseases/illnesses.

Children with disability (CWD) are at risk of malnutrition because of the following:

- Their particular nutritional needs are in most instances not considered.
- They are less likely to be included in nutrition programmes such as Nutrition Education.
- May have medical or sensory challenges which could impact their ability to eat, swallow, digest and absorb nutrients in the food even if the food offered is nutritious.

Moreover, malnutrition in CWD can be attributed to many factors. These include physical problems in feeding, suboptimal feeding practices due to lack of knowledge or specific skills among caregivers, or attitudinal, social, or cultural causes such as the exclusion or neglect of CWD in feeding practices, socially or in the home (UNICEF, 2023).

To support CWD with appropriate feeding practices, the government of the Republic of Zambia through the established Technical Advisory Group (TAG) adapted the Functional Eating EDucation (FEED Safe) Manual and Flip book after a wide consultative review and validation process.

The FEED Safe was initially created by SPOON, an organization that is committed to nourishing ALL children, in partnership with Access to Health Zambia through evidenced-based feeding tools and interventions.

The manual and flip book will help to impart knowledge to families and caregivers on how to safely feed CWD. Through safe feeding practices, there is a realistic chance for children to get the nutrients they need to grow, develop, and reach their full potential.

The goal of FEED Safe is to:

- Teach families and caregivers a responsive feeding approach to address the training needs of nutrition care and support for CWD in Zambia.
- Use evidenced-based approaches to train families and caregivers how to feed CWD safely, efficiently, and effectively in homes and childcare facilities.
- Equip families and caregivers with problem-solving strategies to overcome feeding challenges.

Dr. Muntanga K. Mapani
Executive Director
National Food and Nutrition Commission

ACKNOWLEDGEMENTS

The National Food and Nutrition Commission (NFNC) is thankful to Access to Health Zambia (A2HealthZ) and SPOON for the initiative to develop the Functional Eating EDucation (FEED Safe) Training Manual and Flip Book. This assistance will go a long way in ensuring the entire population including Persons with disabilities (PWD) are protected from the devastating effects of all forms of malnutrition.

The Commission is also aware that these documents were developed in collaboration with other stakeholders led by the Ministry of Community Development and Social Services (MCDSS). The Commission is grateful for the deliberate effort by the MCDSS to mainstream nutrition in social protection interventions. This cordial partnership demonstrates our dedication to address malnutrition multisectorally.

Many thanks also to the Ministry of Health, Ministry of Education, and other members of the Technical Advisory Group (TAG) for their technical inputs and insights during the FEED Safe training manual and the FEED Safe Flip book manual review and validation process.

The adapted FEED Safe training manual and Flip book were developed by SPOON under its partnership with MCDSS and A2HealthZ.

The commission wishes to pay special tribute to Kate S. Fairchild, OTD, OTR/L, who initially developed the FEED Safe manuals in collaboration with the technical experts at SPOON which will be helpful to the caregivers of the children with disability in our effort to tackle malnutrition.

Finally, sincere appreciation goes to GHR Foundation for financial support coordinated by A2HealthZ which facilitated the development of these manuals.

Mathews Mhuru
Deputy Executive Director
National Food and Nutrition Commission
December 2023

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Introduction: About FEED Safe

FEED Safe (Functional Eating EDucation) was created to serve family caregivers of children with disabilities in low-resource countries. FEED Safe teaches family caregivers how to feed children with disabilities who have feeding challenges. It is estimated that over 290 million children worldwide have disabilities and 80% of those children have feeding challenges (Olusanya et al., 2020.)

FEED Safe uses a community-based training model and can be used in the community, home, or clinic. The four modules can be taught in one day or be taught in multiple shorter sessions over several days. Trainers read from the FEED Safe Flipbook while the caregivers view images and participate in experiential learning activities. Handouts are available to caregivers to support the carry-over of skills into the home.

The four modules in FEED Safe are: Responsive Feeding, Safe Feeding, Feeding Techniques for Feeding Challenges, and Nutrition. The training manual gives an overview of each module with added clinical information that can assist in answering family caregiver questions. The course is designed to allow for the sharing of knowledge and experiences by both trainers and family caregivers. Discussion and experiential learning are encouraged.

At the beginning of the training manual is a pre-test to give you an idea of what you already know. At the end, there is a post-test to show what knowledge you have gained. This test is not pass/fail, rather it is a guide to show you how much knowledge you have gained through the training process.

What I Know (training pre-test)

Circle your answer.

1. I know what Responsive Feeding is.

TRUE **FALSE**

2. The three key components of responsive feeding are:

A. Quick, Quiet, and Calm
B. Prompt, Emotionally Supportive, and Developmentally Appropriate
C. Fast, Fun, Active

3. Start with the head position when positioning a child for feeding.

TRUE **FALSE**

4. Choosing the appropriate food texture depends on:

A) The child's age
B) The child's favourite food
C) The child's known skill level

5. I know the signs of choking and aspiration.

YES **NO**

6. Nutrition can be easily understood using the six Zambian food groups:

A. Cereals, starch roots, and tubers; Vegetables; Fruits; Fish, insects and animal source foods; Dairy; and Pulses/legumes, nuts, and seeds
B. Foods for Growth; Foods for Energy; Foods for Protection; Red Foods; Yellow Foods; and Green Foods
C. Foods I like; Foods that I don't like; Seasonal foods; Dry foods; mashed foods; pureed foods

How to use FEED Safe Curriculum

An overview at the beginning of each module provides an estimated time to complete the module, the supplies needed for experiential learning activities, and handouts that accompany the module.

- Dark blue text is read by Trainer.
- Orange text gives instructions for participation and examples.
- Light blue text is trainer notes and information for the trainer.

The Meaning of Icons

FEED Safe repeats icons throughout the curriculum. These icons convey a message to trainers and caregivers.

Spoon: It's safe to feed in this situation.

Spoon in red circle: It is not safe to feed in this situation!

Think About It: When you see this icon, you will have a group discussion and share ideas.

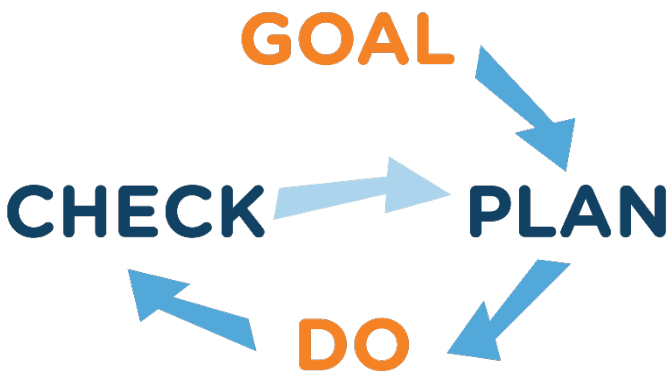
Goal, Plan, Do, Check: When you see this icon, it is a time to practice, and problem solve! Use the steps **Goal**, **Plan**, **Do**, and **Check** (explained below) to overcome feeding problems.

CAUTION: SAFETY! When you see this icon, it notifies you of a safety concern. FEED Safe intends to ***Do No Harm***. If a caregiver needs more information to address complex medical needs refer them to a local healthcare provider such as a paediatrician, occupational therapist, physiotherapist, nurse, or nutritionist. This child may also be appropriate for the *Count Me In* Program.

Teaching Problem Solving

FEED Safe uses the Cognitive Orientation to Occupational Performance (CO-OP) model to empower caregivers to problem-solve feeding difficulties. There are four steps in the CO-OP model: Goal, Plan, Do, and Check (see Figure 1).

Figure 1.
Problem Solving: Goal, Plan, Do, Check



Step One: Identify your GOAL

Before beginning a task, the caregiver will think about the **GOAL**. The caregiver identifies what they want to accomplish. Examples of a goal include: helping the child to eat enough food, helping the child swallow safely, or helping the child to learn how to drink from a cup. By identifying the goal, the caregiver has an idea of what they want to accomplish.

Step Two: Make a PLAN

After identifying the goal, the caregiver creates a **PLAN**. When planning the caregiver can think about the needed tools or supplies. Questions a caregiver may ask themselves when creating a plan include: What food will I prepare? How will I position my child? Will I sit on the floor or in a chair when feeding my child? How much time will I set aside for feeding my child? How will I keep my other children occupied while feeding their sibling?

Step Three: DO the task

Once the caregiver has created a plan, the caregiver will assist the child and **DO** the task as created in the plan.

Step Four: CHECK your outcome

Caregivers will **CHECK** their progress as they do their plan. They may notice what is going well and what is not. If things are going well, the caregivers continue with the plan. If something is not working, instruct caregivers to go back to the planning stage and consider what they may do differently. The caregivers can ask, “What can I change to make this a better experience?” Caregivers may go through the plan, do, check stages multiple times to make feeding safe and efficient.

NOTES:

Module 1: Responsive Feeding

Time to Complete: 1 hour and 15 minutes

Supplies: No supplies are needed.

Handouts: Responsive Feeding

Module 1 teaches about responsive feeding. Responsive feeding promotes a positive relationship between child and caregiver. The four topics taught in Module 1 are:

1.1 - Emotions and Feeding

1.2 - What is Responsive Feeding

1.3 - Senses Involved in Feeding

1.4 - Reading My Child's Hunger Cues

1.1 Emotions and Feeding

The goal of this topic is to recognize that parenting a child with a disability can be challenging. Caregivers will be able to share their own feelings. Caregivers will also think about how their children may feel. As a trainer, allow caregivers to share their experiences without judgment.

Caregivers may ask a question that you don't know the answer to. Tell the caregiver you don't know the answer and refer the caregiver to a local doctor, occupational therapist, physiotherapist, or nutritionist that can help.

GOING DEEPER:

Encourage parents to build a support team. A support team may include other caregivers with children who have disabilities, family members, friends, and medical professionals. Caring for a person that has a disability can be a life-long journey. It is encouraging to have people that can provide support on the journey.

LET'S PRACTICE:

In small groups of 2-4, practice topic 1.1 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

While a caregiver may face a complicated feeding challenge, one thing remains true, the loving care of a family caregiver is an invaluable support to a child with a feeding difficulty.

1.2 What is Responsive Feeding?

HANDOUT: Responsive Feeding

Responsive feeding is an evidenced-based approach that helps caregivers and children have safe and successful eating experiences. The three themes in responsive feeding are:

- **PROMPT**
- **EMOTIONALLY SUPPORTIVE**
- **DEVELOPMENTALLY APPROPRIATE**

Caregivers are encouraged to be ***prompt***. They should watch and listen for a child's hunger cues and respond quickly. Responding to a child promptly builds trust.

An ***emotionally supportive*** parent recognizes their own emotions and their child's emotions (see Figure 2). They provide emotional support by being kind and loving. They will make eye contact with their child, smile, and use a calm voice. An emotionally supportive parent shows love through their actions.

Figure 2. *An Emotionally Supportive Mother*

Providing ***developmentally appropriate*** tasks during mealtime can lead to mealtime success. A mother would not expect a one-month-old infant to chew food. Likewise, a caregiver of a child with a disability must be able to choose and prepare food that matches the child's known skills.

GOING DEEPER:

Responsive feeding promotes the attachment between child and caregiver. Attachment is a healthy bond between the child and the caregiver. Children are born with a desire to attach to their mothers. Mothers are created to attach to their infants. A healthy attachment helps build a healthy nervous system in the first years of life.

When a child has a disability, attachment between caregiver and child may be affected. The caregiver may feel overwhelmed trying to meet their child's needs and manage other daily tasks. Children and caregivers can feel unloved. You can teach caregivers ways to restore attachment. Healthy attachment can lead to positive developmental outcomes.

A few ways to promote attachment:

- Ask caregivers how they can help their children feel loved.
- Encourage eye contact when communicating.
- Encourage caregivers to play with their children.
- Encourage caregivers to hug and cuddle their children.
- Encourage caregivers to ask for support from others. It's okay to need a break!

LET'S PRACTICE:

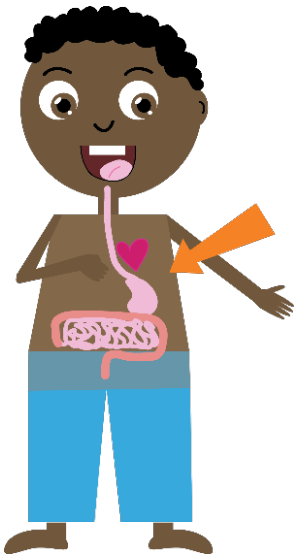
In small groups of 2-4, practice topic 1.2 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

1.3 Senses Involved in Feeding

The goal of this topic is to learn about senses that are involved in feeding. The senses that are covered are: taste, sight, smell, touch, hearing, and internal sensations. Caregivers will discuss how their children use their senses during mealtime.

Figure 3.
Internal Sensations



Children with disabilities may respond to their environment differently than a same age peer. One child may not like the feeling of food in his mouth, while another child may not notice food touching his lips. Caregivers will have the opportunity to problem-solve issues related to feeding and the senses.

One sense that isn't commonly discussed is interoception (see Figure 3). This sense is very important in feeding. Interoceptors are nerve cells that tell the brain about the inside of the body. They communicate messages of hunger, thirst, feeling full, and internal discomfort. In FEED Safe, interoception is explained as "internal sensations." If a child has poor internal sensations, they may not feel hungry or thirsty when the body needs food and water. It may be helpful to ask caregivers how they "feel" when they are hungry or thirsty. Does their stomach growl? Do they have a pain in their abdomen? Does their mouth get dry? You may also ask caregivers to consider what life may be like if they could not feel if they were hungry or thirsty.

GOING DEEPER:

The human brain is an amazing organ that acts as a control centre for the body. The body takes in information from the environment and sends messages to the brain. The brain decides how to respond and send messages back to the body's muscles, bones, and organs. What does this have to do with eating? Eating is a complicated task. Five cranial nerves (nerves in the brain) help us with eating. The nerves help our body feel sensations of touch on our cheeks, nose, upper lip, skin on our face, and teeth. Nerves send taste messages from our tongue to the brain and help us swallow and

digest food. The five nerves communicate with the muscles to allow the mouth to open and receive food. The nerves send messages to chew food, move food with the tongue, swallow, and move food from the oesophagus to the stomach. Children with disabilities may have a medical condition, such as cerebral palsy, that affects the nerves that help a child eat. It is important to identify what the child CAN do. Caregivers should make feeding choices that match their child's known skill level.

LET'S PRACTICE:

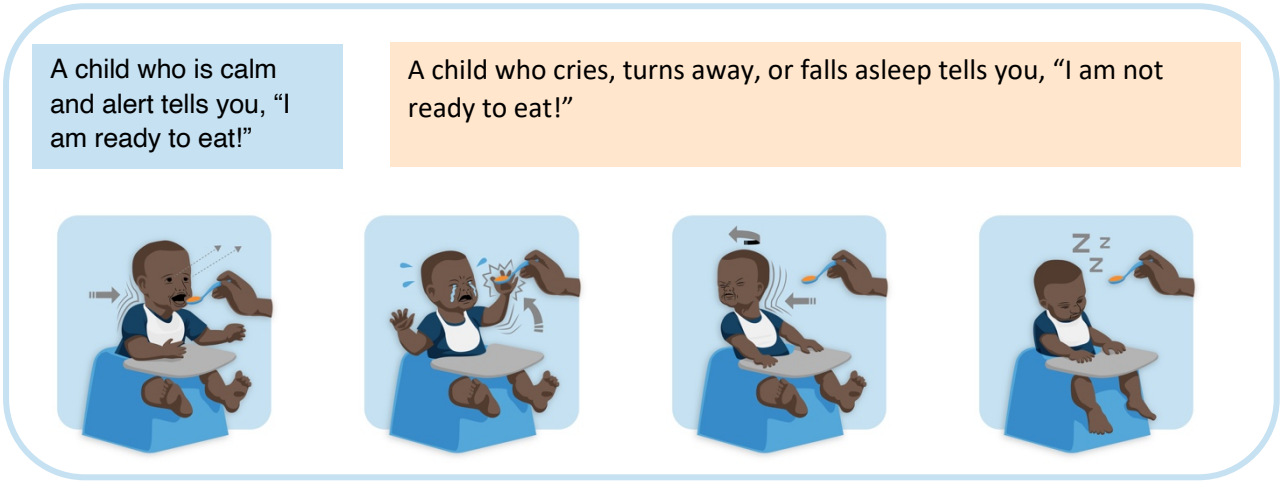
In small groups of 2-4, practice topic 1.3 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

1.4 Reading My Child's Cues

The goal of 1.4 is to teach caregivers how to know if a child is ready to eat. A caregiver who practices responsive feeding will pay attention to verbal and non-verbal communication. Children have the best feeding outcomes when they are **calm** and **alert**. Children with disabilities can fatigue easily during feeding sessions. Children also do not eat well if they are not feeling well. Children who are overly active at mealtime will have difficulty focusing on the task. As a trainer, you will direct caregivers to feed their child when they are calm and alert.

Figure 4. *Reading My Child's Cues*



This topic will also cover communication techniques. Children with disabilities may have difficulty communicating. Caregivers can help their child understand and give them a sense of control during mealtime by following these four simple steps: **Look**, **Tell**, **Listen**, **Respond**.

LOOK

Look at the child. Get down to the child's eye level and use eye contact. The caregiver will observe the child's expression and eye gaze when talking to the child. The child may not have the skill to keep eye contact with the caregiver, but the caregiver should continue to make eye contact with the child when feeding and communicating. If a child shows negative gestures and expressions when the caregiver offers food after several attempts, the child is likely not ready to eat what is offered, give it some time.

TELL

Tell the child what is happening and what to expect. For example, tell the child "Here is your supper. I have some nshima, it is warm. Can you open your mouth for me?" By telling the child what to expect the child can prepare her mind for what her body is about to experience. If a child doesn't know what to expect they may become startled or frightened. When a child knows what to expect their body can remain calm and ready to respond to feeding.

LISTEN

Listen to the child's response. Children with communication difficulties may take longer to respond. Children who cannot communicate verbally, may communicate with body language. Slow down and allow the child to communicate their wants or needs. If a child cries or turns away when the caregiver is offering food, he is likely saying that he is not ready to eat what is offered. Trust is built when respect is present. Listening to the child shows respect.

RESPOND

Respond to the child's attempts to communicate. If a child says no to fish, maybe he will say yes to chicken. The caregiver should acknowledge the child's attempts to communicate and maintain a positive attitude towards the child. The caregiver should be flexible during mealtime and adjust how fast they feed the food they offer (such as a bite of nshima and vegetables, or a bite of nshima and beans, or offering a drink of water).

GOING DEEPER:

Raising children with disabilities can be difficult. Family caregivers often feel isolated. They may have lost opportunities to work, spend time with friends, or have meaningful relationship with other adults who understand the challenges they face. Caregivers may feel guilt, shame, or defeat when they don't read a child's cues correctly or they don't know how to overcome a feeding challenge. It is important allow them to share their struggles. You can let them know that mistakes happen, and you recognize

they are doing their best. As we encourage caregivers to connect with their children, remember the caregiver needs a meaningful connection as well.

LET'S PRACTICE:

In small groups of 2-4, practice topic 1.4 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

Module 2: Safe Feeding

Time to Complete: 1 hour 30 minutes

Supplies:

- **Towels, blankets, or pillows**
- **Let's Practice Image 1 & 2**
- **Biscuits, bananas, forks, napkins, plates**

Handouts: Safe Feeding Position, Modifying Foods for My Child's Skills

Family caregivers may be concerned that a child is experiencing delays in development due to a feeding challenge. A child may have difficulty with managing the texture of a food or using feeding tools. A child may have difficulty maintaining an upright posture or struggle to learn to eat independently. If a caregiver learns safe feeding strategies, they can increase the likelihood of improving developmental outcomes for the child.

The three topics taught in Module 2 are:

2.1 – Safe Positioning for Feeding

2.2 – Modifying Foods for Mealtime Success

2.3 – Signs of Feeding Distress

2.1 Safe Positioning for Feeding

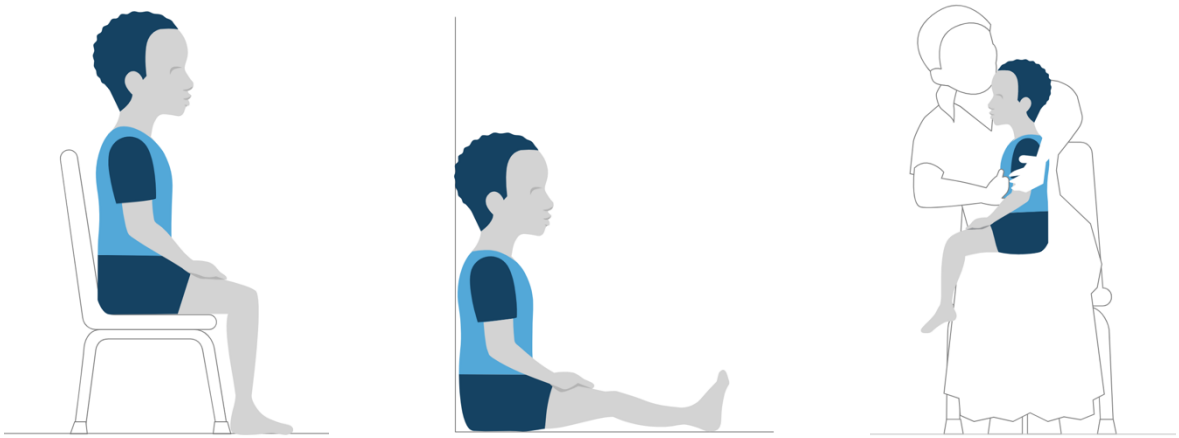
HANDOUT: Safe Feeding Position

In topic one of this module, Safe Feeding, you will be instructing caregivers on positioning children for safe feeding. It is important to note that an infant's anatomy allows them to swallow safely in a reclined position. As the body grows, however, the anatomy for swallowing begins to change in a way that requires children to be fed more upright in order to swallow safely. For older infants and children, always feed in a position that is as upright as possible.

SAFETY FIRST: A child should never be fed lying flat. This could lead to food or drink entering the child's lungs. This is called aspiration. Aspiration can increase a child's risk of respiratory infection.

When training caregivers how to position their child, you want to make sure the child is seated as upright as possible. First, you want the hips at about a 90-degree angle, on a stable base with weight on both sides of the buttocks, and not moving from side to side. The trunk (abdomen and back) should be in a straight line up from the hips and as upright as possible, not leaning to one side. The shoulders should be at rest and the same on both sides, not one higher than the other. The neck and head should be upright. If seated on a chair or caregivers lap, the knees should be comfortably bent over the edge of the chair or lap with the child's thighs supported. Feet should rest flat on a firm surface.

Figure 5. *Safe positioning for mealtime*



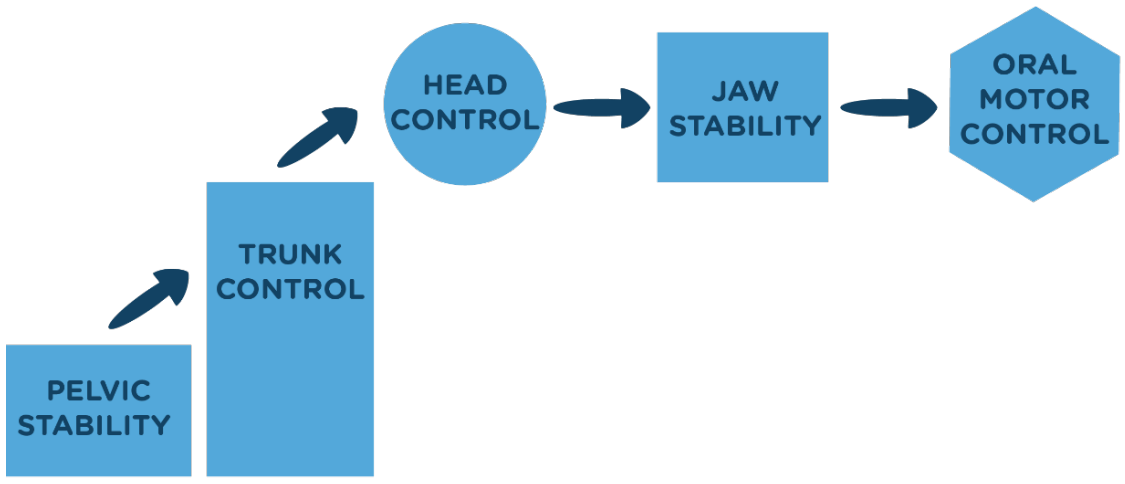
Ideal and safe positioning is possible for a child seated on a chair, on the floor in a caregiver's lap.

GOING DEEPER:

Feeding doesn't start at the mouth. Evidence shows that a stable posture can be one of the most effective treatments for children with neurological disorders, such as cerebral palsy (Redstone & West, 2004). Teaching family caregivers to position the child

in a stable posture will improve feeding. Over time, improved posture during mealtimes can lead to better health outcomes for the child with a disability. A caregiver should start with pelvic stability. This means sitting on a secure base without tipping to the side. A secure base may be a caregiver's lap, a chair, or on the floor. Supporting the feet helps to stabilize the pelvis. Once the pelvis is secure then move on to trunk control. The back should be straight and upright or slightly reclined. The child should be supported enough that he doesn't need to put a lot of energy into maintaining an upright posture. Next move on to the head and neck. The shoulders should be down, the neck straight up and head centred. Once the pelvis, trunk, and head are stable and controlled, then the jaw gains stability. Jaw stability will assist in oral motor control, which includes using lips and tongue to gather and manipulate food in the mouth, chewing the food, and swallowing safely. Encourage caregivers to work their way up to the mouth (see Figure 4).

Figure 6.
Positioning Process for Feeding Safely



Positioning Process for Feeding Safely
Adapted from Holland Bloorview Kids Rehabilitation Hospital,
Optimizing Feeding and Swallowing in Children with Physical and Developmental Disabilities, (2017).

LET'S PRACTICE:

In small groups of 2-4, practice topic 2.1 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers. (Invite parents with children if possible and convenient.)

NOTES:

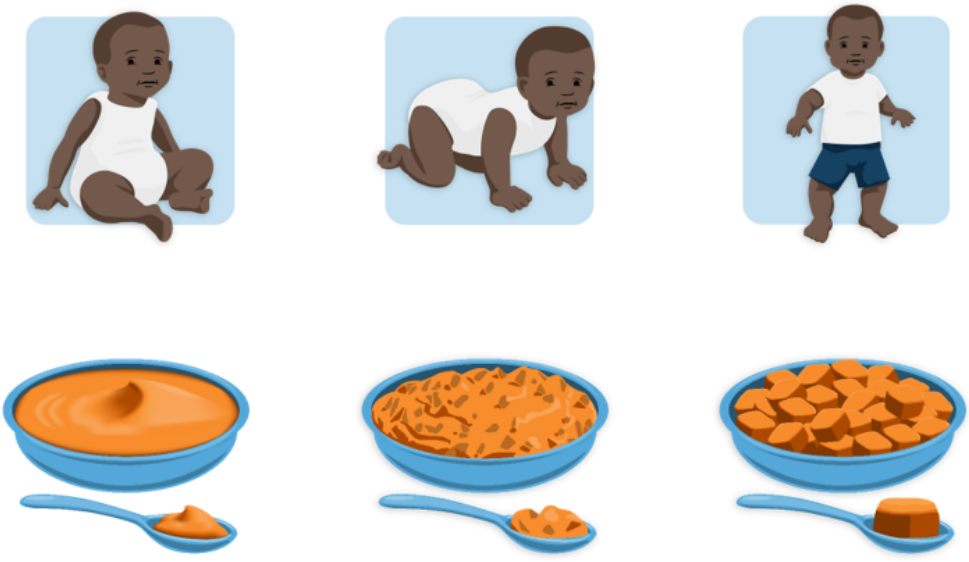
2.2 Modifying Foods for Mealtime Success

HANDOUT: Modifying Foods for My Child's Skills

This topic covers how to modify food for a child's feeding skills. Children with disabilities may have developmental delays that prohibit them from safely chewing and swallowing regular food. Caregivers need to determine their child's skill level and choose the appropriate texture so the child can safely consume food (see Figure 7). FEED Safe teaches how to modify food to three textures: pureed, mashed, and soft and bite-sized. It is important to teach caregivers that they should prepare their child's food based on the child's known skill level, not the child's age. A seven-year-old with a severe disability may only be able to eat pureed food while a three-year-old may eat soft and bite-sized food.

FOOD TEXTURES: Pureed foods are smooth and without lumps like yogurt. Mashed foods are soft and moist, may be have small lumps (about 2 millimetres in size), and can be scooped without liquid or crumbs falling. Soft and bite-sized foods are small (about 8 millimetres in size), tender and moist without liquid dripping and can be easily mashed with a fork or fingers.

Figure 7.
Modifying Foods for Skills: Puree, Mashed, and Soft & Bite-Sized.



SAFETY FIRST: Unsafe Food Choices

Certain foods such as leafy green vegetables or kapenta may be difficult for a child with a disability to manage increasing the risk of choking or aspirating. If a child lacks the skills to safely manage a food texture, modify the texture or substitute a different food that has similar nutrient content. These are generally foods that belong to the same food group. Module 4 will cover nutrition.

GOING DEEPER:

The World Health Organization recommends that "the consistency of complementary foods should change across the first year of life and should adapt to the child's requirements and abilities."

The International Dysphagia Diet Standardisation Initiative (IDDSI) is a global initiative that promotes common language and descriptions for textures of foods and liquids and how to modify them for safe swallowing. Dysphagia is defined as a difficulty swallowing. These guidelines were used to describe the food textures discussed in the FEED Safe. Visit www.IDDSI.org for more information.

LET'S PRACTICE:

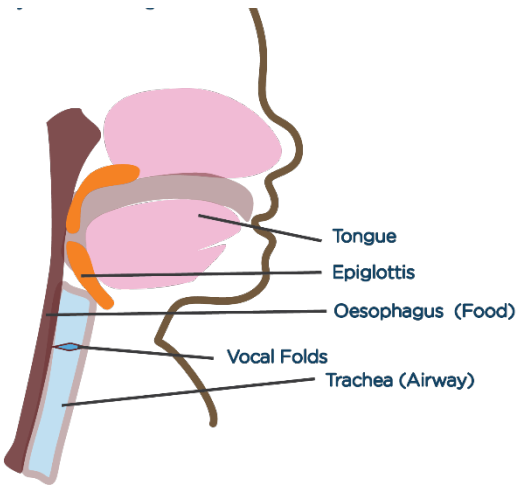
In small groups of 2-4, practice topic 2.2 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

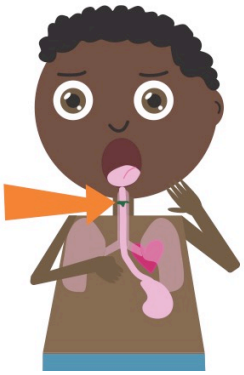
NOTES:

2.3 Signs of Feeding Distress

This topic discusses the signs of choking and aspiration. The oesophagus (tube for food) and trachea (airway) are close together. When someone swallows the epiglottis (a flap of tissue) comes down and closes the airway to prevent choking or aspiration. Choking happens when food or drink does not go in the oesophagus, but rather goes in the trachea above the vocal folds (see Figure 6). When a child aspirates, food goes into the trachea below the vocal folds. If food or drink goes below the vocal folds it can get into the child's lungs and cause illness and infection.

Figure 8.
Anatomy of Swallowing





When a child chokes or aspirates it can cause trauma to the airway. It can be painful and cause fear of eating. The child does not feel safe if he chokes or aspirates. This fear can impact future mealtimes. See table 1 for signs of choking or aspiration.

Table 1.

Signs of Feeding Distress

Signs of Choking	Signs of Aspiration
• Difficulty breathing or unusual breathing sounds • Coughing • Holding the throat • Panicky face • Watery eyes • Change in face colour (more red or blue) • Not breathing	• Frequent respiratory illness • Wheezing • Breathing sounds wet or voice quality sounds wet after feeding • Coughing or choking while feeding • Chest pain • Pain when swallowing

SAFETY FIRST! If a child is coughing, a caregiver should NOT pat them on the back. This can cause food to be inhaled. A child should be allowed to cough to clear the food or drink. The caregiver can support the child by letting them know they are present and encouraging the child to cough. They may say, “I am right here. Keep coughing, that’s good.” After a child has stopped coughing the caregiver should wait before offering more food, this allows time for the child’s nervous system to reset to a calm state. The caregiver should ask, “Are you ready for another bite (or drink)?”

LET’S PRACTICE:

In small groups of 2-4, practice topic 2.3 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

HANDOUTS:

NOTES:

Module 3: Feeding Techniques

Time to Complete: 1 hour
Supplies:

- **Towels, blankets, or pillows**
- **Spoons**
- **Biscuits**
- **Empty plastic water bottles (1 per participant), knives or scissors for cutting water bottles, marker (optional)**

Handouts: Creating Support for Feeding at Home, Jaw and Lip Support, Reducing Tongue Thrust, Learning How to Chew, How to Make a Cut-Out Cup

Module 3 discusses specialized feeding techniques to overcome feeding challenges. There are many reasons why a child may be having difficulty with feeding. Physical disability may contribute to poor posture for eating or learning how to self-feed. Differences of the mind may make it difficult for a child to communicate. The child may become frustrated or fearful if he has not had positive feeding experiences. Table 2 describes factors that can impact feeding.

Table 2.

Factors that impact feeding success

Body	Mind	Spirit
• Poor strength or coordination • High muscle tone that impacts posture (hypertonicity) • Low muscle tone that impacts posture (hypotonicity) • Sensory perception issues • Reflexes that impact chewing or a safe swallow (Tongue Thrust Reflex or Tonic Bite Reflex) • Lack of energy • Reflux or digestive problems • Illness • Structural deformities	• Cognitive delays • Learning differences • Language delays or communication deficits	• Fear • Anger • Fatigue • Poor or lack of attachment to caregiver

3.1 Do No Harm—Contractures

SUPPLIES: Towels, Blankets, Pillows

HANDOUT: Creating Support for Feeding at Home

Children who have contractures may be difficult to position for feeding. A contracture is a joint that is fixed in a position and does not bend easily (see Figure 7). When feeding a child with contractions, they should NOT be lying down. The best approach to feeding a child with contractions is to work around the affected limb(s) and use supports to help the child stabilize the pelvis and trunk in the most upright position as possible. The caregiver can use household items such as pillows or blankets to create a wedge (see Figure 8). For a child who has stiffness, gently flex and extend legs (bicycle motion) to loosen muscles; gently bend legs and separate the thighs before moving the child into a seated position.

Figure 9.

Contractures.

SAFETY FIRST! If a child has a contracture or deformity, DO NOT attempt to bend the joint to correct position or posture. This could cause injury to the child and be very painful. A caregiver who would like to correct contractures should be referred to a paediatrician, occupational therapist, or paediatric physiotherapist.

LET'S PRACTICE:

In small groups of 2-4, practice topic 3.1 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

Practice creating a wedge with blankets.

Figure 10.

Creating a wedge with household materials

NOTES:

3.2 Supporting Lip Closure

HANDOUT: Jaw and Lip Support

Jaw and lip support is a technique to help with lip closure. Some children have medical conditions that prevent them from closing their mouth all the way when eating. The child may have paralysis, low muscle-tone, or lack strength. A child who needs lip support may drool or food may fall out of the child's mouth. Caregivers will learn how to place hands on a child's face to support lip closure. Placing hands in the appropriate place supports the lower jaw and can assist the child in eating food (see Figure 9).

Figure 11.

Jaw and Lip Support

LET'S PRACTICE:

In small groups of 2-4, practice topic 3.2 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

3.3 Reducing Tongue Thrust

SUPPLIES: Spoons

HANDOUT: Reducing Tongue Thrust

Topic 3.3 discusses reducing tongue thrust. The tongue thrust reflex (extrusion reflex) is a normal reflex in infancy and helps an infant push food or drink out of the mouth to prevent choking or aspiration. By six months of age, this reflex begins to disappear. Children with disabilities may still have this reflex. When a bite of food is offered, the tongue pushes the food out of the mouth. This makes feeding difficult because when the tongue is extended it cannot move food to the back of the mouth for swallowing. When the mouth is closed the lips act as a boundary for the tongue. To reduce tongue thrust, the caregiver can use a lateral spoon technique. Place the spoon sideways on the lower lip and gently press on the tongue. The spoon acts as a boundary. Gently tilt the spoon towards the child's mouth (see Figure 10).

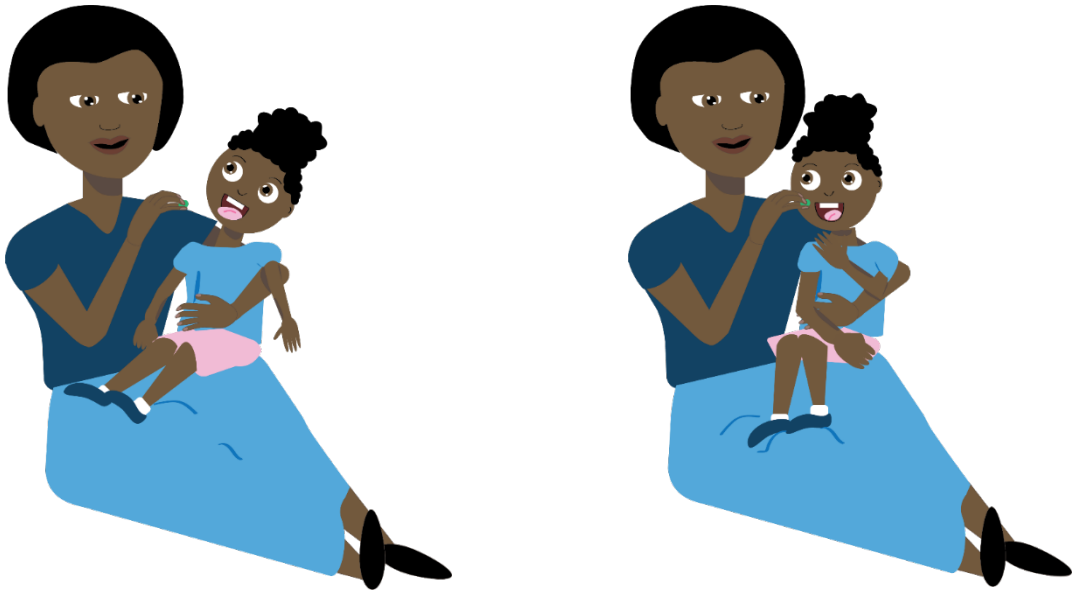
Figure 12.

Reducing Tongue Thrust During Feeding

EASY FEED TIP: If a child's posture is extended (straight arms and legs, arched back, head tipped back) the tongue is more likely to push food out of the mouth. Help the child by bringing arms to the middle of the body and bend knees more than 90-degrees. This flexed posture may help reduce the tongue thrust reflex. In Figure 11, notice the position of the head when the child is sitting with arms and legs flexed. Having the head upright allows the child to develop lip and tongue control. A caregiver can gently place a hand or arm behind the child's head to support it in an upright position.

Figure 13.

Reducing Tongue Thrust through Postural Control



Extended **Flexed**

LET'S PRACTICE:

In small groups of 2-4, practice topic 3.3 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

3.4 Incomplete Swallow

Children who lack oral motor control may have difficulty gathering food in their mouth to form a bolus. A bolus is a ball of food or drink that is ready to be swallowed. If a child has food remaining in their mouth after they have swallowed once, the caregiver can use the empty spoon technique to encourage the child to swallow the remaining food in their mouth. The Empty Spoon technique is done by offering the child an empty spoon (see Figure 12). This encourages the child to gather the remaining food in their mouth and swallowing. It is important that a child clears all food from his/her oral cavity. Any leftover pieces of food could be easily aspirated by a child who lacks oral motor control.

Figure 14.

Empty Spoon Technique

SAFETY FIRST! A caregiver should NOT offer more food to a child if the child still has food in his/her mouth. This increases the risk of aspiration or choking.

GOING DEEPER:

Children with feeding difficulties are more at risk for dental cavities. When a child struggles to move the tongue to gather food in the mouth for a complete swallow, there may be food left sitting on the teeth. This can lead to dental cavities. A child with cavities may experience pain, tooth decay, and loss of teeth. Poor dentition can make feeding difficulties worse.

What caregivers can do: **Clean Mouth with a Washcloth**

1. Use clean water to wet a washcloth.
2. Wring out excess water.
3. Wrap the washcloth around your index finger.
4. Enter the child's mouth from the side and wipe excess food from the child's mouth, including teeth and gums.

Do NOT stick fingers in the mouth of a child who has a tonic bite reflex. Use caution when placing objects in the child's mouth. To clean the child's mouth, it is recommended that you use a tool with a handle, such as a soft toothbrush. Make sure the child is seated in a stable position prior to cleaning the mouth and use a gentle touch and movement to limit the triggering of the tonic bite reflex.

LET'S PRACTICE:

In small groups of 2-4, practice topic 3.4 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

3.5 Difficulty Chewing

SUPPLIES NEEDED: Biscuits

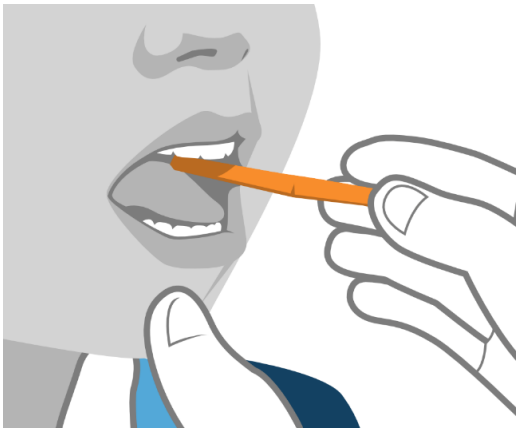
HANDOUTS: Learning How to Chew

When a child has difficulty chewing the caregiver can help the child practice chewing with a side-bite technique. The caregiver offers a soft, stick-shaped piece of food that can easily be mashed with the tongue. The food is placed between the teeth for the child to bite off a small piece. The caregiver can use jaw and lip support to assist the child with taking a small bite of food.

Food that works well for learning to chew includes: a piece of biscuit, a slice of mango, a slice of banana, a slice of cooked Irish or sweet potato, or a soft, blanched carrot.

Figure 15.

Side-Bite Technique.



LET'S PRACTICE:

In small groups of 2-4, practice topic 3.5 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

3.6 Tonic Bite Reflex

Some children with disabilities have a tonic bite reflex. When something touches the teeth or gums the child bites down forcefully (see Figure 14). The child does not do this intentionally. A child with a tonic bite reflex may unintentionally bite the fingers of their caregiver. The child may not be able to open his mouth immediately. The muscles in the jaw need to relax for the child to open the mouth. The safest way to feed a child with a tonic bite reflex is with a spoon.

A child with a tonic bite reflex could damage a tooth if he bites too hard on a metal spoon. It is best to purchase a reusable plastic spoon. Disposable plastic spoons can break and cut the child's mouth.

Figure 16.

Tonic Bite Reflex.

LET'S PRACTICE:

In small groups of 2-4, practice topic 3.6 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

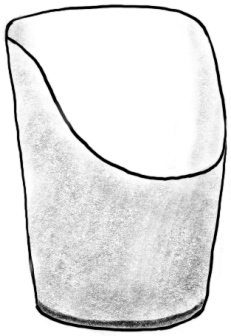
3.7 Cup Drinking

HANDOUTS: How to Make a Cut-Out Cup

A goal of caregivers is skill development. Caregivers want children to grow and gain independence in doing their daily tasks. Children with physical or developmental disabilities may have difficulty learning to drink from a cup. The child is likely to take in too much liquid if the head is tipped back. One way to develop cup drinking skills or assist a child with cup drinking is to use a cut-out cup (see Figure 15). A cut-out cup allows the child and adult to easily see the liquid entering the mouth. When the head remains upright, the caregiver can see liquid in the cup and control the flow of the liquid to ensure the child is taking **SMALL SIPS**.

Figure 17.

Cut-Out Cup.



Caregivers will have the opportunity to make a cut-out cup from a disposable water bottle. Follow the steps in the FEED Safe Flipbook to make the cut-out cup (See Figure 16). It is important that you instruct caregivers to sanitize the cup with soap and water before using it with their child. When using the cut-out cup, the tall side goes towards the child's mouth. The cut-out allows the child and caregiver to see the flow of liquid.

Be aware of sharp edges when making a cut out cup. Caregivers should do their best to cut smoothly. A scissors works best to smooth out rough edges.

Figure 18.

Making a Cut-Out Cup from a Water Bottle

GOING DEEPER:

Caregivers need to consider if a child can manage the texture of water. Some liquids such as mango juice are thicker than water. Water is a thin liquid, as is broth, tea, and milk. A thin liquid can easily flow down the throat. If a child doesn't have strong oral motor skills to gather the liquid together in the mouth before swallowing, the water could flow down the throat and into the trachea (airway) and cause choking or aspiration. Signs of difficulty swallowing a thin liquid include coughing or wheezing after taking a sip of water, a wet voice, and fatigue after eating or drinking. **If a child has difficulty swallowing water, the caregiver should be referred to a local healthcare provider.**

LET'S PRACTICE:

In small groups of 2-4, practice topic 3.7 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

Module 4: Nutrition

Time to Complete: 30 minutes

Supplies: Storing Food Safely image

Handout: Nutrition

Module 4 discusses basic nutrition recommendations to support the growth and development of children with disabilities, especially those at risk for malnutrition. Children living with disabilities that impact feeding or nutritional requirements (e.g., cerebral palsy, Down syndrome, autism spectrum disorders, cardiac or gastrointestinal diseases) are at higher risk for poor nutrition. In this module, caregivers will learn how often to feed their child with a disability, what types of food contribute to growth and development, which foods are both energy-dense and nutrient-dense, and how to safely store foods. This module is intended to enhance knowledge gained from local public health officials and is based on the 2021 Zambia Food -based Dietary Guidelines.

4.1 Nutrition Made Easy

HANDOUT: Nutrition

Nutrition is about the food we eat and the nutrients in food that nourish our bodies. For infants and children, good nutrition is necessary for growth and development. Nutrients in food provide children with energy to do activities, such as playing and learning, and building blocks for body repair, growth, and function.

Figure 19. *A Tired Child*

Some foods are denser in energy and nutrients than other foods. Children with disabilities may use **more energy (and more nutrients)** than other children their age. An example is cerebral palsy. Many children with cerebral palsy have constant muscle contractions that use a lot of energy.

A child with a disability may fatigue easily during feeding. It takes energy to maintain upright posture, gather food into the mouth, chew, and swallow. A tired child can have

difficulty swallowing safely. It is important to feed a child with a disability a variety of foods. This allows the child to consume enough energy and nutrients throughout the day without becoming too tired during feeding sessions. It is recommended that children eat different types of food from each of the **six food groups** every day: 1) Cereals, starchy roots, and tubers; 2) Vegetables; 3) Fruits; 4) Fish, insects, and animal food sources; 5) Dairy; and 6) Legumes, pulses, and nuts. These foods collectively perform the functions of providing the body with energy, ensuring good growth and repair, as well as protecting from infections and illnesses.

Table 3: Examples of foods in each of the six Zambian food groups

Cereals grains and Tubers	**Vegetables**	**Fruits**	**Fish, Insects, and Animal Source Foods**	**Dairy**	**Pulses/Legumes, Nuts and Seeds**
Provides energy	*Protects from illnesses and infections*	*Protects from illnesses and infections*	*Supports growth and repair*	*Supports growth and repair*	*Supports growth and repair*
• Maize on cob • Maize meal • Rice • Bread • Wheat flour • Cassava • Millet • Sorghum • Sweet potatoes • Irish potatoes • Yam	• Pumpkin leaves • Pumpkin • Butternut • Cabbage Carrots • Sweet potato leaves Amaranth leaves • Rape • Spinach Tomatoes Peppers • Beetroot • Moringa	• Masuku • Masau • Mango • Guava • Paw Paw • Pineapple Lemons Oranges • Bananas • Tangerines (Naarjies) Baobab Tamarind • Watermelon • Mulberries	• Kapenta • Finkubala • Mbeba • Inswa • Grasshopper (nshokononono) • Fish • Chicken • Eggs • Beef • Goat • Pork • Rabbit • Quails	• Fresh milk • Sour milk (mabisi) • Yoghurt • Cheese	• Beans • Soya • Cow peas • Pigeon peas • Bambara nuts • Groundnuts • Cashew nuts • Pumpkin seeds • Sunflower seeds

A Diverse Diet

It is important to offer children a **diverse diet**. This means offering different types of foods from each of the six food groups. For example, a caregiver may prepare mashed sweet potato with milk for breakfast; a banana for a midmorning snack; nshima with chicken and pumpkin leaves cooked with groundnut powder for lunch; an orange (with no seeds) as an afternoon snack; rice and beans for supper. In just a day, it is possible to eat from all the 6 food groups. A caregiver should think about nutrition diversity within a food group and across the food groups. Is the child eating foods of all different colours throughout the week? These foods must be prepared in a texture that is safe for the child.

GOING DEEPER:

Children in Zambia generally have low diet diversity. Their meals are dominated by maize-based foods such as *nshima.* This is often accompanied by over-cooked vegetables, which have lost their nutrients. Over-cooking destroys certain vitamins in vegetables such as vitamin C. To maximize the nutritional benefits of vegetables that are added to *nshima*: 1) offer raw vegetables when possible; 2) cook vegetables for a short time (less than 10 minutes); 3) use a minimal amount of vegetable oil when cooking vegetables; 4) use little amounts of water when cooking vegetables; 5) do not discard cooking water as it contains nutrients; instead use it to make soup.

LET'S PRACTICE:

In small groups of 2-4, practice Topic 4.1 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

Case study: A caregiver is asking you for recommendations to make her maize porridge more nutritious for her child. Her child is a 4-year-old boy with cerebral palsy. He can only eat pureed and mashed foods. Using what you learned in Topic 4.1, what are your recommendations for the caregiver?

NOTES:

4.2 Nutrient-dense and Energy-dense Foods

It is important that children with disabilities eat a variety of healthy foods. The foods a caregiver chooses should be both nutrient-dense and energy-dense to support the needs of the child. **Nutrient-dense foods** are high protein, vitamin A, vitamin C, calcium, iron, and other vitamins and minerals. **Energy-dense foods** supply a lot of energy (or calories) in a small amount of food. These foods are usually high in fat and starch (carbohydrates) and have a low water content.

Foods that are both energy-dense and nutrient-dense provide a lot of energy while also supplying protein, vitamins, and/or minerals. Examples include milk, yogurt, eggs, meat, kapenta, nuts, beans, avocado, starchy vegetables (orange-fleshed sweet potato, pumpkin), and dense fruits (bananas, mango).

GOING DEEPER:

In small groups of 2-4, discuss local foods that are high in both energy and nutrients and are available to the families you serve. Create a diverse meal plan for one day.

LET'S PRACTICE:

In small groups of 2-4, practice sharing topic 4.2 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

NOTES:

4.3 Storing and Handling Food Safely

SUPPLIES: Let's Practice Image 3

HANDOUTS: Storing and Handling Food (including leftover food) Safely

Storing and handling food safely is a key factor in feeding children safely. Children with disabilities are likely to have weakened immune systems which affects their ability to fight off infections. It is important that a caregiver reduce the risk of foodborne illnesses by safely storing food.

You will discuss with caregivers several recommendations on how to safely store food. Use Let's Practice Image 3 to identify safe food storage practices.

Ensure that caregivers understand the following:

- Bacteria can easily grow in leftover food and can cause foodborne illnesses.
- Leftover food should be refrigerated and used within three days. Leftovers older than three days should be discarded.
- If a refrigerator is not available, cooked food should not be left out at room temperature for more than two hours. This is reduced to one hour if the temperature is hot (32°C or higher). Cooked foods left outside and not consumed within 1-2 hours should be discarded.
- Reheat leftovers thoroughly to at least 74° C (165° F).
- Refrigerate perishables as soon as you get them home from the market.
- Separate raw meats, poultry, and fish from fresh fruits and vegetables.
- Use clean and safe water for food preparation.
- Wash hands with water and soap for at least 20 seconds before and after handling food, and after using the toilet, and handling animals and pets.

LET'S PRACTICE:

In small groups of 2-4, practice topic 4.3 in the FEED Safe Flipbook. One person will act as the trainer and others will be caregivers.

Case study: A caregiver shares with you that she does not have access to a refrigerator. Using what you learned in Topic 4.3, what are helpful tips on storing food that you can share with the caregiver?

NOTES:

What I Know (training post-test)

Circle your answer.

1. I know what Responsive Feeding is.

TRUE **FALSE**

2. The three key components of responsive feeding are:

D. Quick, Quiet, and Calm
E. Prompt, Emotionally Supportive, and Developmentally Appropriate
F. Fast, Fun, Active

3. Start with the head position when positioning a child for feeding.

TRUE **FALSE**

4. Choosing the appropriate food texture depends on:

A) The child's age
B) The child's favourite food
C) The child's known skill level

5. I know the signs of choking and aspiration.

YES **NO**

6. Nutrition can be easily understood using the six Zambian food groups:

D. Cereals, starch roots, and tubers; Vegetables; Fruits; Fish, insects and animal source foods; Dairy; and Pulses/legumes, nuts, and seeds
E. Foods for Growth; Foods for Energy; Foods for Protection; Red Foods; Yellow Foods; and Green Foods
F. Foods I like; Foods that I don't like; Seasonal foods; Dry foods; mashed foods; pureed foods

APPENDIX A: RESOURCES

Resources for Feeding Children with Disabilities

SPOON Foundation: www.spoonfoundation.org

Feeding Matters: www.feedingmatters.org

Information on Modifying Food Textures

International Dysphagia Diet Standardisation Initiative: https://www.iddsi.org/

Learning Opportunities for Health Care Providers

International Pediatric Feeding Disorder Conference (IPFDC): https://www.feedingmatters.org/international-pfd-conference/

Resources for Family Growth and Development

Catholic Medical Missions Board Zambia: https://cmmb.org/country-office/zambia/

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