



INFANT FEEDING



INFANT & YOUNG CHILD FEEDING (IYCF)

- The concept of infant and young child feeding was introduced in 2002.
- Fetal and infant nutrition is the foundation for growth, development , intelligence , emotional wellbeing and immunity .



KEY FACTS OF IYCF BY UNICEF

1. Indian children have the growth and development potential as all children worldwide .
2. Child malnutrition remains one of the greatest developmental challenges of India.
3. Stunted children have stunted bodies, stunted brains and stunted lives.
4. Child under nutrition starts early in life to make a lifelong lasting difference.
5. No need to discover new vaccines or new drug: we know what works.



KEY INTERVENTIONS OF IYCF BY UNICEF

1. Timely initiation of breast feeding within 1hr of birth.
2. Exclusive breast feeding during first 6m of life.
3. Timely introduction of complementary foods at 6m.
4. Age-appropriate foods for children 6m-2yrs.
5. Hygienic complementary feeding practices.
6. Immunization and bi-annual vitamin A supplementation with deworming
7. Appropriate feeding for children during and after illness
8. Therapeutic feeding for children with severe acute malnutrition.



ARTIFICIAL FEEDING

- When mother is unavailable, critically ill or no more, and in any case breast feeding is not possible – baby have to be fed artificially
 - Infant formula.
 - Unmodified bovine milk.
- Decision of choosing the formula feeding is done by healthcare professional based on socio-economic status of family.
- Detailed information regarding the hygienic preparation in right proportion has to be adviced.



PREPARATION

- Full strength formula (1:1) is prepared by adding one level measure of powder to one ounce(30mL) of water.
- 150-165 ml/kg/day milk can be given in 6-8 feeds.
- However , the exact information on the label and pack should be carefully read before the usage of the content.
- Ensure usage of clean cup and spoon or paladai but not feeding bottles.



- Most of the formula are made of bovine milk , which is modified to suit the infant's physiology requirements.
- Starter formula(No.1) for infants 0-6m .
After 6m when the infant is introduced to complementary foods, follow up formula (2,3) is advised.
- For infants with lactose intolerance (primary/secondary) special low lactose, lactose free formula have been designed
- For premature , LBW infants there are special infant formula with medium chain triglycerides , LC , PUFA .

ADVERSE EFFECTS OF ARTIFICIAL FEEDING



- Malnutrition due to dilution and infection due to contamination are important side effects.
- Untreated bovine milk feeding has more potential risk for allergy.
- High sodium content in cow milk may lead to salt sensitive hypertension in susceptible individuals.
- CMPI – Cow milk protein intolerance is due to lactoglobulin or alpha casein and may cause diarrhoea.

ADVERSE EFFECTS OF ARTIFICIAL FEEDING



- High solute in artificial milk will increase the additional load on immature kidney .
- Due to increase demand for water to excrete this load , there is chance for dehydration and constipation.
- Iron deficiency is common in those on cow's milk, due to poor availability and absorption of iron .
- Low vitamin C and Lactoferrin and high phosphate also lead to decrease iron absorption.

ADVERSE EFFECTS OF ARTIFICIAL FEEDING



- High phosphate in cows milk also reduces calcium absorption.
- Chances of NEC is more among those on artificial feed.
- Usage of cow's milk is not advised, except in situations when the mother is away.
- However , infant milk substitutes may be prescribed in severely malnourished babies or conditions of lactation failure

Formula Feeding

- High Sugar Exposure
- High GMO Exposure
- Increased Allergy Risk
- Synthetic vitamins
- Increased Risk Fat Deficiency

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Breast Feeding

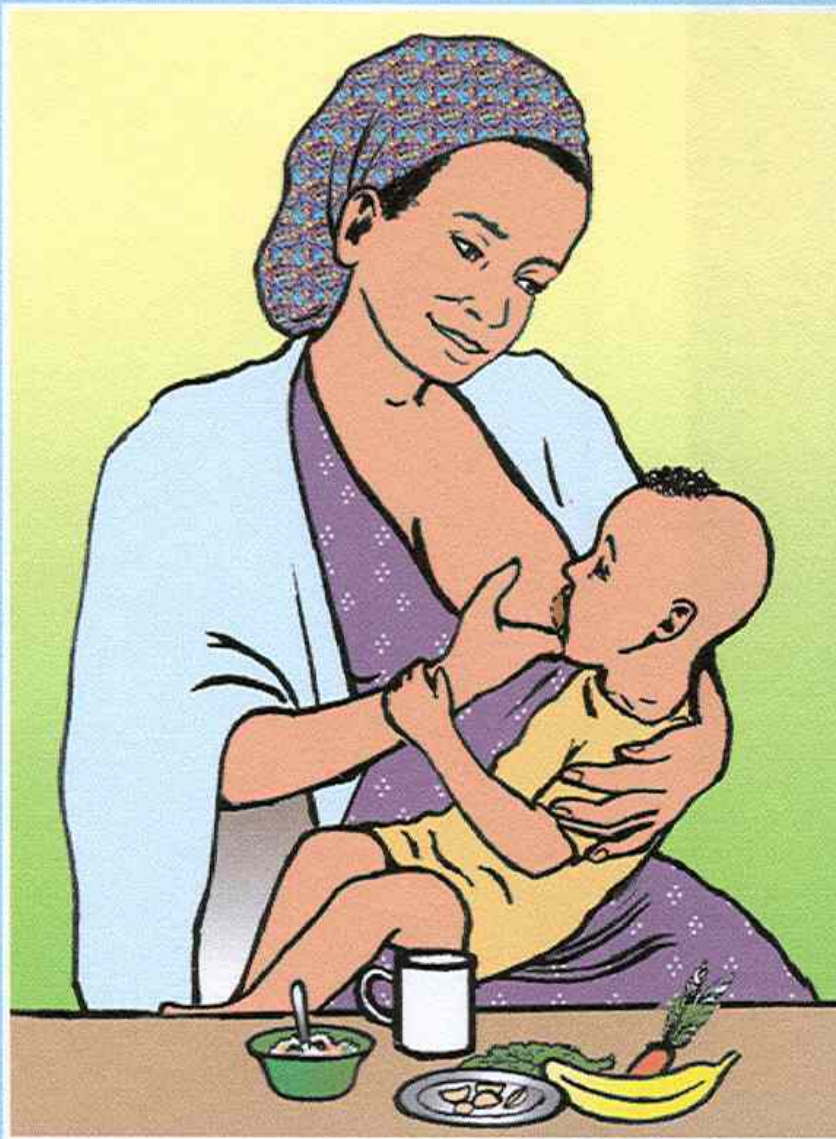
- Enhanced Natural Immunity
- Reduced Allergy Risk
- Bonding
- Weight Normalization (mom)





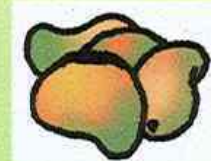
COMPLEMENTARY FEEDING

- DEFINITION –
 - Complementary feeding is defined as the systematic process of introduction of suitable food at the right time in addition to mothers milk in order to provide needed nutrients to the baby



From 6 months up to 2 years

Continue breastfeeding and give your child additional foods such as porridge, Shiro fitfit, Merek fitfit, mashed potatoes, mashed gommen, eggs, fruits, etc...
at least 5 times a day.





WHAT IS COMPLEMENTARY FEEDING?

- The giving of foods to infants starting at six months, in addition to breast milk.
- NOT sufficient as on their own as a diet
- Should NOT displace breastmilk

TIME OF COMPLEMENTARY FEEDING OR WEANING

- Baby is biologically ready to accept semisolids by 4-6 months of age
- By 4 months of age intestinal amylase matures and the gut becomes ready to accept cereals and pulses (legumes)
- Breast milk increases till 6 months of age and it plateaus off

WHY START AT SIX MONTHS?

- Infant's intestinal tracts develop immunologically with defence mechanisms to protect the infant from foreign proteins.
- The infant's ability to digest and absorb proteins, fats, and carbohydrates, other than those in breast milk increases rapidly.
- The infant's kidneys develop the ability to excrete the waste products from foods with a high renal solute load, such as meat.
- The infant develops the neuromuscular mechanisms needed for recognizing and accepting a spoon, masticating, swallowing non liquid foods, and appreciating variation in the taste and colour of foods.

What are the risks of starting complementary feeding too early or too late?

- Reduce breast milk production or intake
- Contribute to increased rates of infant mortality and morbidity.
- Increase the risk of mother becoming pregnant.
- Interfere with iron absorption
- Reject foods when they are introduced at a later age
- Consume an inadequate variety & amount of food to meet their nutritional needs.

CONTINUATION OF BREAST FEEDING

- Breast milk should continue to be the main food of the baby even when weaning is started
- Breast milk should continue as long as feasible ,preferably till 2 years of age
- This is important as the first 2 years is a period of rapid brain growth and breast milk contains factors essential for brain growth and development

COMPLEMENTARY FOODS

- Complementary foods can be home made or instant foods
- It is better to start with mono cereals, followed by multi cereals and cereals- pulse combination
- Cereal like rice is best choice to start as it is gluten free and easily digestible.
- Cereal pulse combination is better due to fortification of amino acids as cereals generally lack lysine and pulses lack methionine.



- The advantage of homemade weaning cereals is that they are economical, easily available, culturally accepted and closer to family food and versatile.
- Addition of jaggery for calories and minerals, milk for protein and oil for calories can make homemade food more nutrient denser

FAMILY POT FEEDING

- The acceptance of food from family food should be a part of mixed feeding regime
- A new food should be introduced in the morning session and only one item should be introduced at a time
- Around 6 months of age :cereal based porridge(ragi , suji , rice) enriched with jaggery / sugar , oil / ghee and animal milk can be started



- 6-9 MONTHS :
 - Introduce mashed items from the family pot enriched with jaggery /sugar & oil /ghee
 - Mashed rice with pulses , mashed tubers & vegetables soups, mashed fruits can be given 4-5 times a day in addition to breast milk

- 9-12 MONTHS :
 - Introduce soft food that can be chewed.
 - By 1 year of age baby should be taking everything cooked at home. This is called family pot feeding.
 - 1 year old child should eat half of what the mother eats

BRIDGING THE CALORIE AND OTHER NUTRIENT GAP

- The calorie gap can be bridged by using oil/ghee & sugar & selecting high density food item that will not swell much on cooking. Ex: egg, potato
- Cereals, pulse combinations, roots & tubers, green leafy vegetables, seasonal fruits, milk products given to the baby will bridge the nutrient gap.
- Soaking and malting of grains will increase digestibility and vitamin content.

- Sprouting or germination will enhance vitamin content and make it amylase rich food (ARF) and will decrease bulk on cooking.
- Fermentation enhances vitamin C and digestibility
e.g Curd /yogurt.
- The once a day introduction of instant food could be a way of balancing nutrient gap and one step solution to prevent malnutrition



DEVELOPING READINESS FOR FAMILY FOODS

- It is very essential to introduce varied textures and taste throughout complementary feeding period.
- It is essential to advise the mother to differentiate the texture through the preparation and cooking methods.
- Introducing new tastes with addition of vegetables ,fruits will expose the baby to healthy eating practices



PREPARATION AND STORAGE OF WEANING FOODS

- Hand washing with soap and water should be practiced before cooking and feeding
- The food stuffs should be freshly prepared
- Precooked ready to mix cereal-pulse combinations can be prepared and stored in air tight containers

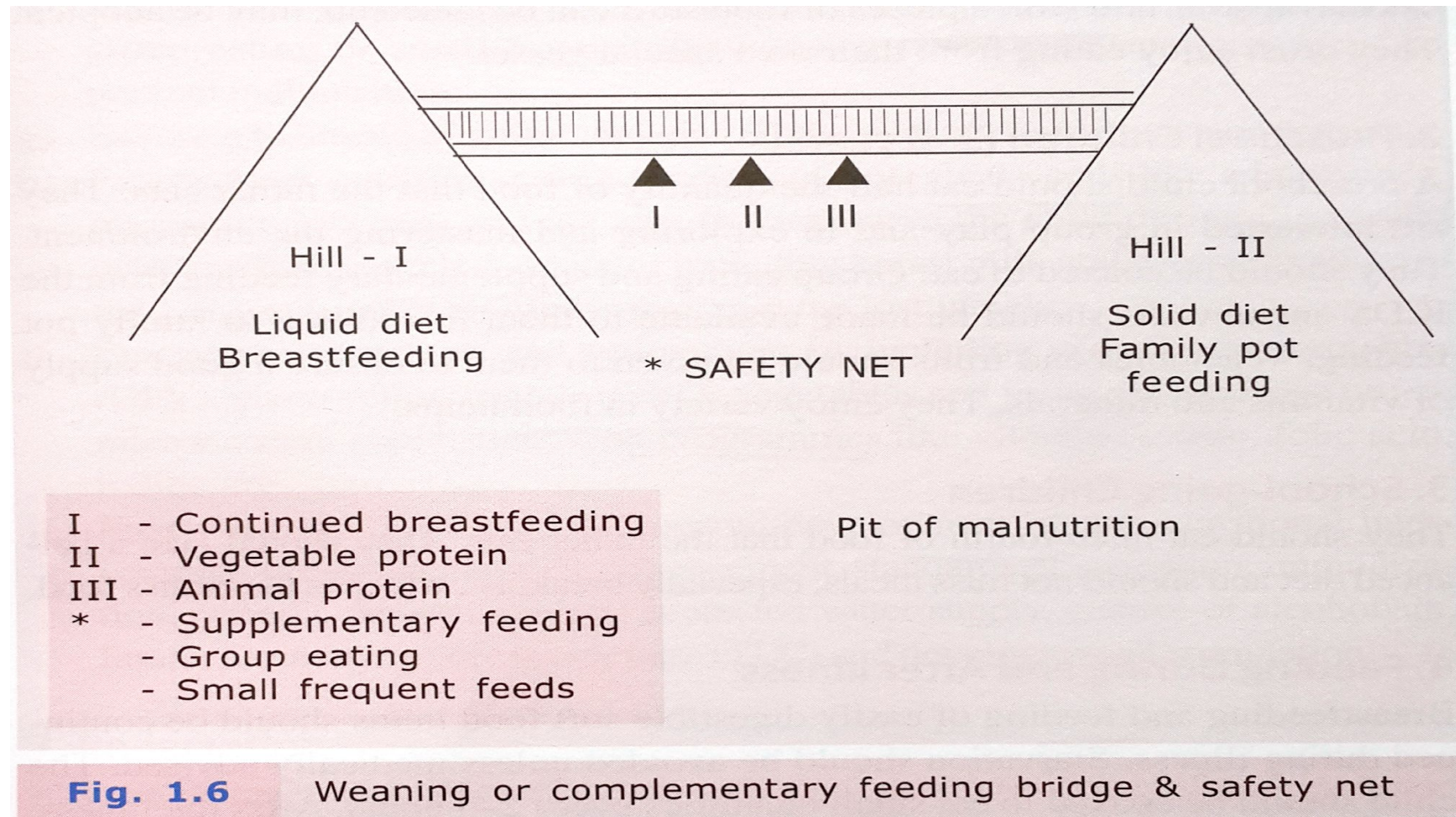
WEANING OR COMPLEMENTARY BRIDGE AND SAFETY NET TO PREVENT MALNUTRITION

- Most of the children fall into pit of malnutrition during the weaning and post weaning phase
- Jelliffe has suggested a 'three plank protein bridge' to prevent PEM.
- Three planks include
 1. Continued breast feeding
 2. Introducing vegetable protein
 3. Animal protein



- So safety net is needed beneath the bridge
- This includes utilization of supplementary feeding programmes as in ICDS, which ensures extra 300 kcal/day
- Those who cant avail this facility should arrange extra feeding either in play school in form of group eating or at home using akshayapatra
- **Responsive feeding** like mother child interaction during feeding has positive impact

WEANING OR COMPLEMENTARY FEEDING BRIDGE



FEEDING OF CHILDREN

1) TODDLERS (1-3 YEARS OF AGE)

- Toddler needs more than half the food that the mother eats
- Eating while playing, group eating and eating from special vessel 'akshayapatra' into which pieces of food stuff added on ,may be adopted



2) PRESCHOOL CHILDREN (3-6 YEARS)

- A preschool children child should eat half the quantity of food that the father eats.
- Group eating and supplementary feeding from the ICDS anganwadis should be made available to them in addition to family pot feeding.



3) SCHOOL GOING CHILDREN

- They should eat three fourth of food that the father eats
- They should take balanced diet and should not miss meals especially breakfast ,which is brain's food.

4) FEEDING DURING AND AFTER ILLNESS

- Breast feeding and feeding of easily digestible soft food items should be continued during illness every 2 – 3 hours.
- After the illness give an extra meal for 1-2 weeks to regain the lost weight

- GROWTH AND DEVELOPMENT MONITORING
 - Frequent weighing and recording on the growth chart are desirable
 - A flat curve or downward curve should be of concern and appropriate intervention should be initiated



TEN COMMANDMENTS IN NUTRITION

1. Be baby friendly and initiate breast feeding soon after birth
2. Practice exclusive demand feeding during the first 4-6 months of age
3. Continue breast feeding till 2 years of age, the period of rapid brain growth and myelination
4. Build the weaning or complementary bridge at the age of 4-6 months
5. Slowly switch over to pot feeding and baby should take everything cooked at home by one year of age

6. Make a safety net for the young child in the form of supplementary feeding, group eating or akshayapatra concept
7. Ensure balanced diet that includes all various food items and nutrients
8. Ensure extra nutrition during special physiological needs like illness, adolescence, pregnancy, lactation
- 9 . Ensure micro nutrients and anti oxidants by including green leafy vegetables, fruits etc. Also utilize micro nutrient supplementation programmes like vitamin A, iron, folic acid, iodine etc.
10. Ensure quality of survival and overall development by non-nutritional interventions like socioeconomic advancement, standards of sanitation , immunisation , periodic deworming, tender loving care(TLC)



ESPHAGAN (EUROPEAN SOCIETY FOR PAEDIATRIC GASTROENTEROLOGY ,HEPATOLOGY , AND NUTRITION) AND WHO RECOMMENDATIONS

1. Introducing weaning foods around 6 months of age and giving follow on formula in a quantity of not less than 500ml daily along with complementary feeds
2. It has recommended that introduction of gluten be avoided in select families and communities
3. Avoiding foods that may contain high amount of nitrates during early months
4. Delaying the introduction of highly allergic foods ,such as egg white and sea fish

TYPES OF COMMERCIAL WEANING PREPARATIONS

- **STANDARD CEREALS OR PROCESSED CEREAL BASED COMPLEMENTARY FOOD**
 - Commonly called as weaning food or supplementary food based on cereal/pulses, millets, nuts and edible oil seeds processed to low moisture content and so fragmented to permit dilution with water ,milk or other suitable medium.

- COMPLETE CEREALS OR MIK –CEREAL BASED
COMPLEMENTARY FOOD
 - These foods are based on milk, cereal, millets, nuts and edible oil seeds processed to low moisture content and so fragmented as to permit dilution with water

- PULPY WEANING FOODS
 - These are high quality pulp of selected single or combination of fruit and vegetable pulps packed in suitable containers.
 - These are not available in India

- FOLW ON /FOLLOW-UP FORMULAS
 - Is a food intended for use as a liquid part of the weaning diet for the infant from the 6th Month onwards till 2 years of age

- Follow – on formulas should continue to provide about 40% of the infants energy intake, with about 500 ml to be consumed every day
 - PROTIEN
 - Protein used is of good quality. From sources such as milk, eggs and fish
 - CALCIUM
 - Follow on formulas should contain at least 90 mg of calcium per 100 kcal (50-140mg/100 kcal)



- FAT
 - Fat content of follow –on formula should be higher than 3.3gm /100kcal and it should provide at least 35% of total energy in the formula
 - Linoleic acid content should be between 300 mg and 1200mg /100kcal .

FEATURES OF HOMEMADE PREPARATIONS AND COMMERCIAL PREPARATIONS

Table 1.9 Features of homemade preparations and commercial preparations

HMP	Commercial preparations
■ Variety is unlimited; any food available for home cooking can be prepared for the baby (provided it suits the developmental stage of the infant). ■ Can be fresh and unprocessed. ■ Can be ground, pureed or sieved for proper consistency. ■ Can be culturally acceptable and available. ■ Shift to <u>family pot</u> is comfortable. ■ Are more economical.	■ Mostly nutrient dense and prepared as per the standards. ■ Standardized for high quality. ■ Easy to use. ■ Energy density is specified. ■ Often include added vitamins (e.g., vitamin A, C) and minerals (e.g., iron), which are generally non-bioavailable in HMP. ■ Can be used to construct a balanced diet of convenience. ■ Overcome problems of seasonal availability of certain foods (i.e., provides variety, regardless of season). ■ Especially helpful for <u>working mothers</u>.

Thank You

