

RECOMMENDATION

Infant and Young Child Feeding Guidelines, 2016

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Justification: Shaping up the post-2015 development agenda is of crucial importance in the development process around the Globe as 2015 was the last year of millennium development goals. It is the right time to assess our own progress *vis-a-vis* the Millennium Development Goals and these Guidelines are an attempt in that regard.

Process: The Infant and Young Child Feeding (IYCF) chapter of Indian Academy of Pediatrics invited a group of experts for National Consultative Meet for discussing and contributing on latest scientific advances and developments. Various partners from WHO, UNICEF, Ministry of Child Welfare Department, Ministry of Health and Family Welfare, Ministry of Chemical and Fertilizers of Govt of India, Human Milk Banking Association (of India), Indian Medico-Legal and Ethics Association (IMLEA), non-governmental organizations and academicians from various states of India contributed to these guidelines. The guidelines were finalized during the IYCNCON 2015 at New Delhi in August 2015.

Objectives: To formulate, endorse, adopt and disseminate guidelines related to Infant and Young Child feeding from an Indian perspective (including human milk banking, infant feeding in the HIV situation, and micro-nutrients).

Recommendations: Early initiation of breastfeeding within first hour of birth, exclusive breastfeeding for the first six months followed by continued breastfeeding for up to two years and beyond with appropriate complementary foods after completion of 6 months is the most appropriate feeding strategy. Micro-nutrient supplementation in infants, and adequate nutrition and anemia control for adolescent girls, pregnant and lactating mothers is advocated. Concepts and need for human milk banks in India has also been incorporated.

Keywords: Early Initiation, Exclusive breastfeeding, Complementary feeding, Hand washing, Human milk banking, Malnutrition, Micronutrients.

The under-five population of India stands at a staggering 112.8 million [1]. However, despite all the advances in health, education and agriculture sectors as well as vast improvements in the country's economy, India figures in the list of countries that have made insufficient progress towards meeting the Millennium Development Goals [2]. It has the largest numbers of under-five children who are moderately or severely stunted, accounting for 38% of the global burden. India also has the highest numbers of children with moderate and severe wasting.

According to National Family Health Survey-3 data, about 20 million children are not able to receive exclusive breastfeeding (EBF) for the first six months, and about 13 million do not get good, timely and appropriate complementary feeding along with continued breastfeeding. Over the past several years, India has failed to witness any remarkable progress in infant feeding practices, with only a small increment being recorded in EBF rates amongst infants 0-6 months of age – from 41.2% in 1998-99 (NFHS-2) to 46.3% in 2005–2006 (NFHS-3) [3]. The rate of early initiation of breastfeeding stands abysmally low at 24.5%, while the median duration of EBF among last-born children is as brief as two months. Further,

the rate of EBF drops progressively from 51% at 2-3 months of age to 28% at 4-5 months of age. In a recent Annual Health Survey conducted in India from 2010 to 2013 covering all the 284 districts (as per 2011 census) of 8 Empowered Action Group (EAG) States (Bihar, Uttar Pradesh, Uttarakhand, Jharkhand, Madhya Pradesh, Chhattisgarh, Odisha and Rajasthan) and Assam [4], the percentage of children breastfed within one hour of birth was observed to vary from 30% in Bihar and Uttar Pradesh to around 70% in Assam and Odisha. Children exclusively breastfed for at least 6 months ranged from 17.7% in UP to 47.5% in Chhattisgarh. Complementary feeding is introduced in only 53% infants between 6–8 months, with only about 44% of breastfed children being fed at least the minimum number of times recommended [3]. Overall, only 21% of breastfeeding and non-breastfeeding children are fed in accordance with the infant and young child feeding (IYCF) recommendations.

TECHNICAL GUIDELINES

Breastfeeding

WHO/UNICEF have emphasized the first 1000 days of life *i.e.*, the 270 days *in-utero* and the first two years after birth as the critical window period for nutritional interventions.

As the maximal brain growth occurs, malnutrition in this critical period can lead to stunting and suboptimal developmental outcome. The optimal and appropriate infant and young child nutrition practices and strategies are enumerated in **Box 1**; the others are:

- (a) Breastfeeding should be promoted as the gold standard feeding options.
- (b) Antenatal counseling individually or in groups organized by maternity facility or mother support group (MSG) should prepare expectant mothers for successful breastfeeding.
- (c) For all normal newborns (including those by caesarean section) skin-to-skin contact should be initiated in about 5 minutes of birth in order that baby initiates breastfeeding in an hour of birth. The method of 'Breast crawl' can be adopted for early initiation [5]. In case of operative birth, the mother may need extra motivation and support. Skin-to-skin contact between the mother and new born should be encouraged by 'bedding in the mother and baby pair'. Mother should communicate, look into the eyes, touch and caress the baby while feeding. The new born should be kept warm by promoting Kangaroo Mother Care and promoting local practices to keep the room warm [6].
- (d) Baby should be fed "on cues". The early feeding cues include sucking movements and sucking sounds, hand to mouth movements, rapid eye movements, soft cooing or sighing sounds, lip smacking, restlessness *etc.* Crying is a late cue and may interfere with successful feeding. Babies should be breastfed at least 8 to 10 times in 24 hours till lactation is established (1 to 2 weeks) indicated by frequent urination, stooling and adequate weight gain. A sleepy baby can be easily woken up by removing blankets, removing clothes,

BOX 1 THE OPTIMAL AND APPROPRIATE INFANT AND YOUNG CHILD NUTRITION PRACTICES AND STRATEGIES

- EBF should be practiced till end of six months (180 days).
- After completion of six months, introduction of optimal complementary feeding should be practiced preferably with energy dense, home-made food.
- Breastfeeding should be continued minimum for 2 years and beyond.
- Mother should communicate, look into the eyes, touch and caress the baby while feeding. Practice responsive feeding.
- WHO Growth Charts recommended for monitoring growth.

changing loin cloth if wet, skin-to-skin contact in kangaroo position and gently massaging the back and the limbs. Periodic feeding is practiced in certain situations like in the case of a very small infant who is likely to become hypoglycemic unless fed regularly, or an infant who 'does not demand' milk in initial few days. Adequacy of breastfeeding in this critical period should be monitored by clinical parameters complemented by weighing on digital weighing scale (minimum sensitivity of 5 g) on Day 1, 4, 7, 14 and 28. Maternity service should have a protocol to manage post-discharge follow ups along with protocols for management of excessive weight loss (>10%) and weight-faltering.

- (e) Every mother, especially the primipara, should receive support from doctors, nursing staff or community health workers (in case of non-institutional birth) with regards to correct positioning, latching and treatment of problems, such as engorgement, nipple fissures and delayed 'coming-in' of milk. If available, dedicated skilled supports like Lactation Consultants/ Mother Support Counselors/ Peer Counselors should be facilitated to support the mother in the antenatal, immediate postnatal period, post discharge follow-ups and in neonatal care units.
- (f) Mothers need skilled help and confidence-building during all health contacts and at home through home visits by trained community worker, especially after the baby is 3 to 4 months when a mother may begin to doubt her ability to fulfill the growing needs and demands of baby.
- (g) The main reason given by majority of working mothers for stopping breastfeeding is their return to work following the maternity leave. Mothers who work outside should be assisted with obtaining adequate Maternity/ Baby Care/Breastfeeding leave, should be encouraged to continue EBF for 6 months by expressing milk while they are out at work. They may be encouraged to carry the baby to a work place/ crèche wherever such facility exists. The concept of "Hirkani's rooms" may be considered at work places (Hirkani's rooms are specially allocated room at the workplace where working mothers can express milk and store in a refrigerator during their work schedule). Every such mother leaving the maternity facility should be taught manual expression of her breast milk; however, for a working mother this skill would prove invaluable.
- (h) If the breastfeeding was temporarily discontinued due to an inadvertent situation, re-lactation should be tried as soon as possible [7]. Supplemental Suckling Technique (SST) is a technique which can be used as a

strategy to initiate re-lactation in mothers who have developed lactation failure or Mother's Milk Insufficiency (MMI). WHO recommends re-lactation through Supplemental Suckling technique. The drip and drop method helps to sustain the infant's interest of suckling at the breast [8].

- (i) The possibility of induced lactation shall be explored according to the situation *e.g.* adoption, surrogacy. It helps to create mother-infant bonding apart from security and comfort for the baby. The technique involves motivating the surrogate mother, having a willing and vigorously sucking infant, and an adequate support group. Prolactin and oxytocin, the hormones which govern lactation, are pituitary and not ovarian. Hence, stimulation of nipple and areola and repeated suckling by the baby are important. Lact-aid as nursing trainer is also useful [9]. A course of prolactin enhancing drugs such as Metoclopramide or Domperidone is initiated [10]. Non-puerperal lactation in surrogate mothers has been successfully demonstrated among Indian mothers [11].
- (j) Nursing in Public (NIP): Mothers should feel comfortable to nurse in public. All efforts should be taken to remove hurdles impeding breastfeeding in public places, special areas / rooms shall be identified/ constructed or established in places like Bus stands, Railway stations, Air ports etc.
- (k) Adoption of latest WHO Growth Charts is recommended for monitoring growth [12].

Complementary Feeding [13]

- (a) Appropriately thick homogenous complementary foods home-made from locally available foods should be introduced at six completed months while continuing breastfeeding *ad libitum* [14,15]. During this period, breastfeeding should be actively supported and the term 'weaning' should be avoided [16]. Complementary feeding should be projected as the bridge that the mother has to make between liquid to solid transition and to empower the baby to 'family pot feeding'.
- (b) To address the issue of a small stomach size, each meal must be made energy dense by adding sugar / jaggery and ghee/butter/oil. To provide more calories from smaller volumes, food must be thick in consistency—thick enough to stay on the spoon without running off, when the spoon is tilted [17]
- (c) Foods can be enriched by making a fermented porridge, use of germinated or sprouted flour and toasting of grains before grinding [16, 18].

- (d) Adequate total energy intake can also be ensured by addition of one to two nutritious snacks between the three main meals. Snacks are in addition and should not replace meals. They should not to be confused with foods such as sweets, chips or other processed foods [18].
- (e) Parents must identify the staple homemade food (as these are fresh, clean and cheap), comprising of cereal-pulse mixture in the ratio 2:1, and make them caloric and nutrient rich with locally available products.
- (f) Research has time and again proved the disadvantages of bottle feeding. Hence bottle feeding shall be discouraged at all levels.
- (g) The food should be a balanced diet consisting of various (as diverse as possible) food groups / components in different combinations. Easily available, cost-effective seasonal uncooked fruits, green and other dark colored vegetables, milk and milk products, pulses/ legumes, animal foods, oil/ butter, sugar/ jaggery may be added in the staples gradually [16,17].
- (h) Hygienic practices are essential for food safety during all the involved steps *viz.* preparation, storage and feeding. Hand washing with soap and water at critical times- including before eating or preparing food and after using the toilet [17,18].
- (i) Practice responsive feeding. Self-feeding should be encouraged despite spillage. Each child should be fed under supervision in a separate plate to develop an individual identity. Forced feeding, threatening and punishment interfere with development of good/ proper feeding habits [17]. Along with feeding, mother and care givers should provide psycho-social stimulation to the child through ordinary age-appropriate play and communication activities to ensure early childhood development.
- (j) Consistency of foods should be appropriate to the developmental readiness of the child in munching, chewing and swallowing. 'Neophobia' is the rule in them and any item may have to be offered several times for acceptance. Avoid foods which can pose choking hazard. Introduce lumpy or granular foods and most tastes by about 9 to 10 months. The details of food including; texture, frequency and average amount are summarized in **Table II**.

HIV AND INFANT FEEDING

The following guidelines of HIV and infant feeding are based on recommendations given by WHO and NACO in 2013:

- (a) The best time to counsel HIV-positive mothers is during antenatal period. They should be informed about infant feeding options, *viz.* exclusive breastfeeding or exclusive replacement feeding that is recommended by the national authority so to improve HIV free survival of exposed infants. Exclusive breastfeeding is superior to exclusive replacement feeding in developing countries because it maximizes the chances of survival of the infant [20].
- (b) Prevention of parent-to-child transmission (PPTCT) interventions should begin early in the pregnancy for all HIV infected pregnant women [21].
- (c) In resource-limited settings, HIV-infected mothers of HIV-uninfected infants often have difficulty in deciding about feeding options, breastfeeding risks transmission of HIV to their infants and formula feeding is not always a feasible option due to high cost, lack of clean water or stigma associated with not breastfeeding. Recent clinical studies have proven that the risk of transmission through breastfeeding is minimal provided mother and the infant receive appropriate antiretroviral prophylaxis.
- (d) WHO 2013 guidelines recommend two options:
- Providing lifelong antiretroviral treatment (ART) (one simplified triple regimen) to all pregnant and breastfeeding women regardless of CD4 count or clinical stage.
 - To provide ART to pregnant and breastfeeding women with HIV during the period of risk of mother-to-child HIV transmission and then continuing lifelong ART only for those women who are eligible according to their own health [20,22].
- (e) The global target is “elimination of new HIV infections among children” by 2015 and government of India is actively working towards it. Following the new guidelines from WHO (June 2013), National AIDS control organization (NACO) has decided to provide life-long ART (triple drug regimen) to all pregnant and breastfeeding women living with HIV. With this step, all pregnant women living with HIV should receive a triple drug ART regimen regardless of CD4 count or WHO clinical stage. This would also help in increasing the coverage for those needing treatment to keep them alive and for their own health, avoiding stopping and starting drugs with repeat pregnancies, provide early protection against mother-to-child transmission in future pregnancies and avoiding drug resistance. These recommendations can potentially reduce the risk of mother-to-child-transmission to less than 5% in breastfeeding populations. These guidelines have been implemented across India from January, 2014 [21].
- (f) Providing an optimized, fixed-dose combination once daily first-line ARV regimen of Tenofovir (TDF), Lamivudine (3TC) (or Emtricitabine [FTC]) and Efavirenz (EFZ) to all pregnant and breastfeeding women HIV has important programmatic and clinical benefits. Where access to CD4 testing is limited, WHO prefers that all pregnant and breastfeeding HIV-infected women, regardless of CD4 cell count, should continue antiretroviral treatment for life (sometimes called “Option B+”) [22-24].
- (g) Exclusive breastfeeding is the recommended infant feeding choice in the first 6 months, irrespective of the fact that mother is on ART early or infant is provided with anti-retroviral prophylaxis for 6 weeks.
- (h) No Mixed Feeding is to be done during the first 6 months.
- (i) Mothers known to be infected with HIV and whose infants are HIV uninfected or of unknown HIV status should exclusively breastfeed their infants. Complementary foods should be appropriately introduced thereafter, and breastfeeding should be continued for the first 12 months of life. Initiate maternal ART and give Nevirapine (NVP) for 6 weeks. The treatment options, if mother is known to be infected with HIV, are presented in **Table I**.
- (j) Mothers known to be infected with HIV and whose infants are HIV infected should exclusively breastfeed for the first 6 months of life, complementary foods should be appropriately introduced thereafter, and breastfeeding should be continued for 24 months of life. Initiate maternal ART and give NVP for 6 weeks.
- (k) Mothers who are diagnosed with HIV during labor or in the immediate postpartum period and are planning to breastfeed, such mothers should be initiated on ART and their infants should receive extended NVP prophylaxis for 12 weeks.
- (l) Mothers who are diagnosed with HIV during labor or in the immediate postpartum period and are planning exclusive replacement feeding (ERF) should be referred for evaluation and treatment of HIV. Infants of these mothers should be given NVP prophylaxis for 6 weeks.
- (m) Mothers who are HIV-infected and insist on not breastfeeding and opt for exclusive replacement feeding (ERF) should be explained that they are doing so at their own risk and this is contrary to the WHO/NACO’s guidelines of giving exclusive breastfeeds. When taking choice for exclusive replacement

TABLE I AMOUNTS OF FOODS TO OFFER [18,19]

Age	Texture	Frequency	Average amount each meal
6-8 mo	Start with thick porridge, well mashed foods	2-3 meals per day plus frequent BF	Start with 2-3 table spoonfuls
9-11 mo	Finely chopped or mashed foods, and foods that baby can pick up	3-4 meals plus on appetite offer 1-2 snacks	½ of a 250 mL cup/ bowl
12-23 mo	Family foods, chopped or mashed if necessary	3-4 meals plus BF. Depending on appetite offer 1-2 snacks	¾ to one 250 mL cup/bowl

If baby is not breastfed, give in addition: 1-2 cups of milk per day, and 1-2 extra meals per day.

The amounts of food included in the table are recommended when the energy density of the meals is about 0.8 to 1.0 Kcal/g. If the energy density of the meals is about 0.6 Kcal/g, recommend to increase the energy density of the meal (adding special foods) or increase the amount of food per meal. Find out what the energy content of complementary foods is in your setting and adapt the table accordingly.

feeding, they should fulfill the AFASS (A – Affordable F – Feasible A – Acceptable S – Sustainable S – Safe) criteria [21]. Explain the advantages of ERF as (i) No risk of HIV transmission; and (ii) ERF milk can be given by other persons. Also enumerate the disadvantages like (i) Animal milk is not a complete food for baby; (ii) Formula milk may be complete but is expensive; (iii) Baby has more risk of infections-diarrhea, respiratory and ear infection and malnutrition; and (iv) Careful and hygienic preparation required each time to sterilize feeding cups, using boiled water and fresh preparation of all feeds 12-15 times in the first 4 months of baby's life.

- (n) Mother who is receiving ART but interrupts ART regimen while breastfeeding (due to toxicity, stock-outs or refusal to continue etc); determine an alternative ART regimen or solution for mother and counsel her regarding continuing ART without interruption. NVP should be given to infant until 6 weeks after maternal ART is restarted or until 1 week after breastfeeding has ended.
- (o) The preferred feeding option for HIV-exposed infants <6 months of age is exclusive breastfeeding. However, in certain situations like maternal death and severe maternal illness breastfeeding may not be possible, in such cases ERF should be done only when AFASS criteria is fulfilled.
- (p) Breastfeeding should stop once a nutritionally

adequate and safe diet without breast milk can be provided. Breastfeeding should not be stopped abruptly. Gradually wean from breast milk over a one month period.

- (q) Mothers known to be HIV infected may consider expressing and heat-treating breast milk as an interim feeding strategy in special circumstances such as:
- When the infant is born with low birth weight or is otherwise ill in the neonatal period and unable to breastfeed; or
 - When the mother is unwell and temporarily unable to breastfeed or has a tempo-rary breast health problem such as mastitis; or if antiretroviral drugs are temporarily not available.
- (r) Nevirapine should be given as prophylaxis for six weeks daily to infants of HIV-infected mothers who are receiving ART and are breastfeeding. Those infants who are receiving replacement feeding should be given four to six weeks of infant prophylaxis with daily NVP (or twice-daily Zidovudine [AZT]). Infant prophylaxis should begin at birth or when HIV exposure is recognized postpartum [20, 21]. The recommended dose of Nevirapine is shown in **Table III**.
- (s) Infants who are identified as HIV-exposed after birth (through infant testing [at 6 weeks or after] or maternal HIV antibody testing) and are breastfeeding, in such cases maternal ART should be initiated and the infant should receive NVP prophylaxis. Perform infant DNA/PCR test if child is 6 weeks or older, immediately initiate 6 weeks or longer of NVP and strongly consider extending this to 12 weeks. The treatment options and baby's HIV status is discussed in **Table IV**.
- (t) Infant identified as HIV-exposed after birth (through infant or maternal HIV antibody testing) and are not breastfeeding. Refer mother to ART Centre after CD4 tests and baseline test and treatment should be started. No NVP needs to be given to infants. Do HIV DNA/PCR test in accordance with national recommendations on early infant diagnosis and initiate treatment if the infant is infected.
- (u) For breastfeeding infants who have been diagnosed HIV positive, pediatric ART should be started and breastfeeding to be continued ideally until the baby is 2 years old [25].
- (v) For breastfeeding infants, diagnosed HIV-negative, breastfeeding should be continued until 12 months of age ensuring the mother is on ART as soon as possible. The Early Infant diagnosis (EID) is repeated for the 3rd

TABLE II OPTIONS OR TREATMENT PLANS IF MOTHER IS KNOWN TO BE HIV EXPOSED

	<i>Mother Exposed to HIV</i>					
	<i>Infant Uninfected/ Status unknown</i>	<i>Mother diagnosed during labor / post-partum</i>	<i>Infant diagnosed after birth</i>	<i>Infant diagnosed after birth</i>	<i>Mother's ART regimen getting interrupted</i>	
EBF	Six months	Six months	Not Breastfeeding	Six months	Not Breastfeeding	EBF Six months
Complementary feeding	Start at six months	Start at six months	Start at six months	Start at six months	Start at six months	Start at six months
Maternal ART	Yes	Yes	Yes	Yes	Yes	Counseling for regular ART. Consider alternative ART
Infant Prophylaxis	NVP six weeks	NVP twelve weeks	NVP six weeks	NVP twelve weeks	No NVP	NVP six weeks after restarting Maternal ART
Continue breastfeeding	Yes, For 1 year in EID negative infants	Yes, For 1 year in EID negative infants and 2 years for EID positive infants	No BF	Yes, For 2 years for EID positive infants	No BF	Yes, For 1 year in EID negative infants and 2 years for EID positive infants
Infant Evaluation and Treatment	EID: Do DBS (Dried Blood Spot) for DNA/PCR at 6 weeks for all HIV exposed babies; if positive do WBS (Whole blood specimen). If WBS positive, start Paediatric ART irrespective of CD4% for babies less than 2 years. Final confirmation of the HIV status in the baby should be done at 18 months by doing all 3 Rapid Tests irrespective of earlier EID status					

EBF: exclusive breastfeeding; NVP: Nevirapine; ART: Antiretroviral treatment; EID: early infant diagnosis.

time (when previous 2 EIDs have been negative) after 6 weeks of stopping breast feeds. If rapid test is positive, then do Dried Blood Spot (DBS). If DBS is positive, then do, Whole Blood Sample (WBS) test. If WBS test is positive, Pediatric ART should be initiated. However, confirmation test for HIV has to be done at 18 months using 3 rapid antibody tests for all babies irrespective of the earlier EID status or the fact that Pediatric ART has already been initiated.

Concept and Need of Human Milk Banks in India

(a) Human Milk Banks should be promoted considering the large number of babies needing pasteurized donor

TABLE III DOSES OF NEVIRAPINE

<i>Infant age</i>	<i>Dose</i>
Birth to 6 wks (Birth weight 2000-2499 g)	10 mg once daily
Birth to 6 wks (Birth weight ≥2500 g)	15 mg once daily
>6 wks to 6 mo	20 mg once daily
>6 mo to 9 mo	30 mg once daily
>9 mo to end of breastfeeding	40 mg once daily

human milk when mother's own milk is not available. In 1980 the WHO and UNICEF jointly declared: "Where it is not possible for the biological mother to breastfeed, the first alternative, if available, should be the use of human milk from other sources" [26].

(b) Cost effectiveness of using banked human milk in neonatal intensive care units has been documented in Western countries, largely due to reduction in rates of necrotizing enterocolitis [27,28], reduction in severe infections [29-31] and decreased length of hospital stay [32]. Given the high incidence of sepsis and a large burden of premature births, this intervention has a potential to result in substantial saving for the nation in terms of finances and human capital.

(c) Presence of human milk bank is also a factor promoting breastfeeding.

- Use of pasturized donor human milk in NICU is associated with increased breastfeeding rate at discharge from the hospital for very low birth weight (VLBW) infants [33].
- The novel approach of promoting human milk banks

TABLE IV OPTIONS FOR HIV EXPOSED BABIES AFTER BIRTH

	<i>HIV Negative</i>	<i>HIV Positive</i>
Breastfeeding	Exclusive breastfeeding for six months Continue breastfeeding for one year. The stoppage of breastfeeding after one year should be gradual and not abruptly	Exclusive breastfeeding for six months Continue breastfeeding for two years The stoppage of breastfeeding should be gradual and not abruptly
Complementary feeding	At six months	At six months
NVP Prophylaxis	NVP for 6 weeks extending to twelve weeks if breastfeeding	NVP for 6 weeks if breastfeeding No NVP if not breastfeeding
ART	ART to mother only and NVP prophylaxis to the baby	ART to mother and start Pediatric ART also

ART: antiretroviral treatment; NVP: Nevirapine.

through mode of collecting breast milk donations in form of camps can be a strong means of promoting breastfeeding in the society.

- (d) It is recommended that there should be a human milk bank in each sick newborn care units (SNCU) and neonatal ICU initially preferably in government set-up, and subsequently in private and corporate sectors.

5. Feeding in Other Specific Situations

- (a) *Feeding during sickness* is important for recovery and for prevention of under nutrition. Even sick babies mostly continue to breastfeed and the infant can be encouraged to eat small quantities of nutrient rich food more frequently and by offering foods that the child likes to eat.

(b) *Infant feeding in maternal illnesses*

- (i) Painful and/ or infective breast conditions like breast abscess, mastitis and psychiatric illnesses which pose a danger to the child's life *e.g.* postpartum psychosis, schizophrenia may need a temporary cessation of breastfeeding.
- (ii) Chronic infections like tuberculosis, leprosy, or medical conditions like hypothyroidism need treatment of the primary condition and do not warrant discontinuation of breastfeeding.
- (iii) Breastfeeding is contraindicated when the mother is receiving certain drugs like anti-neoplastic agents, immuno-suppressants, antithyroid drugs like thiouracil, amphetamines, gold salts, *etc.* Breastfeeding may be avoided or continued with caution when the mother is receiving following drugs—atropine, reserpine, psychotropic drugs. Other drugs like antibiotics, anesthetics, antiepileptics, antihistamines, digoxin, diuretics, prednisone, propranolol *etc.* are considered safe for breastfeeding [34].

(c) *Infant feeding in various conditions related to the infant*

- (i) Breastfeeding on demand should be promoted in normal active babies. However, in difficult situations like VLBW, sick, or depressed babies, alternative methods of feeding can be used based on neuro-developmental status. These include feeding expressed breastmilk through intra-gastric tube or with the use of cup and spoon. For very sick babies, expert guidance should be sought. If the baby is transferred to SNCU/NICU, mothers should be supported to start breastmilk expression within initial hours, continue at least 3 hourly during the day time and at least once at night.
- (ii) Ensure early transfer of mothers with the baby in SNCU/NICU and that has arrangement to accommodate the mothers in the immediate vicinity and that mothers are permitted to visit, hold and touch the baby at will if the baby's condition permits.
- (iii) Ensure that majority of babies are on exclusive breastfeeding or on breastfeeding plus expressed breastmilk at discharge from the SNCU/NICU.
- (iv) Gastro-Esophageal Reflux Disease (GERD) is often treated conservatively when it is mild, through thickening of the complementary foods, frequent small feeds and upright positioning for 30 minutes after feeds.
- (v) Primary Lactose Intolerance is congenital and may require long term lactose restriction. Secondary Lactose Intolerance is usually transient and resolves after the underlying condition has remitted. Most of the cases of diarrhea do not require stoppage of breastfeeding.
- (vi) Various Inborn Errors of Metabolism warrant restriction of specific offending agent and certain dietary modifications *e.g.* in galactosemia, dietary

lactose and galactose should be avoided. This is probably the only absolute contraindication to breastfeeding.

- (vii) During emergencies, priority health and nutrition support should be arranged for pregnant and lactating mothers. Donated or subsidized supplies of breastmilk substitutes (e.g. infant formula) should be avoided, must never be included in a general ration distribution, and must be distributed, if at all, only according to well-defined strict criteria. Donations of bottles and teats should be refused, and their use actively avoided.

Micronutrient in infant Feeding

- (a) Breastmilk has usually adequate amount of iron, calcium, phosphorus and vitamin A for a normal newborn. Preterm infants who are breastfed should receive 2 mg of supplemental iron per kg of body weight each day after one month of age [35]. Preterm and low birth weight infants may also need calcium and multivitamin supplements.
- (b) Breastfed infants can maintain normal vitamin D status in the early post-natal period only when their mother's vitamin D status is normal and /or the infants are exposed to adequate amount of sunlight. Corroborative evidences of high prevalence of vitamin D deficiency in Indian infants suggest that they should be given routine vitamin D supplementation of 400 IU daily, especially in those with higher risk of getting less of vitamin D. Even those on formula feed needs supplementation unless they consume more than 1000 mL of formula daily [36,37]. VLBW infants should be given vitamin D supplements at a dose ranging from 400 to 1000 IU per day until six months of age [38].
- (c) Food items that supply micronutrients should be encouraged like GYOR (green, yellow, orange and red) vegetables and fruits, Use of food fortification like iron-fortified foods, iodized salt, vitamin A enriched food etc. are to be encouraged.

Junk Food and Infant Feeding

- (a) Consumers are often bewildered by nutritive and health claims, while children are highly influenced by advertisements enticing them to buy a product which may be unhealthy or in fact detrimental [39].
- (b) The parents should understand that though the companies are promoting many foods as "Magic food" in reality such products do not exist.
- (c) Avoid Junk and Commercial food which are high in SSSAP (sugar, salt, fat, additives/preservatives and pesticides). Avoid giving ready-made, processed

commercial food from the market.

- (d) Junk foods are one of the important reasons for the increasing incidence of childhood obesity. There is need to restrict consumption of junk food especially in and around educational institutions and remote areas of the country.
- (e) The provisions of The Food Safety and Standards Act 2006 should be implemented and monitored regularly [40].

Maternal Nutrition

- (i) In India, 22% babies born each year have low birth weight (LBW), which has been linked to maternal under-nutrition and anemia among other causes. Half of adolescents (boys and girls) have below normal body mass index (BMI) and almost 56% of adolescent girls aged 15-19 years have anemia.
- (ii) Optimal nutrition of adolescent girls, pre-pregnant women and pregnant mothers is critical to intrauterine growth, fetal well-being and to prevent malnutrition in the postnatal period [41].
- (iii) There is growing evidence that maternal nutritional status can alter the epigenetic state (stable alterations of gene expressions through DNA methylation and histone modifications) of the fetal genome. This may provide a molecular mechanism for the impact of maternal nutrition on both fetal programming and genomic imprinting. Just as the damaging effects of malnutrition, pass from one generation to the next, so can benefits of good nutrition [42].
- (iv) The maternal nutrition should also be balanced, fresh and preferably home-made and there should not be any unscientific restrictions.

OPERATIONAL GUIDELINES

Recommendations for Governmental and International Agencies

- (a) Global legislation, binding to all states and private organizations including labor benefits, 6 months maternity and appropriate paternity leave is strongly recommended. Maternity leave, day care facilities and paid breastfeeding breaks should be available to all employed women in all sectors including those engaged in atypical forms of dependent work.
- (b) Breastfeeding is a human right both for the mother as well as baby. With due weightage and respect to National Family Planning Policies and Program, the benefits should be given to mother and the child (even after 2 issues) born out of unplanned pregnancy (Family planning method failure) or as a result of

accidental death of previous child.

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- (c) Scientific and unbiased IYCF practices must be promoted through regular advertisements in state, public or private owned audiovisual and print media. Public should be made aware that artificial, junk or packaged food can be injurious to the health of the children.
 - (d) Necessary and adequate arrangements should be made for propaganda and implementation of the provisions of Infant Milk Substitute (IMS) Act which prevents advertising or promoting infant milk substitutes, feeding bottles and teats. In addition, further strengthening of the existing Act must be tried.
 - (e) Adopt a National policy to avoid conflict of interests in the areas of child health and nutrition. Popularization of “unscientific health claims” by commercial ads through media needs to be restricted. UN agencies shall help in promoting the home made/ available food (especially through various media) with the help of their brand ambassadors/endorsers.
 - (f) There should be a board, commission or committee to monitor, evaluate and censor food product before it is released in the market. Such board or committees shall have a sensitized pediatrician and/ or other equivalent health care expert/ nutrition expert. A pediatrician shall also be involved in the commission/ committee/ board entrusted with drafting of any code, bill, laws, rules/ regulations related to food, nutrition, drinks, food products, etc.
 - (g) Human milk banks shall be promoted, established and maintained at least in District/ Civil hospitals and Medical colleges.

Role of Non-Government Organizations

- (a) Various programs or community projects should be initiated to provide home care and counseling on IYCF through formation of mother support groups especially by women’s organizations.
- (b) The voluntary organizations should understand and advocate important recommendations at all levels. Various like-minded organizations should work preferably on the same platform and co-ordinate with each-other in promoting the IYCF practices.

Recommendations for Media

The media can have a vital role to play in strengthening the knowledge chain, serving as a link between the stakeholders and the community as community is exposed to images, articles and ideas in innumerable ways from television, newspaper headlines, magazine covers, movies,

websites, video games and road side signboards. Media has a great power but it is high time that it recognizes its responsibility towards child nutrition:

- (a) Media has to take concrete steps to avoid directly or indirectly glamorizing/promoting bottle feeding, artificial, commercial and ready to use food. Instead, the risks involved in artificial feeding and other suboptimal feeding practices should be advertised prominently in bold prints.
- (b) Media support is even more important on certain occasions, celebrations, and social mobilization activities such as World Breastfeeding Week and Nutrition Weeks.
- (c) The companies and media should have self-regulatory pledge for responsible advertising/ marketing. They should help in promoting healthier dietary choices and a more active life style for Indian children.
- (d) Sportsman, celebrities should not promote various nutritional products; only evidence-based scientifically sound and authentic information shall be provided.

Recommendations for Training

- (a) It is recommended that all the community health workers, PPTCT counselors, and other personnel caring for children including doctors should undergo three days skill training on IYCF (including IMS Act). In situations where three day training is not feasible, some impact can be made with short duration sensitization programs of half day or one day.
- (b) IYCF should also be included in the curriculum of undergraduate and postgraduate medical education, nursing education, home science, child nutrition courses *etc.*
- (c) State, National and International level workshops on IYCN should be organized at regular intervals for capacity building of IYCN Resource Personnel.
- (d) In addition to above measures dedicated skilled breastfeeding (IYCN) support is critical to achieve IYCF goals. Hence there is a need to launch an ambitious program to create a spectrum of such resources [Lactation consultants, IYCF counselors and Peer counselors).

Baby Friendly Concepts

Baby Friendly Hospitals Initiatives (BFHI) is recommended to be spread to all especially medical college hospitals departments. The revised and expanded version of BFHI has been implemented by UNICEF and WHO in 2009 [43]. BFHI was implemented partially in some states of India in 1992 but over the years it has not been reinforced

Box 2 KEY MESSAGES RELATED TO INFANT AND YOUNG CHILD NUTRITION

- Initiation of breastfeeding as early as possible after birth, preferably within one hour.
- Exclusive breastfeeding in the first six months of life and no other foods or fluids.
- Appropriate and adequate complementary feeding after completion of six months. Complementary foods should not be confused with supplementary foods.
- Hand washing with soap and water at critical times – including before eating or preparing food and after using the toilet.
- Avoid junk food. Home food should be preferred over artificial, commercial, tinned or packaged food.
- Promote and establish Human Milk Banks.
- Full immunization and Vitamin-A supplementation with deworming.
- Effective home based care and treatment of children suffering from severe acute malnutrition.
- Adequate nutrition and anemia control for adolescent girls, pregnant and lactating mothers.
- Effective implementation and monitoring of IMS Act and other laws related to child nutrition.

or reevaluated. Strengthening of this initiative in the community would lead to better child survival.

Box 2 Summarises key recommendations related to infant and young child feeding.

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ANNEXURE

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