Global summary of the HIV & AIDS epidemic, 2005

<table>
<thead>
<tr>
<th>Number of people living with HIV/AIDS</th>
<th>Total</th>
<th>Adults</th>
<th>38.6 million (33.4 – 46.0 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Women</td>
<td>36.3 million (31.4 – 43.4 million)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children under 15</td>
<td>17.3 million (14.8-20.6 million)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.3 million (1.7 – 3.5 million)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>People newly infected with HIV in 2005</th>
<th>Total</th>
<th>Adults</th>
<th>4.1 million (3.4-6.2 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Children under 15</td>
<td>3.6 million (3.0-5.4 million)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>540 000 (420 000 - 670 000)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AIDS deaths in 2005</th>
<th>Total</th>
<th>Adults</th>
<th>2.8 million (2.4-3.3 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Children under 15</td>
<td>2.4 million (2.0-2.8 million)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>380 000 (290 000 - 500 000)</td>
</tr>
</tbody>
</table>

The ranges around the estimates in this table define the boundaries within which the actual numbers lie, based on the best available information.

Adults and children estimated to be living with HIV, 2005

Total: 38.6 (33.4 – 46.0) million

From: UNAIDS/WHO. AIDS Epidemic Update, 2005
### Regional HIV statistics for women, 2005

<table>
<thead>
<tr>
<th>Region</th>
<th># of women (15-49) living with HIV</th>
<th>% of HIV+ adults who are women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>13.5 million</td>
<td>57%</td>
</tr>
<tr>
<td>N. Africa &amp; Middle East</td>
<td>220,000</td>
<td>47%</td>
</tr>
<tr>
<td>S. &amp; S.A. Asia</td>
<td>1.9 million</td>
<td>26%</td>
</tr>
<tr>
<td>East Asia</td>
<td>160,000</td>
<td>18%</td>
</tr>
<tr>
<td>Oceania</td>
<td>39,000</td>
<td>55%</td>
</tr>
<tr>
<td>Latin America</td>
<td>580,000</td>
<td>32%</td>
</tr>
<tr>
<td>Caribbean</td>
<td>140,000</td>
<td>50%</td>
</tr>
<tr>
<td>Eastern Europe &amp; Central Asia</td>
<td>440,000</td>
<td>28%</td>
</tr>
<tr>
<td>W. &amp; C. Europe</td>
<td>190,000</td>
<td>27%</td>
</tr>
<tr>
<td>North America</td>
<td>300,000</td>
<td>25%</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>17.5 million</td>
<td>46%</td>
</tr>
</tbody>
</table>

Ten steps to successful breastfeeding

Step 1. Have a written breastfeeding policy that is routinely communicated to all health care staff.

Breastfeeding policy

Why have a policy?

- Requires a course of action and provides guidance
- Helps establish consistent care for mothers and babies
- Provides a standard that can be evaluated
Breastfeeding policy

What should it cover?

- At a minimum, it should include:
  - The 10 steps to successful breastfeeding
  - An institutional ban on acceptance of free or low cost supplies of breast-milk substitutes, bottles, and teats and its distribution to mothers
  - A framework for assisting HIV positive mothers to make informed infant feeding decisions that meet their individual circumstances and then support for this decision
- Other points can be added
Breastfeeding policy

How should it be presented?

It should be:

- Written in the most common languages understood by patients and staff
- Available to all staff caring for mothers and babies
- Posted or displayed in areas where mothers and babies are cared for
Step 1: Improved exclusive breast-milk feeds while in the birth hospital after implementing the Baby-friendly Hospital Hospital Initiative

Ten steps to successful breastfeeding

Step 2. Train all health-care staff in skills necessary to implement this policy.

Areas of knowledge

- Advantages of breastfeeding
- Risks of artificial feeding
- Mechanisms of lactation and suckling
- How to help mothers initiate and sustain breastfeeding
- How to assess a breastfeed
- How to resolve breastfeeding difficulties
- Hospital breastfeeding policies and practices
- Focus on changing negative attitudes which set up barriers
Additional topics for BFHI training in the context of HIV

Train all staff in:

- Basic facts on HIV and on Prevention of Mother-to-Child Transmission (PMTCT)
- Voluntary testing and counselling (VCT) for HIV
- Locally appropriate replacement feeding options
- How to counsel HIV+ women on risks and benefits of various feeding options and how to make informed choices
- How to teach mothers to prepare and give feeds
- How to maintain privacy and confidentiality
- How to minimize the “spill over” effect (leading mothers who are HIV - or of unknown status to choose replacement feeding when breastfeeding has less risk)

Transparency 4.2.3
Step 2: Effect of breastfeeding training for hospital staff on exclusive breastfeeding rates at hospital discharge

Step 2: Breastfeeding counselling increases exclusive breastfeeding

All differences between intervention and control groups are significant at p<0.001.
From: CAH/WHO based on studies by Albernaz, Jayathilaka and Haider.
Which health professionals other than perinatal staff influence breastfeeding success?
Ten steps to successful breastfeeding

Step 3. Inform all pregnant women about the benefits of breastfeeding.

Antenatal education should include:

- Benefits of breastfeeding
- Early initiation
- Importance of rooming-in (if new concept)
- Importance of feeding on demand
- Importance of exclusive breastfeeding
- How to assure enough breastmilk
- Risks of artificial feeding and use of bottles and pacifiers (soothers, teats, nipples, etc.)

- Basic facts on HIV
- Prevention of mother-to-child transmission of HIV (PMTCT)
- Voluntary testing and counselling (VCT) for HIV and infant feeding counselling for HIV+ women

- Antenatal education should not include group education on formula preparation

Transparency 4.3.2
Step 3: The influence of antenatal care on infant feeding behaviour

Step 3: Meta-analysis of studies of antenatal education and its effects on breastfeeding

Increase in selected behaviours

- **Initiation** (8 studies): 23%
- **Short-term BF** (10 studies): 39%
- **Long-term BF** (7 studies): 4%

Why test for HIV in pregnancy?

- If HIV negative
  - Can be counseled on prevention and risk reduction behaviors
  - Can be counseled on exclusive breastfeeding

- If HIV positive
  - Can learn ways to reduce risk of MTCT in pregnancy, at delivery and during infant feeding
  - Can better manage illnesses and strive for “positive” living
  - Can plan for safer infant feeding method and follow-up for baby
  - Can decide about termination (if a legal option) and future fertility
  - Can decide to share her status with partner /family for support
Definition of replacement feeding

- The process, in the context of HIV/AIDS, of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs.

- During the first six months this should be with a suitable breast-milk substitute - commercial formula, or home-prepared formula with micronutrient supplements.

- After six months it should preferably be with a suitable breast-milk substitute, and complementary foods made from appropriately prepared and nutrient-enriched family foods, given three times a day. If suitable breast-milk substitutes are not available, appropriately prepared family foods should be further enriched and given five times a day.
Risk of mother-to-child transmission of HIV

Assumptions:
- 20% prevalence of HIV infection among mothers
- 20% transmission rate during pregnancy/delivery
- 15% transmission rate during breastfeeding


Slide 4.3.7 (HIV)
WHO recommendations on infant feeding for HIV+ women

When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV-infected mothers is recommended.

Otherwise, exclusive breastfeeding is recommended during the first months of life.

To minimize HIV transmission risk, breastfeeding should be discontinued as soon as feasible, taking into account local circumstances, the individual woman’s situation and the risks of replacement feeding (including infections other than HIV and malnutrition).


Slide 4.3.8 (HIV)
HIV & infant feeding recommendations

If the mother’s HIV status is unknown:

- Encourage her to obtain HIV testing and counselling
- Promote optimal feeding practices (exclusive BF for 6 months, introduction of appropriate complementary foods at about 6 months and continued BF to 24 months and beyond)
- Counsel the mother and her partner on how to avoid exposure to HIV

If the mother’s HIV status is negative:
- Promote optimal feeding practices (see above)
- Counsel her and her partner on how to avoid exposure to HIV

If the mother’s HIV status is positive:
- Provide access to anti-retroviral drugs to prevent MTCT and refer her for care and treatment for her own health
- Provide counselling on the risks and benefits of various infant feeding options, including the acceptability, feasibility, affordability, sustainability and safety (AFASS) of the various options.
- Assist her to choose the most appropriate option
- Provide follow-up counselling to support the mother on the feeding option she chooses

Ibid.
Ten steps to successful breastfeeding

Step 4. Help mothers initiate breastfeeding within a half-hour of birth.

New interpretation of Step 4 in the revised BFHI Global Criteria (2006):

“Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour and encourage mothers to recognize when their babies are ready to breastfeed, offering help if needed.”
Early initiation of breastfeeding for the normal newborn

Why?

- Increases duration of breastfeeding
- Allows skin-to-skin contact for warmth and colonization of baby with maternal organisms
- Provides colostrum as the baby’s first immunization
- Takes advantage of the first hour of alertness
- Babies learn to suckle more effectively
- Improved developmental outcomes
Early initiation of breastfeeding for the normal newborn

*How?*

- Keep mother and baby together
- Place baby on mother’s chest
- Let baby start suckling when ready
- Do not hurry or interrupt the process
- Delay non-urgent medical routines for at least one hour
Impact on breastfeeding duration of early infant-mother contact

Temperatures after birth in infants kept either skin-to-skin with mother or in cot

## Protein composition of human colostrum and mature breast milk (per litre)

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Measure</th>
<th>Colostrum (1-5 days)</th>
<th>Mature Milk (&gt;30 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total protein</td>
<td>G</td>
<td>23</td>
<td>9-10.5</td>
</tr>
<tr>
<td>Casein</td>
<td>mg</td>
<td>1400</td>
<td>1870</td>
</tr>
<tr>
<td>α-Lactalbumin</td>
<td>mg</td>
<td>2180</td>
<td>1610</td>
</tr>
<tr>
<td>Lactoferrin</td>
<td>mg</td>
<td>3300</td>
<td>1670</td>
</tr>
<tr>
<td>IgA</td>
<td>mg</td>
<td>3640</td>
<td>1420</td>
</tr>
</tbody>
</table>

Effect of delivery room practices on early breastfeeding

Ten steps to successful breastfeeding

Step 5. Show mothers how to breastfeed and how to maintain lactation, even if they should be separated from their infants.

“Contrary to popular belief, attaching the baby on the breast is not an ability with which a mother is born…]; rather it is a learned skill which she must acquire by observation and experience.”

Effect of proper attachment on duration of breastfeeding


Transparency 4.5.3
Step 5: Effect of health provider encouragement of breastfeeding in the hospital on breastfeeding initiation rates

Breastfeeding initiation rates p<0.001

- Encouraged to breastfeed: 74.6%
- Not encouraged to breastfeed: 43.2%

Effect of the maternity ward system on the lactation success of low-income urban Mexican women

NUR, nursery, n=17
RI, rooming-in, n=15
RIBFG, rooming-in with breastfeeding guidance, n=22
NUR significantly different from RI (p<0.05) and RIBFG (p<0.05)


Transparency 4.5.5
Supply and demand

- Milk removal stimulates milk production.

- The amount of breast milk removed at each feed determines the rate of milk production in the next few hours.

- Milk removal must be continued during separation to maintain supply.
Ten steps to successful breastfeeding

Step 6. Give newborn infants no food or drink other than breast milk unless medically indicated.

Long-term effects of a change in maternity ward feeding routines

- Intervention group = early, frequent, and unsupplemented breastfeeding in maternity ward.
- Control group = sucrose water and formula supplements given.

% exclusively breastfed

0% 20% 40% 60% 80% 100%

1.5 3 6 9

Months after birth

Transparency 4.6.2

The perfect match: quantity of colostrum per feed and the newborn stomach capacity

Impact of routine formula supplementation

Decreased frequency or effectiveness of suckling

Decreased amount of milk removed from breasts

Delayed milk production or reduced milk supply

Some infants have difficulty attaching to breast if formula given by bottle
Determinants of lactation performance across time in an urban population from Mexico

- Milk came in earlier in the hospital with rooming-in where formula was not allowed
- Milk came in later in the hospital with nursery (p<0.05)
- Breastfeeding was positively associated with early milk arrival and inversely associated with early introduction of supplementary bottles, maternal employment, maternal body mass index, and infant age.

### Summary of studies on the water requirements of exclusively breastfed infants

<table>
<thead>
<tr>
<th>Country</th>
<th>Temperature °C</th>
<th>Relative Humidity %</th>
<th>Urine osmolarity (mOsm/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>20-39</td>
<td>60-80</td>
<td>105-199</td>
</tr>
<tr>
<td>India</td>
<td>27-42</td>
<td>10-60</td>
<td>66-1234</td>
</tr>
<tr>
<td>Jamaica</td>
<td>24-28</td>
<td>62-90</td>
<td>103-468</td>
</tr>
<tr>
<td>Peru</td>
<td>24-30</td>
<td>45-96</td>
<td>30-544</td>
</tr>
</tbody>
</table>

Note: Normal range for urine osmolarity is from 50 to 1400 mOsm/kg.

Medically indicated

There are rare exceptions during which the infant may require other fluids or food in addition to, or in place of, breast milk. The feeding programme of these babies should be determined by qualified health professionals on an individual basis.
Acceptable medical reasons for supplementation or replacement

Infant conditions:

- Infants who cannot be BF but can receive BM include those who are very weak, have sucking difficulties or oral abnormalities or are separated from their mothers.
- Infants who may need other nutrition in addition to BM include very low birth weight or preterm infants, infants at risk of hypoglycaemia, or those who are dehydrated or malnourished, when BM alone is not enough.
- Infants with galactosemia should not receive BM or the usual BMS. They will need a galactose free formula.
- Infants with phenylketonuria may be BF and receive some phenylalanine free formula.
Maternal conditions:

- BF should stop during therapy if a mother is taking anti-metabolites, radioactive iodine, or some anti-thyroid medications.
- Some medications may cause drowsiness or other side effects in infants and should be substituted during BF.
- BF remains the feeding choice for the majority of infants even with tobacco, alcohol and drug use. If the mother is an intravenous drug user BF is not indicated.
- Avoidance of all BF by HIV+ mothers is recommended when replacement feeding is acceptable, feasible, affordable, sustainable and safe. Otherwise EBF is recommended during the first months, with BF discontinued when conditions are met. Mixed feeding is not recommended.
Maternal conditions (continued):

- If a mother is weak, she may be assisted to position her baby so she can BF.
- BF is not recommended when a mother has a breast abscess, but BM should be expressed and BF resumed once the breast is drained and antibiotics have commenced. BF can continue on the unaffected breast.
- Mothers with herpes lesions on their breasts should refrain from BF until active lesions have been resolved.
- BF is not encouraged for mothers with Human T-cell leukaemia virus, if safe and feasible options are available.
- BF can be continued when mothers have hepatitis B, TB and mastitis, with appropriate treatments undertaken.
Risk factors for HIV transmission during breastfeeding*

Mother
- Immune/health status
- Plasma viral load
- Breast milk virus
- Breast inflammation (mastitis, abscess, bleeding nipples)
- New HIV infection

Infant
- Age (first month)
- Breastfeeding duration
- Non-exclusive BF
- Lesions in mouth, intestine
- Pre-maturity, low birth weight
- Genetic factors – host/virus

* Also referred to as postnatal transmission of HIV (PNT)

Risk factor: Maternal blood viral load

Risk of HIV transmission per day of BF in Nairobi, Kenya (%)

From: Richardson et al, Breast-milk Infectivity in Human Immunodeficiency Virus Type 1 – Infected Mothers, JID, 2003 187:736-740 (adapted by Ellen Piwoz)

Transparency 4.6.12 (HIV)
Feeding pattern & risk of HIV transmission

HIV & Infant feeding study in Zimbabwe

Elements of safer breastfeeding:

- Exclusive breastfeeding
- Proper positioning & attachment to the breast to minimize breast pathology
- Seeking medical care quickly for breast problems
- Practicing safe sex

Exposure to safer breastfeeding intervention was associated with reduced postnatal transmission (PNT) by mothers who did not know their HIV status.

Cumulative PNT HIV transmission (%) according to reported exposure to SBF program:

- 13.3% for 0 contacts
- 8.8% for 1 contact
- 6.2% for 2 contacts
- 0% for 3 contacts

$N=365; \ p=0.04$ in test for trend. Each additional intervention contact was associated with a 38% reduction in PNT after adjusting for maternal CD4.

Piwoz et al. in preparation, 2005.
Ten steps to successful breastfeeding

Step 7. Practice rooming-in — allow mothers and infants to remain together — 24 hours a day.

Rooming-in

A hospital arrangement where a mother/baby pair stay in the same room day and night, allowing unlimited contact between mother and infant.
Rooming-in

Why?

- Reduces costs
- Requires minimal equipment
- Requires no additional personnel
- Reduces infection
- Helps establish and maintain breastfeeding
- Facilitates the bonding process
Morbidity of newborn babies at Sanglah Hospital before and after rooming-in

Effect of rooming-in on frequency of breastfeeding per 24 hours


Transparency 4.7.5
Ten steps to successful breastfeeding

Step 8. Encourage breastfeeding on demand.

Breastfeeding on demand:
Breastfeeding whenever the baby or mother wants, with no restrictions on the length or frequency of feeds.
On demand, unrestricted breastfeeding

Why?

- Earlier passage of meconium
- Lower maximal weight loss
- Breast-milk flow established sooner
- Larger volume of milk intake on day 3
- Less incidence of jaundice

Breastfeeding frequency during the first 24 hours after birth and incidence of hyperbilirubinaemia (jaundice) on day 6

Mean feeding frequency during the first 3 days of life and serum bilirubin

Ten steps to successful breastfeeding

Step 9. Give no artificial teats or pacifiers (also called dummies and soothers) to breastfeeding infants.

Alternatives to artificial teats

- cup
- spoon
- dropper
- Syringe
Cup-feeding a baby
Proportion of infants who were breastfed up to 6 months of age according to frequency of pacifier use at 1 month

Non-users vs part-time users: P<<0.001
Non-users vs. full-time users: P<0.001

Ten steps to successful breastfeeding

Step 10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

The key to best breastfeeding practices is continued day-to-day support for the breastfeeding mother within her home and community.”

Support can include:

- Early postnatal or clinic checkup
- Home visits
- Telephone calls
- Community services
  - Outpatient breastfeeding clinics
  - Peer counselling programmes
- Mother support groups
  - Help set up new groups
  - Establish working relationships with those already in existence
- Family support system
Types of breastfeeding mothers’ support groups

- Traditional
  - extended family
  - culturally defined *doulas*
  - village women

- Modern, non-traditional
  - Self-initiated
    - by mothers
    - by concerned health professionals
  - Government planned through:
    - networks of national development groups, clubs, etc.
    - health services -- especially primary health care (PHC) and trained traditional birth attendants (TBAs)

From: Jelliffe DB, Jelliffe EFP. The role of the support group in promoting breastfeeding in developing countries. *J Trop Pediatr*, 1983, 29:244.
Step 10: Effect of trained peer counsellors on the duration of exclusive breastfeeding

Home visits improve exclusive breastfeeding

Combined Steps: The impact of baby-friendly practices: The Promotion of Breastfeeding Intervention Trial (PROBIT)

- In a randomized trial in Belarus 17,000 mother-infant pairs, with mothers intending to breastfeed, were followed for 12 months.

- In 16 control hospitals & associated polyclinics that provide care following discharge, staff were asked to continue their usual practices.

- In 15 experimental hospitals & associated polyclinics staff received baby-friendly training & support.


Transparency 4.11.1
## Differences following the intervention

<table>
<thead>
<tr>
<th>Control hospitals:</th>
<th>Experimental hospitals:</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Routine separation of mothers &amp; babies at birth</td>
<td>■ Mothers &amp; babies together from birth</td>
</tr>
<tr>
<td>■ Routine tight swaddling</td>
<td>■ No swaddling—skin-to-skin contact encouraged</td>
</tr>
<tr>
<td>■ Routine nursery-based care</td>
<td>■ Rooming-in on a 24-hr basis</td>
</tr>
<tr>
<td>■ Incorrect latching &amp; positioning techniques</td>
<td>■ Correct latching &amp; positioning techniques</td>
</tr>
<tr>
<td>■ Routine supplementation with water &amp; milk by bottle</td>
<td>■ No supplementation</td>
</tr>
<tr>
<td>■ Scheduled feedings every 3 hrs</td>
<td>■ Breastfeeding on demand</td>
</tr>
<tr>
<td>■ Routine use of pacifiers</td>
<td>■ No use of pacifiers</td>
</tr>
<tr>
<td>■ No BF support after discharge</td>
<td>■ BF support in polyclinics</td>
</tr>
</tbody>
</table>

Effect of baby-friendly changes on breastfeeding at 3 & 6 months

Adapted from: Kramer et al. (2001)
Impact of baby-friendly changes on selected health conditions

- Gastro-intestinal tract infections: 9.1% in Experimental Group vs 3.3% in Control Group
- Atopic eczema: 13.2% in Experimental Group vs 6.3% in Control Group

Note: Differences between experimental and control groups for various respiratory tract infections were small and statistically non-significant.

Adapted from: Kramer et al. (2001)
Combined Steps:
The influence of Baby-friendly hospitals on breastfeeding duration in Switzerland

- Data was analyzed for 2861 infants aged 0 to 11 months in 145 health facilities.
- Breastfeeding data was compared with both the progress towards Baby-friendly status of each hospital and the degree to which designated hospitals were successfully maintaining the Baby-friendly standards.

Proportion of babies exclusively breastfed for the first five months of life -- Switzerland

Median duration of exclusive breastfeeding for babies born in Baby-friendly hospitals -- Switzerland

- If hospital showed good compliance with 10 Steps: 12 weeks
- If hospital showed poor compliance with 10 Steps: 6 weeks