

Infant feeding and HIV in resource-constrained countries

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More questions than answers

- Formula versus breast
- Pasteurised vs non-pasteurised breast milk
- Early versus late weaning
- Micronutrient supplementation vs better diet

Advantages of breast milk

- Natural
- Available
- No need for preparation
- Free of contaminating bacteria
- Psychological benefits
- Less eczema, feeding intolerance, cows milk allergy

Some protective factors in breast milk

- Antibodies against bacteria & viruses
- Lactoferrin binds Fe - growth factor for pathogenic *E. coli*
- Transfer of tuberculin responsiveness

Kangaroo care low birth weight infants

- Skin to skin care
- Breast feeding
 - NEC
 - sepsis

Pretoria pasteurization method: Jeffreys et al

- Boil pot of water
- Remove from heat source
- Insert glass jar containing 50 - 60ml EBM
- Leave for 20 mins
- Remove & allow to cool

Infections transmitted through breast milk

- Hepatitis B
- CMV
- HTLV1
- HIV

Breastfeeding & infant mortality due to infectious diseases in less developed countries: a pooled analysis

- WHO collaborative study
- Lancet 2000; 355: 451-455
- 6 studies - The Gambia, Pakistan, Brazil, Ghana, Senegal, Philippines
- 1223 deaths < 2y

Protection by breast feeding in 1st year of life: Odds ratios

- Non-African data only
- African studies included breast feeding into 2nd year of life
- Odds Ratio: mortality breast vs formula•

Odds Ratio A/B versus C/D

	Death	Survival
Breast	A	B
Formula	C	D

1st year protection by breast milk significant, declines with age OR (confidence intervals)

- < 2m: 5.8 (3.4 - 9.8)
- 2 - 3m:4.1 (2.7 - 6.4)
- 4 - 5m:2.6 (1.6 - 3.9)
- 6 - 8m:1.8 (1.2 - 2.8)
- > 8m: 1.4 (0.8 - 2.6)

1st 6m: protection against diarrhoea > ARI

- Diarrhoea 6.1 (4.1 - 9)
- ARI 2.4 (1.6 - 3.5)

ARI - acute respiratory infection

Mortality in 2nd year of life

- OR varied between 1.6 & 2.1
- Protection highest where maternal education lowest

WHO

- 1987 & 1992: women should breast-feed irrespective of HIV where infectious diseases & malnutrition major causes of infant mortality
- 1996: UNAIDS recommended informed choice for all HIV+ mothers

Transmission of HIV through breast feeding

- Acute maternal infection - 29% (16 - 42%)
- Established maternal infection 14% (7 - 22%)

Effect of Breast- and formula-feeding on transmission of HIV-1: a randomized clinical trial

- Nduati R et al
- JAMA 2000; 283: 1167-1174

Does the risk of HIV-1 transmission exceed the risk of formula-associated diarrhoea?

- In developing countries

Nairobi, Kenya: 401 mother-infant pairs (no ARVs)

- Breast - 212
- Formula - 213
- Outcome - number of HIV infections & deaths in 1st 2 years of life

Results

- Compliance 96% for breast & 70% for formula

- Median duration breast-feeding 17 m

HIV infection at 24 months

- Breast - 36%
- Formula - 20.5%
- 75% breast transmission occurred by 6 m
- Continued risk of HIV infection with ongoing breast-feeding

Mortality at 24m similar

- Breast - 24.4% (18.2 - 30.7)
- Formula - 20% (14.4 - 25.6)
- IMR Nairobi 4.2% in 1998

Rate of HIV-1-free survival lower for breast than formula

- 80 in breast-fed & 58 in formula-fed either dead or HIV-infected at 24m
- 58% vs 70%
- P = 0.02
- May be better measure of cumulative risk as breast-fed are completely weaned & formula-fed at lower risk of diarrhoea

Problems

- Compliance in formula group
- Exclusive breast-feeding or mixed feeding?

Exclusive breast-feeding

- Method of feeding & transmission of HIV-1 from mothers to children by 15 m: prospective cohort from Durban
- Coutsoudis A, Pillay K, Kuhn L et al
- AIDS 2001; 15: 379 – 387

Method

- Women self-selected to breast or formula
- Breast-feeders encouraged to exclusively breast-feeding for 3 to 6 months

Results: 3 feeding groups

- Breast - 118
- Formula - 157
- Mixed - 276

Problem

- Vitamin A intervention study

Interesting observations

- Formula fed - mothers higher education & more employment; breast-fed had lowest level education & employment
- Piped water - highest for formula & lowest for breast

Effect of breast-feeding on mortality among HIV-1-infected women: a randomized trial

- Nduati R et al
- Lancet 2001; 357: 1651 – 55

Association between maternal & subsequent infant death even after controlling for infant HIV

- OR 7.9 (3.3 - 18.6)
- P < 0.001

Question

How do nutritional & anthropometric indices vary in different countries?

No difference in maternal mortality – Durban mean follow-up: 11month AIDS 2001

- Maternal mortality
 - Exclusive breast-feeding: 2 of 410 (0.48%)
 - Exclusive formula-feeding: 3 of 156 (1.9%)

Feeding policy

- Formula where sufficient support
- Exclusive breast feeding where appropriate
- Rapid weaning at 6m?