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**Expanding Access to Pediatric HIV/AIDS  
Care and Treatment in Ethiopia:  
*Challenges and Prospects***



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**Infant Feeding in the  
Context of HIV/AIDS**

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Addis Ababa, Ethiopia  
25-27 January, 2006

# Key Concepts / Learning Points

- Benefits and risks of infant feeding options in the context of HIV/AIDS
- Understanding exclusive breast feeding (EBF)
- ART and breast feeding
- Programmatic approaches to infant feeding:  
How can HIV/AIDS care and treatment programs help mothers to maximize benefits and minimize risks for themselves and their infants?

# Benefits of Breast Feeding (BF)

## Benefits for infants:

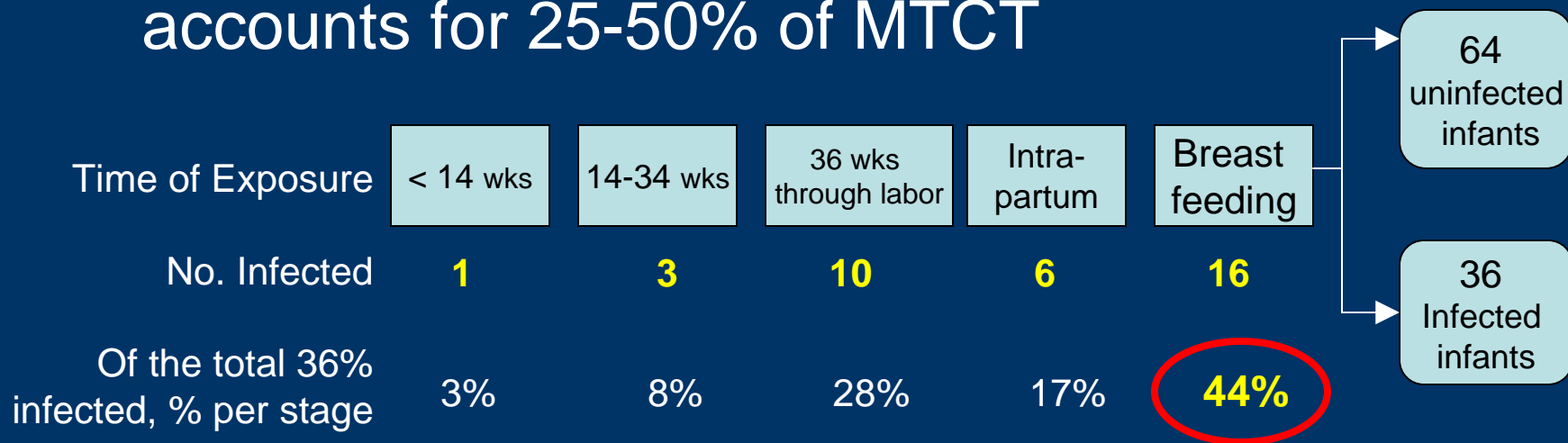
- Immunologic protection
  - Gastrointestinal infections
  - Lower respiratory tract infections
  - Meningitis and other infections
  - **In the absence of maternal HIV infection, BF provides a clear mortality benefit for infants**
- Nutritional support
  - BF provides complete nutrition in early months of life
  - Especially important in times of food insecurity
- Psychosocial support
  - Promotes bonding with mother

## Benefits for mothers:

- Promotes bonding with infant
- Societal norm in many areas
- Facilitates child spacing
- Does not require clean water or preparation
- Inexpensive

# Risks of Breast Feeding

- In the context of maternal HIV infection, the dominant risk of breast feeding is that of **maternal-to-child-transmission (MTCT)**
- Post-natal transmission of HIV via breast feeding accounts for 25-50% of MTCT



Adapted from Kourtis et al JAMA 2001;285: 709-712 and Ndurti et al, JAMA 2000;283:1167-1174

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# Risks of Breast Feeding

- Postnatal transmission rate is estimated at ~ 0.9 case per 100 women/month of breast feeding
  - 10 cases/100 women breast feeding for 1 year
  - Likely highest risk during 1<sup>st</sup> weeks, then constant risk throughout duration of breast feeding
- The probability of HIV infection per liter of breast milk ingested by an infant is similar in magnitude to the probability of heterosexual transmission of HIV per one episode of unprotected sex in adults.

# Breast Feeding and MTCT Risk

- Breast feeding transmission is associated with:
  - High maternal plasma HIV viral load
  - Low maternal CD4 count
  - Duration of breast feeding
  - Mastitis
  - Acute maternal HIV infection

# Breast Milk Infectivity by Maternal Disease and Immune Status: Kenya

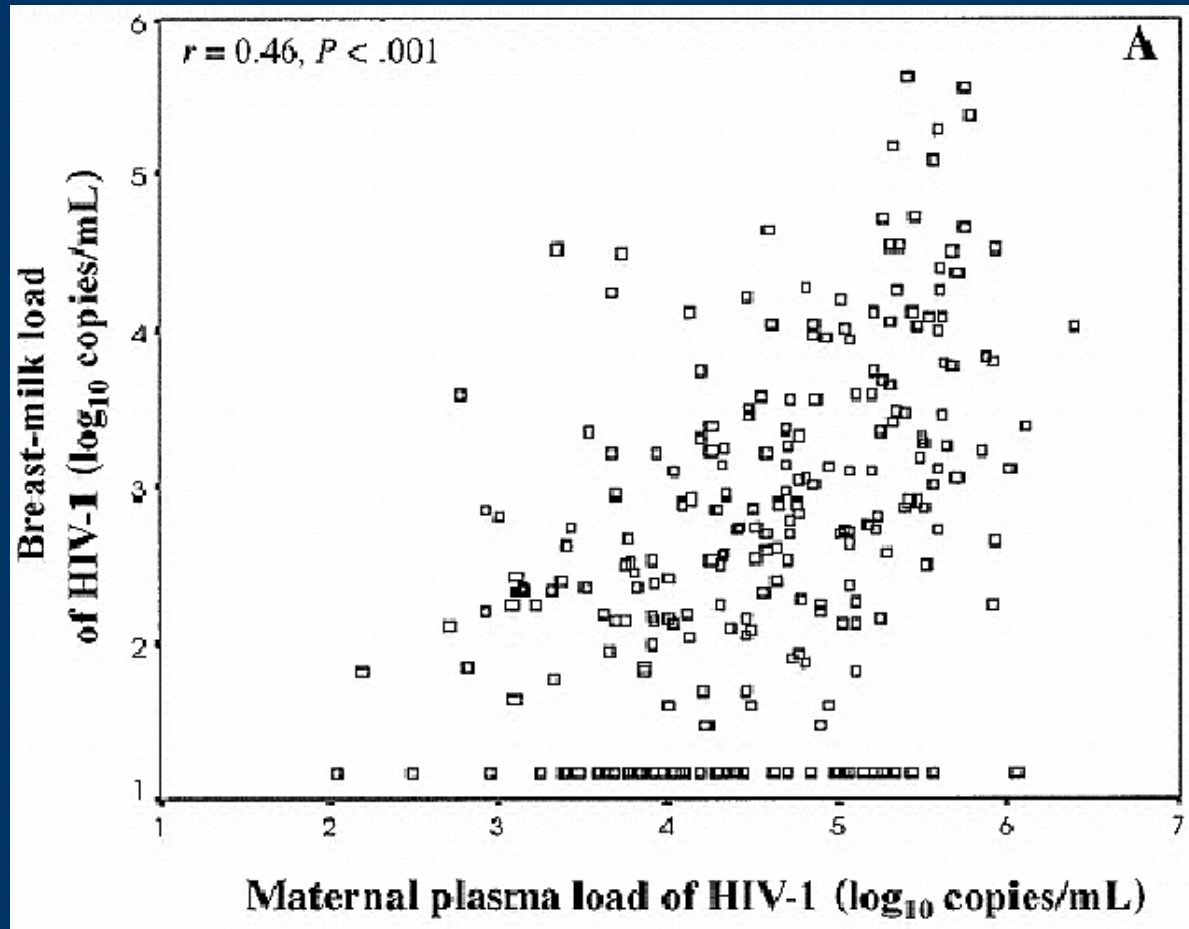
Breast milk infectivity				
Measure of breast milk infectivity	Maternal plasma viral load		Maternal CD4 cell count	
	$\geq 43K$ copies/ml	$< 43K$	$< 400 \times 10^6/L$	$\geq 400$
Per liter ingested	0.00104	0.00025	0.00095	0.00036
Per day of exposure	0.00044	0.00011	0.00043	0.00015

Richardson et al. JID 2003

Breast milk infectivity is highest when maternal viral load is high and/or maternal CD4 count is low

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# Correlation between viral load in breast-milk and maternal blood



Rousseau et al., JID 2003;187:741

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## *Replacement feedings*

*Commercial infant formula*

*Home modified animal milk*

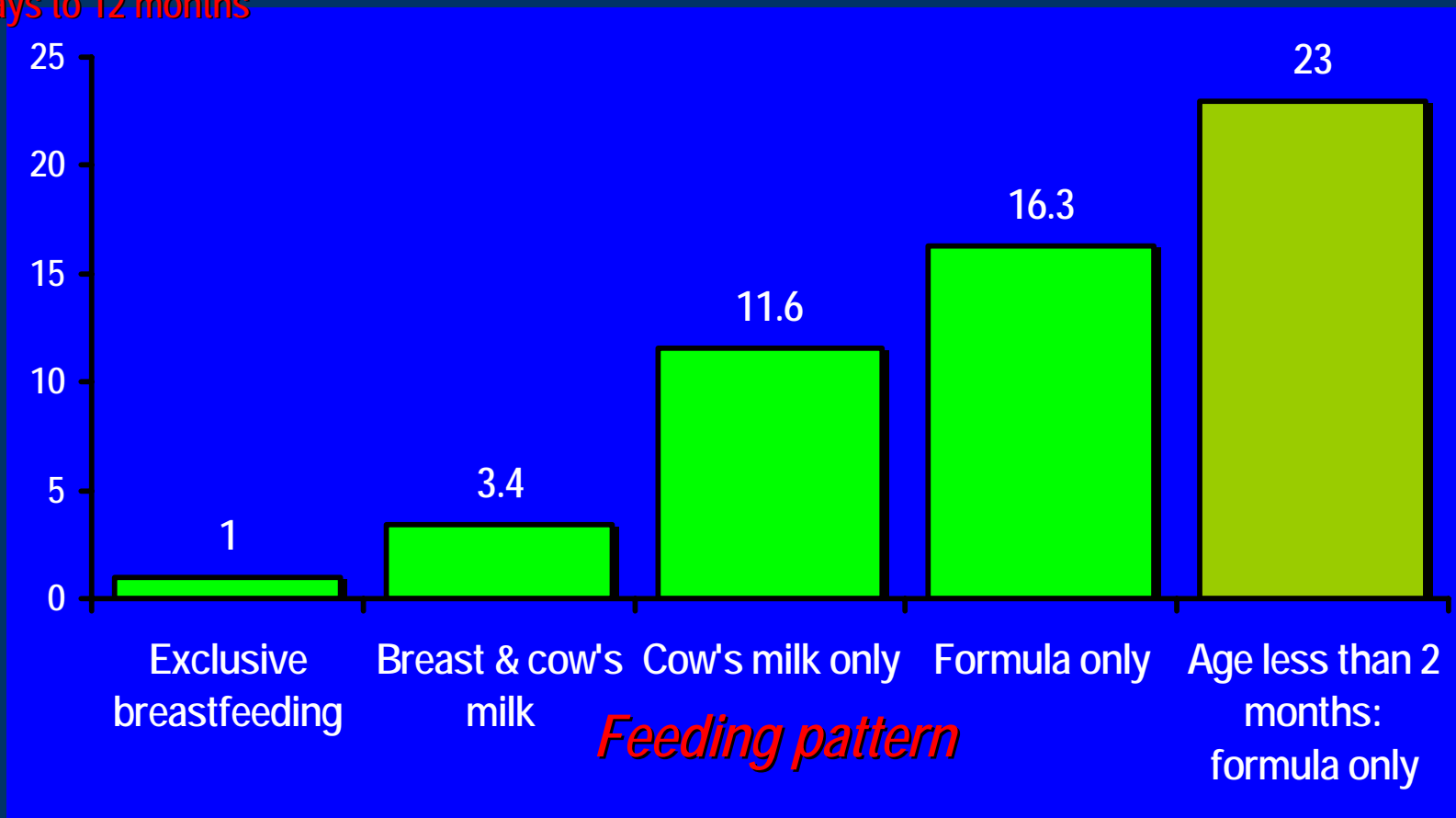
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## *High risks are associated with replacement feeding*

- Unsafe preparation of replacement feeding causes **diarrhea**
  - Safe preparation difficult even when clean water available
  - Severe diarrhea may cause dehydration and death
- Higher risk in lower socio-economic households

# Risk of death by diarrhea, by type of infant feeding in infants 8 days to 12 months

Risk of death in infants  
8 days to 12 months



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Victoria et al, Lancet 1987, Brazil data

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# Exclusive Breast Feeding

- In contexts where replacement feeding is acceptable, feasible affordable safe and sustainable, this is clearly the best way to prevent post-natal HIV transmission
- In resource-limited settings, however, replacement feeding is not a feasible option for most women
- Interest in early exclusive breast feeding stems from data showing lower MTCT rates in infants fed breast milk only compared to mixed feeding

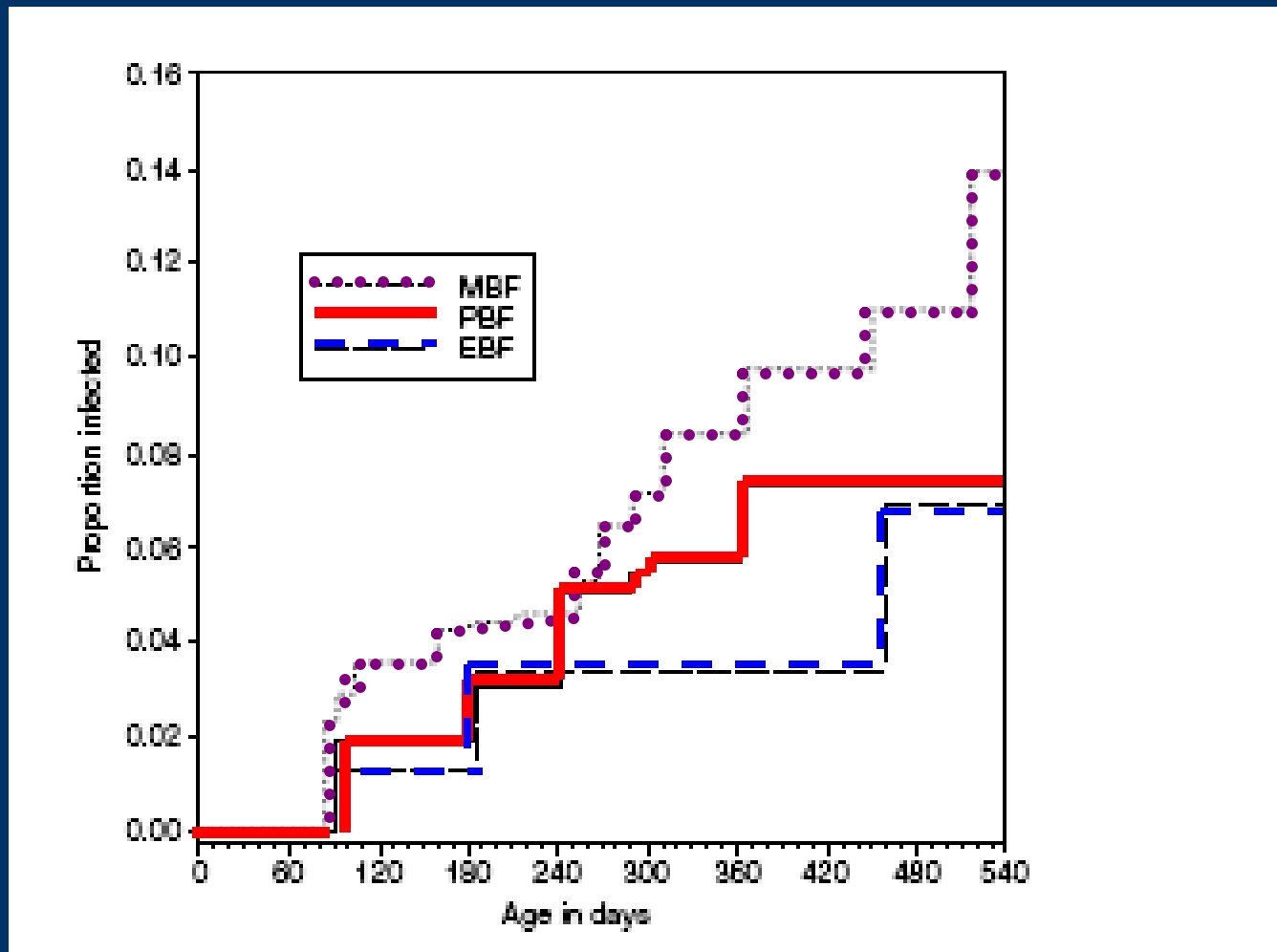
# Defining Exclusive Breast Feeding

- Exclusive breast feeding (**EBF**) = consuming only breast milk and no other liquids, milks, or solid foods except vitamins or prescribed medications
  - No water, tea, juice, cow's milk, infant formula, traditional/herbal remedies, solid or semisolid food
- Predominant breast feeding (**PBF**) = consuming mostly breast milk, but also non-milk liquids
- Mixed breast feeding (**MBF**) = consuming breast milk and either non-human milks (formula, cow's milk) and/or solid or semisolid foods

# Benefits of Exclusive Breast Feeding

- Data from several (although not all) studies suggest that exclusive breast feeding is associated with a lower risk of MTCT compared with mixed feeding
- The ZVITAMBO study = a 2005 substudy of a vitamin A trial in Zimbabwe looking at postnatal transmission
  - 2060 infants who tested HIV negative by PCR at 6 weeks, followed for 18 months

# MTCT Rates by Early Breast Feeding Practices: ZVITAMBO 2005



Ilf et al., AIDS 2005

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# ZVITAMBO Study: Key Findings

- Introduction of solid foods or animal milks < 3 months of age was associated with 4x greater risk of post-natal transmission (PNT) at 6 months of life
- EBF during the first 3 months of life was associated with a 61% reduction in PNT at 18 month compared with MBF
- Maternal health status was significantly associated with risk of postnatal transmission
  - Women with CD4 count < 200 were 5X more likely to transmit postnatally compared with women with CD4 count >500
- Most transmission occurred after 6 months of age (68%)

## *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).”

# Barriers to Exclusive Breast Feeding

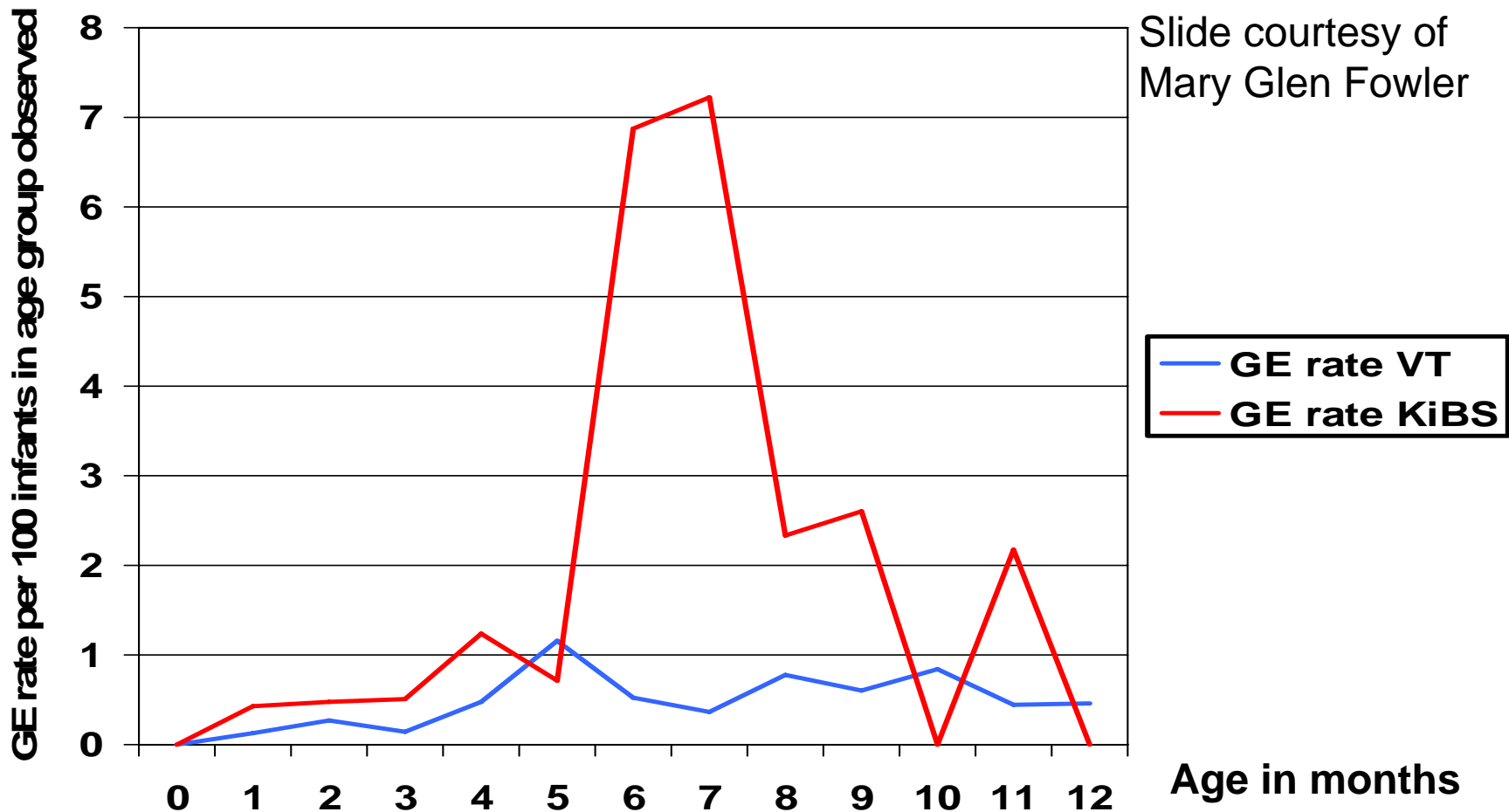
- Cultural norms regarding infant feeding practices
- Precludes prolonged separation of mother and child
  - Can delay return to work
- Others...

# Risks of Early Cessation

- Recommendations for exclusive breast feeding include early cessation at 6 months
- In addition to creating practical difficulties, early cessation may carry some risks, particularly in settings of food insecurity
  - Increased risk of growth faltering
  - Increased risk of gastroenteritis

## Rates of GE Hospitalizations by infant age, comparing KiBS and Vertical Transmission (VT) Study in Kisumu Kenya

Slide courtesy of Mary Glen Fowler



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# ART and breast feeding

- Pregnant women with HIV should be rapidly assessed to see if they are eligible for HAART
  - Clinical staging and CD4 count should be routine elements of care for pregnant HIV-infected women
  - Most cohort studies in sub Saharan Africa show that 10-20% of pregnant women with HIV meet immunologic treatment criteria (e.g, have CD4  $\leq$  200)
  - Triple therapy (ART) has a clear mortality benefit for women, and is much more effective at preventing MTCT than single-drug or dual-drug pMTCT regimens

# ART during breast feeding

- Breast feeding is not a contraindication to maternal ART use
- If pregnant or postpartum women meet treatment criteria, ART should be started without delay

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# Programmatic Lessons

- There is increasing consensus that exclusive breast feeding reduces MTCT
- There is also increasing recognition that EBF is neither easy to implement nor entirely risk-free

How can programs help mothers to ensure that infants receive adequate caloric intake to support growth and development while minimizing risk of MTCT?

# Programmatic Lessons

1. Provide HAART for women with advanced disease during lactation
2. Help mothers make informed choice about infant feeding options (individual approach) based on **AFASS**

# Programmatic Lessons

## 3. Make breastfeeding safer

Counsel mothers on optimal breast -feeding practices

- Support exclusive breastfeeding for the first 6 months of life (Advantage to as short a time as 3 months of EBF)
- proper positioning and attachment
- Emptying one breast at a time

# Programmatic Lessons

- Maintain breast health
- Counsel mother to practice safe sex during lactation
- Counsel on adequate maternal nutrition

# Programmatic Lessons

3. Early cessation of BF when safe and feasible
  - Early cessation of BF can be associated with high risk of morbidity and possibly mortality
  - Timing of cessation must be determined in the context of available food and clean water for feeding