Update on HIV and Breastfeeding in the Most Vulnerable Populations: Myths and Controversies

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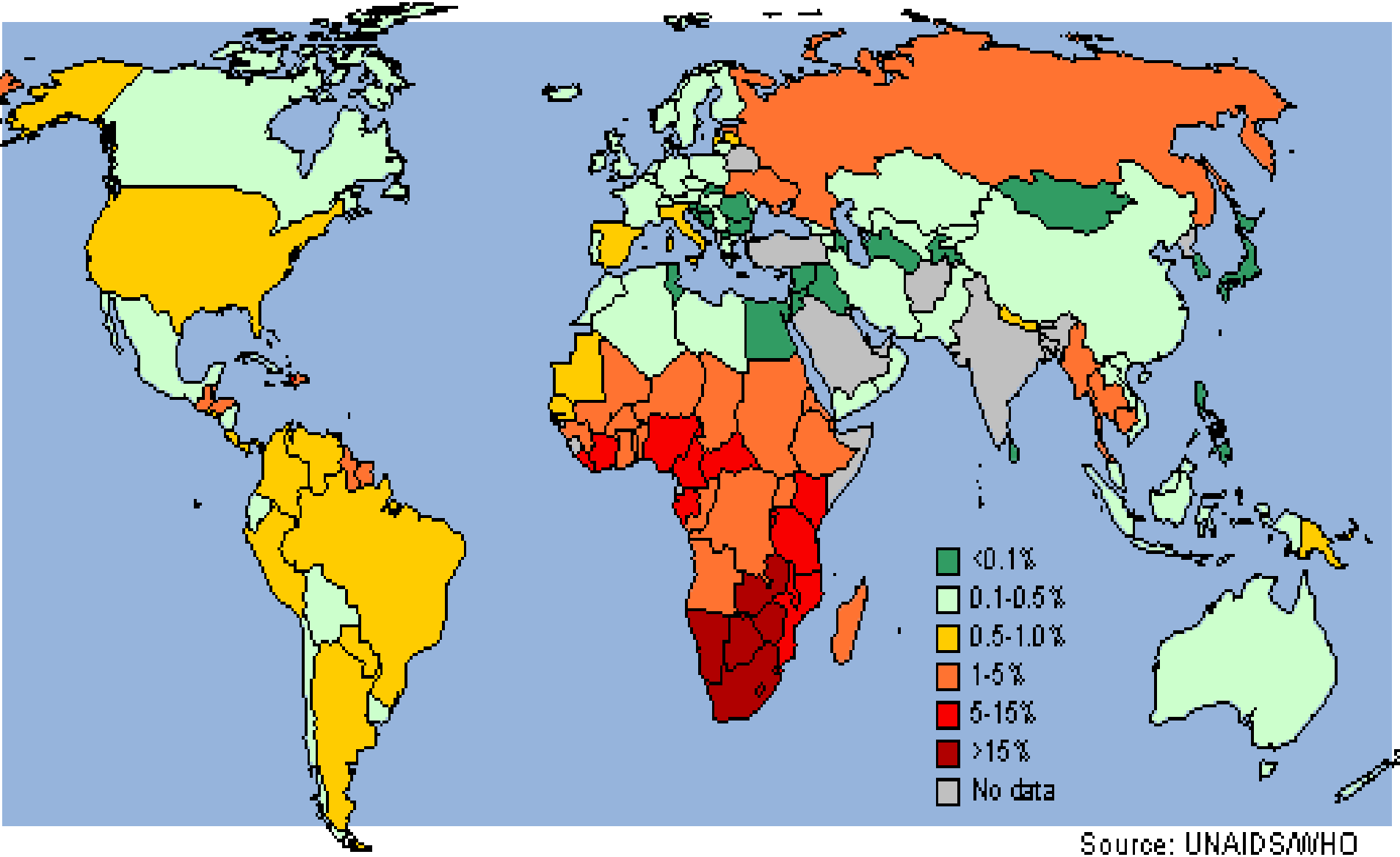
HIV prevalence in adults end 2003



Source: UNAIDS/WHO

This map does not reflect a position by UNICEF, UNAIDS or WHO on the legal status of any country or territory or the delineation of any frontiers.

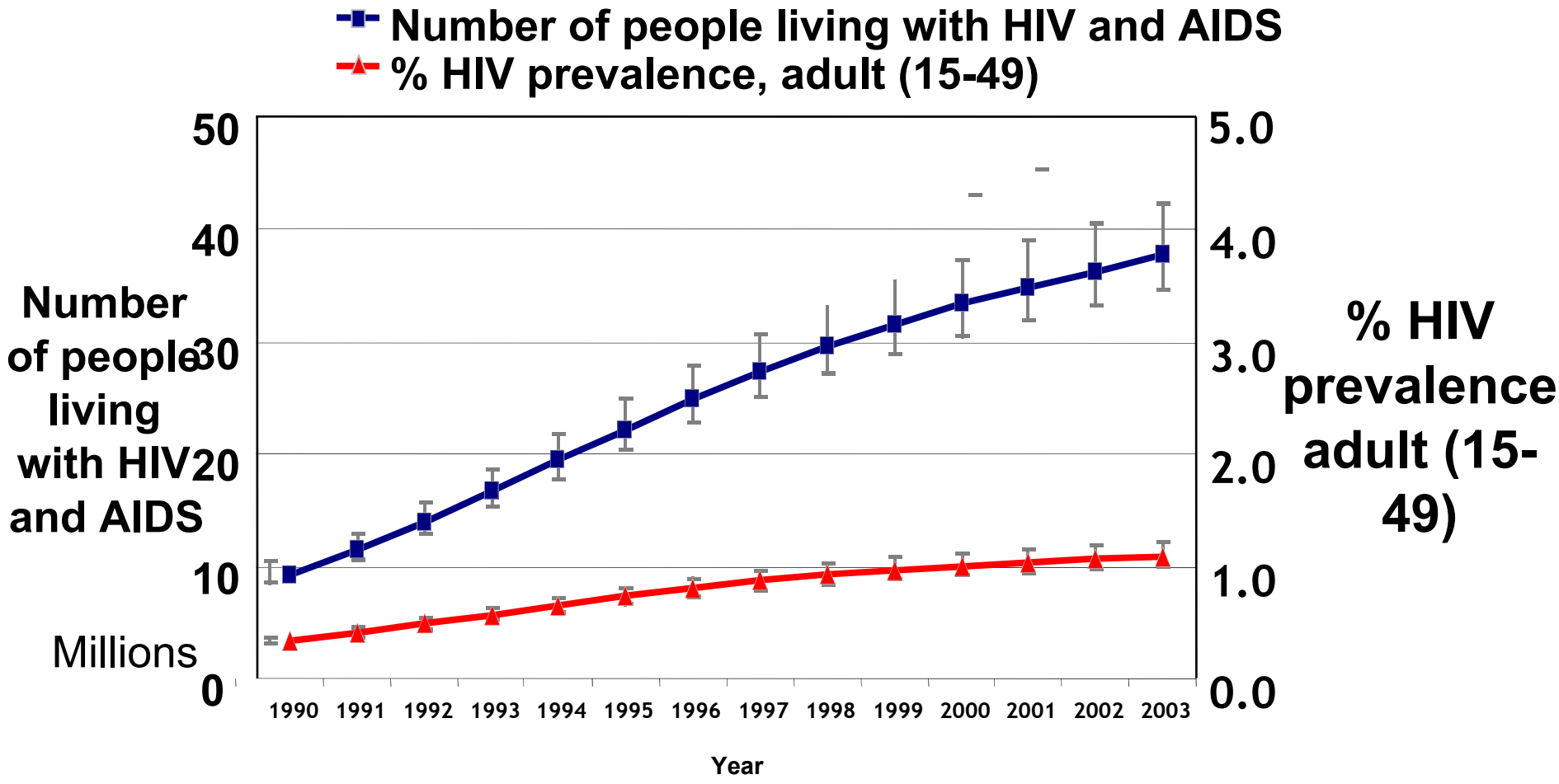
Magnitude of HIV/AIDS Pandemic

- By the end of 2003, an estimated 38 million people were infected with HIV.
- Over 95 per cent of those living in developing countries.
- Approximately 17 million people with HIV are women, and,
- 2.1 million are children under age 15.

Magnitude of MTCT

- Roughly 2 million HIV positive pregnant women were in need of prevention of MTCT services in 2003.
- Effective and feasible interventions to reduce mother-to-child transmission are now available and could save the lives of thousands of children each year.
- **However, currently only 8 percent of infected women are estimated to have access to these life-saving interventions**.

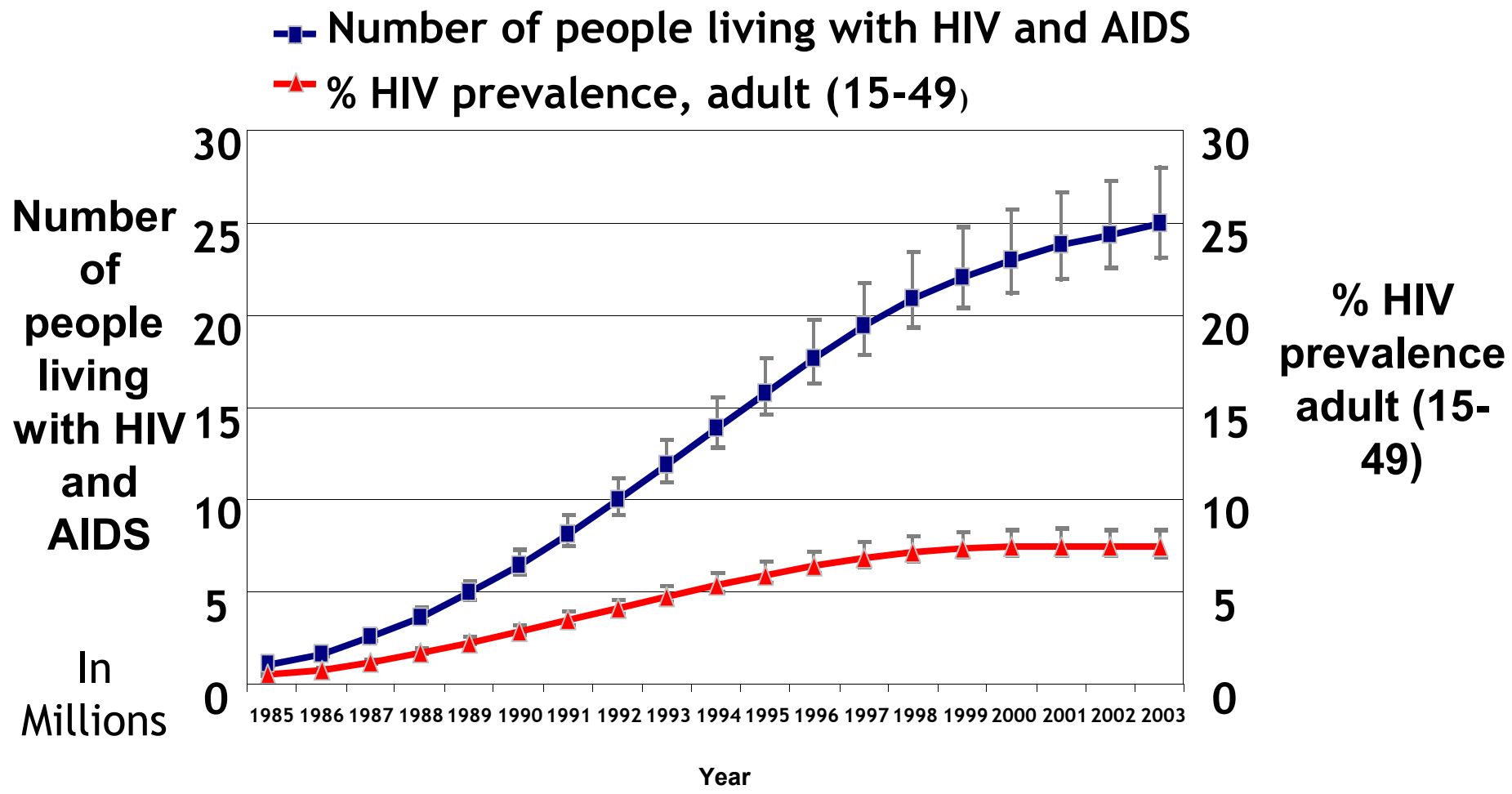
Global AIDS epidemic 1990–2003



Source: UNAIDS/WHO, 2004

2004 Report on the Global AIDS Epidemic (Fig 1)

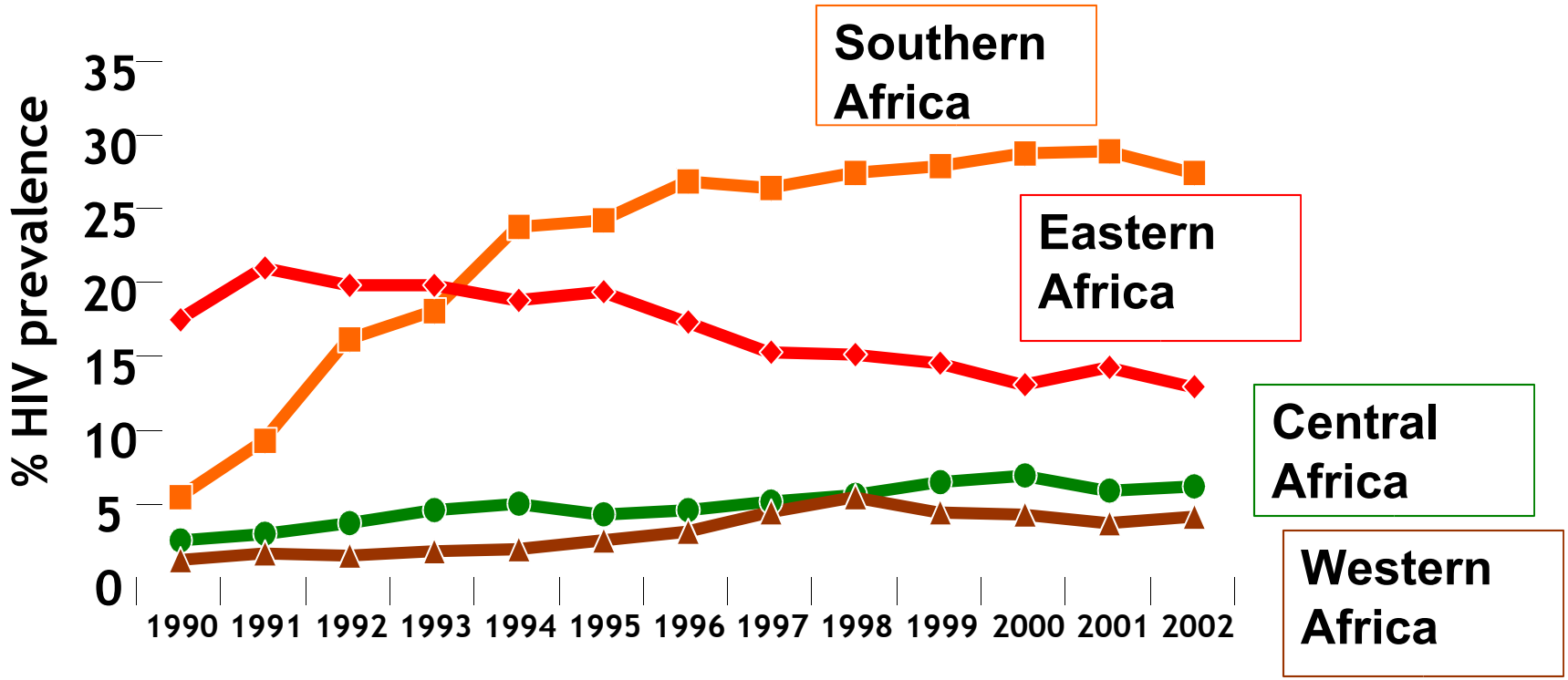
Epidemic in sub-Saharan Africa: 1985–2003



Source: UNAIDS/WHO, 2004

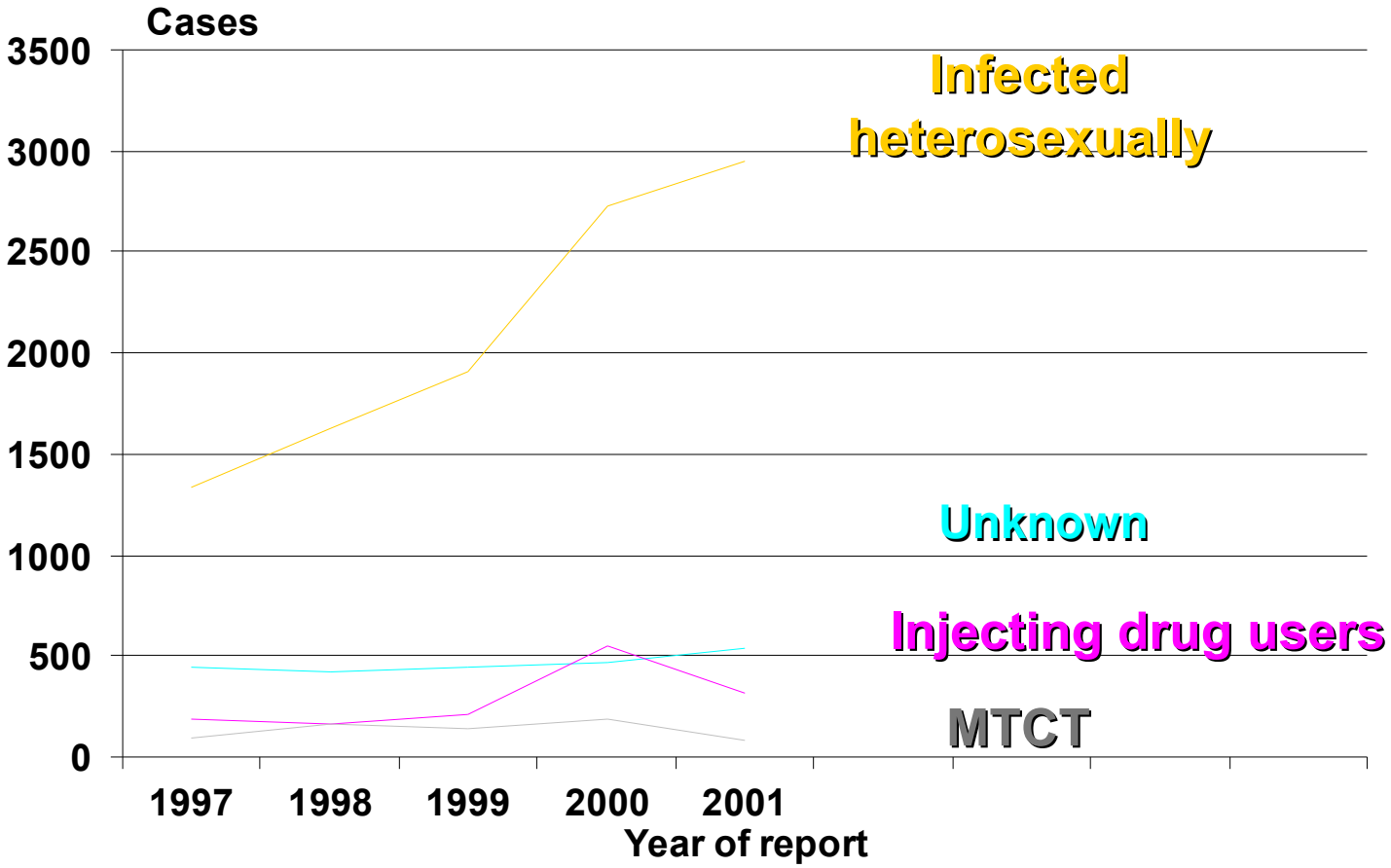
2004 Report on the Global AIDS Epidemic (Fig 5)

Median HIV prevalence (%) in antenatal clinics in urban areas, by sub-region, in sub-Saharan Africa, 1990–2002



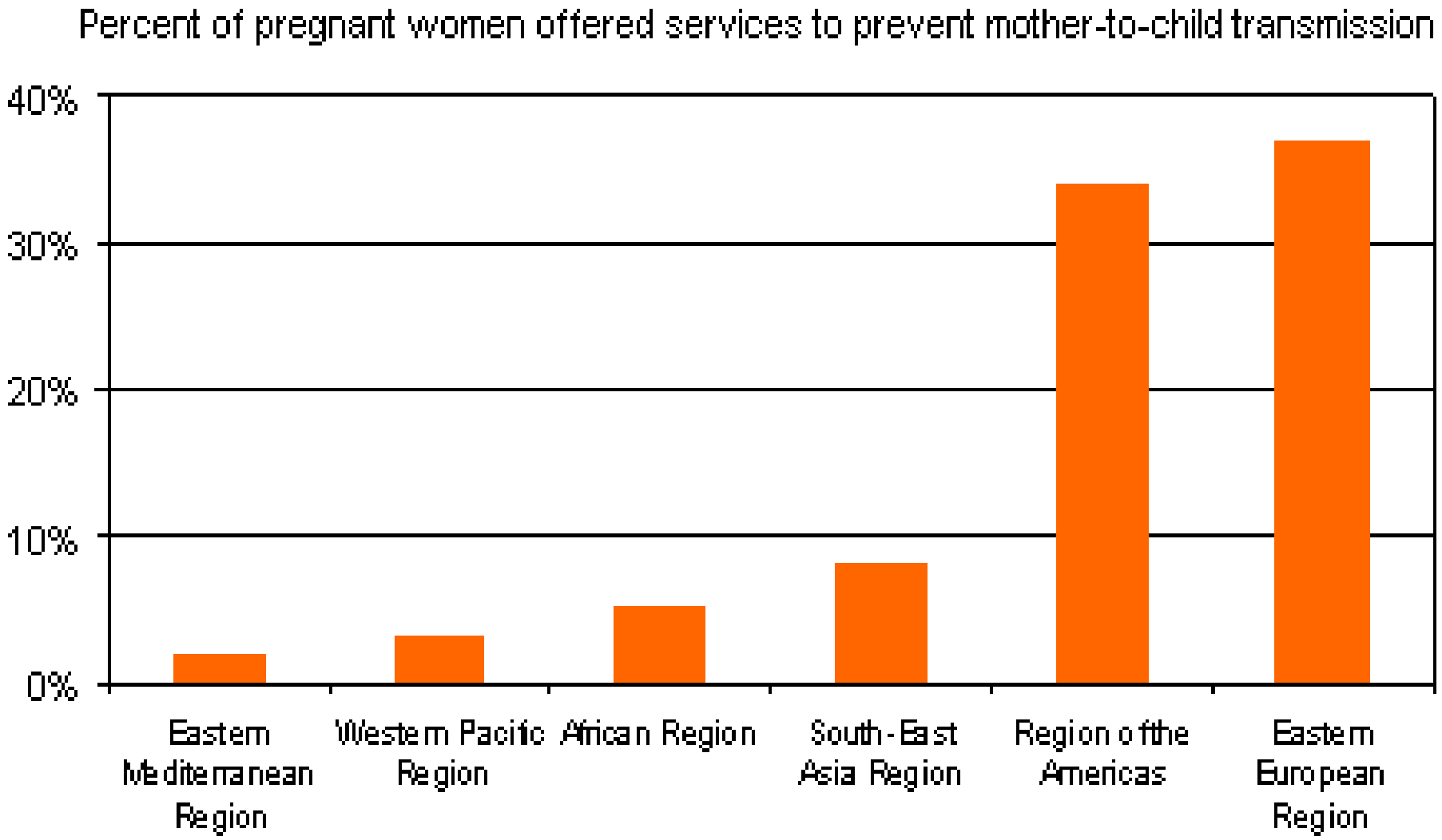
Source: Adapted from WHO AFRO 2003 Report

HIV infections newly diagnosed in women by transmission groups and MTCT, 1997-2001, Western Europe



Source: EuroHIV

The vast majority of pregnant women around the world do not have access to services to prevent mother-to-child transmission



Source: USAID, UNAIDS, WHO, CDC, UNICEF, World Bank and the POLICY Project. Coverage of selected services for HIV/AIDS prevention, care and support in low and middle income countries in 2003. June 2004

Presentation Outline

- Myth 1: “Breastfeeding should not be supported in a populations where there is HIV. “
- Myth 2: “UNAIDS does not support breastfeeding in HIV-endemic situations.”
- Myth 3: “Breastfeeding should not be an option because it increases mortality in HIV+ Mothers.”
- Myth 4: “With instruction by health workers, most HIV+ mothers will easily and properly prepare formula.”
- Myth 5: “Besides exclusive breastfeeding, support for healthy breastfeeding, reducing duration of breastfeeding, assessment of severity of mothers disease, and predetermination of CD4 count, nothing can be done to reduce HIV passage via human milk.”
- Myth 6: “With 3X5, the issue of infant feeding will no longer be a problem.”
- Summary and conclusions

Myth 1: Breastfeeding should not be supported in a populations where there is HIV.

- Even in high HIV prevalence settings, the majority of women remain HIV negative.
- Support for exclusive breastfeeding could save 1.3 million child lives each year.
- Support for replacement feeding could save about 75 thousand child lives each year.
- Is this balance of risks difficult in terms of overall public health?
- Is this balance of risks difficult for individual counseling?
- Now, add to this balance new information on MTCT via breastfeeding…

HIV Transmission through Breastfeeding

Late postnatal transmission of HIV-1 in breast-fed children: an individual patient data meta-analysis. Coutsoudis A, Dabis F, J Infect Dis. 2004 Jun 15;189(12):2154-66.

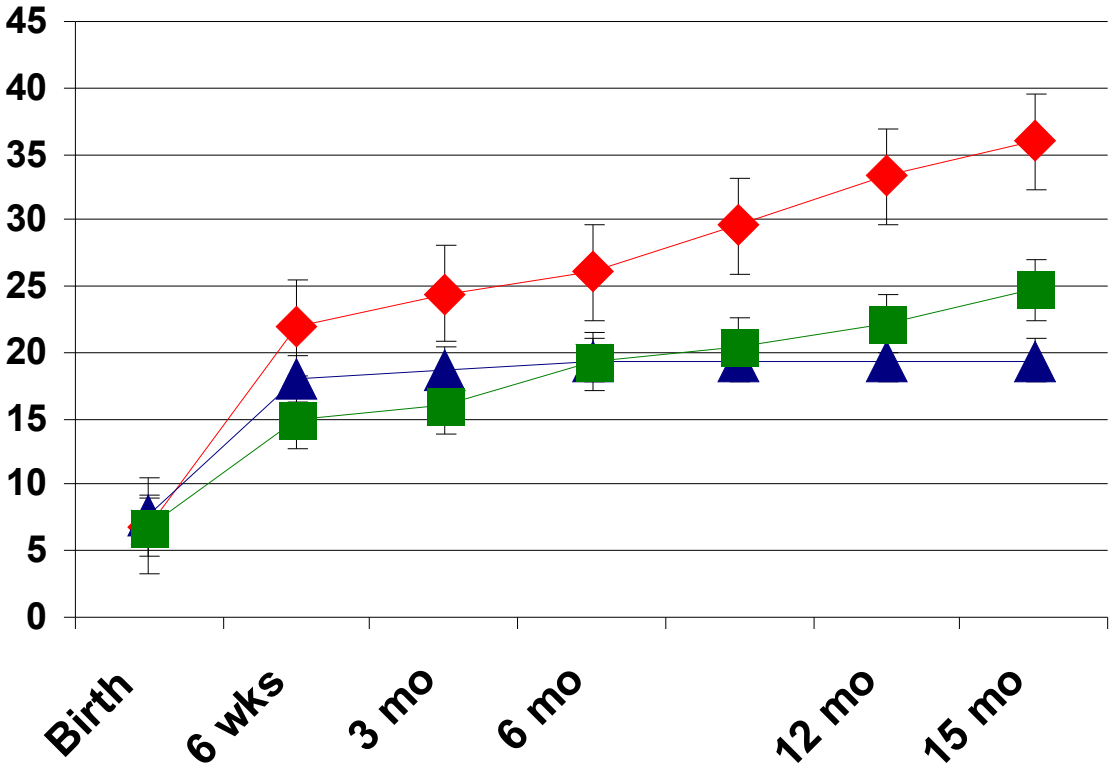
- Transmission via breastfeeding long considered to be about 14% for all (WHO: 5-20%)
- 2002 analysis (Ghent) demonstrate lower rates via breastfeeding if shorter duration:

		Cumulative
- 1 - 6 months:	4%	4%
- 7 -12 months:	5%	9%
- 13-24 months:	7%	**16%**

- **2004 meta-analysis show cumulative transmission of only 9.3% by 18 months** (8.9 per 100 child-years of breastfeeding)
- **Rate of transmission was significantly higher when lower maternal CD4(+) cell counts** and male sex.

Cumulative probability of HIV among 549 children born to HIV+ women

Coutsoudis et al. AIDS 2001, 15:379-87



- **Exclusively breastfed group (■) is statistically significantly different from mixed fed (●), but is not statistically significantly different from never breastfed (▲)group until 15 months, controlling for 15 variables.**

Early introduction of non-human milk and solid foods increases the risk of postnatal HIV-1 transmission (PNT) in Zimbabwe

Iliff P, Piwoz E et al. AIDS, 2005

- Examined the relationship between early breastfeeding (BF) practices and postnatal HIV transmission (PNT) in 2055 HIV-exposed infants who were HIV DNA PCR-negative at 6 weeks.
- **EBF reduces the risk of PNT/death by a factor of 3.**
- In settings where HIV+ mothers choose to BF, EBF should be supported and early introduction of non-human milk and solid foods should be strongly discouraged.

Hazards Ration for HIV Infection or Death from 6 weeks to 6, 12, and 18 months, by feeding pattern

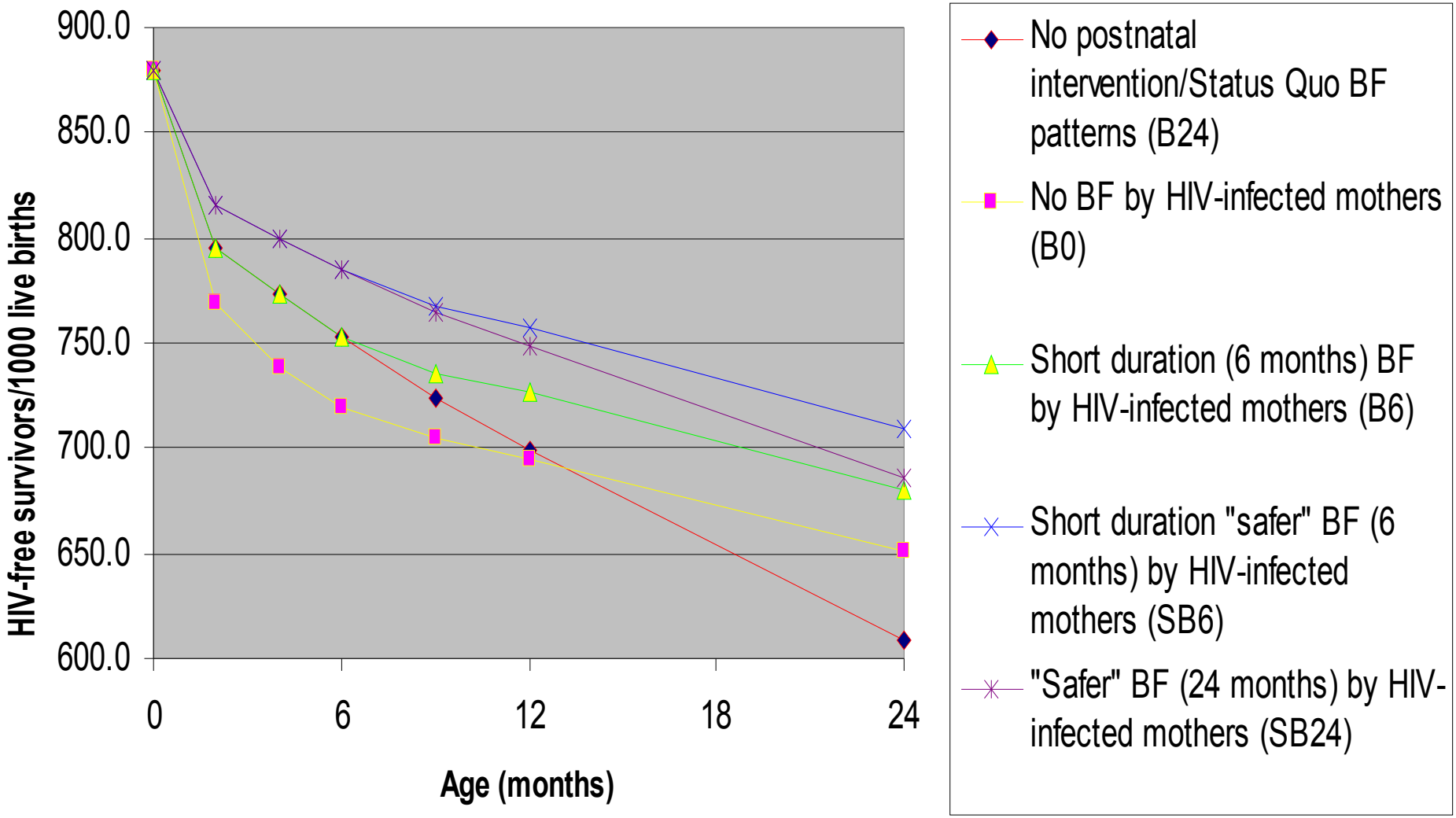
Controlled for Infant birth weight, and Maternal CD4 count, hemoglobin, death, marital status and Vitamin A treatment

	Definition	Hazard ratio for death or infection at 6 mo.	Hazard ratio for death or infection at 12 mo.	Hazard ratio for death or infection at 18 mo.	p Value
EBF	Only BM	1.0	1.0	1.0	
Pre-dominant	BM & non-milk liquids	2.42 (0.71,8.18)	2.36 (1.00,5.57)	1.73 (0.84,3.52)	p<0.05 at 12 mo
Partial /Mixed	BM & non-human milk &/or solid food	3.03 (0.95,9.69)	3.03 (1.34,6.86)	2.48 (1.26,4.84)	p<0.06 at 6 mo., p<0.008 at 12 and 18 mo.

Iliff P, Piwoz E et al. AIDS, 2005

Model for Cumulative HIV-free Survival Per 1000 HIV-Posit (IMR 96)

Ross and Labbok, AJPH, 2004



Where IMR>40, this model indicates that EBF might be the best choice feeding option for HIV+ Moms

There are many known ways to reduce risk of HIV transmission through breastfeeding

- Exclusive breastfeeding during 1st 6 months
- Shorter duration – 6 months (?Rapid Cessation?)
- Safe sex practices of mother during lactation period to prevent infection or re-infection
- Good lactation management (attachment, positioning, frequency) to avoid mastitis
- Limit it to mothers with high CD4 counts
- Prevent and avoid feeding from cracked nipple
- ARVs?

Myth 1: Breastfeeding should not be supported in a populations where there is HIV.

- For individual counseling, where HIV status is known, counseling should consider all options and AFASS.
- Where HIV-status is not known (>90% of cases worldwide) exclusive breastfeeding is recommended.
- There is the possibility that prescreening, shortening duration of feeding and safe transition from EBF to RF will all decrease risk of PMTCT.
- Support for optimal breastfeeding is especially necessary where there are MTCT programmes in order to prevent spillover of replacement feeding use to non-infected populations.

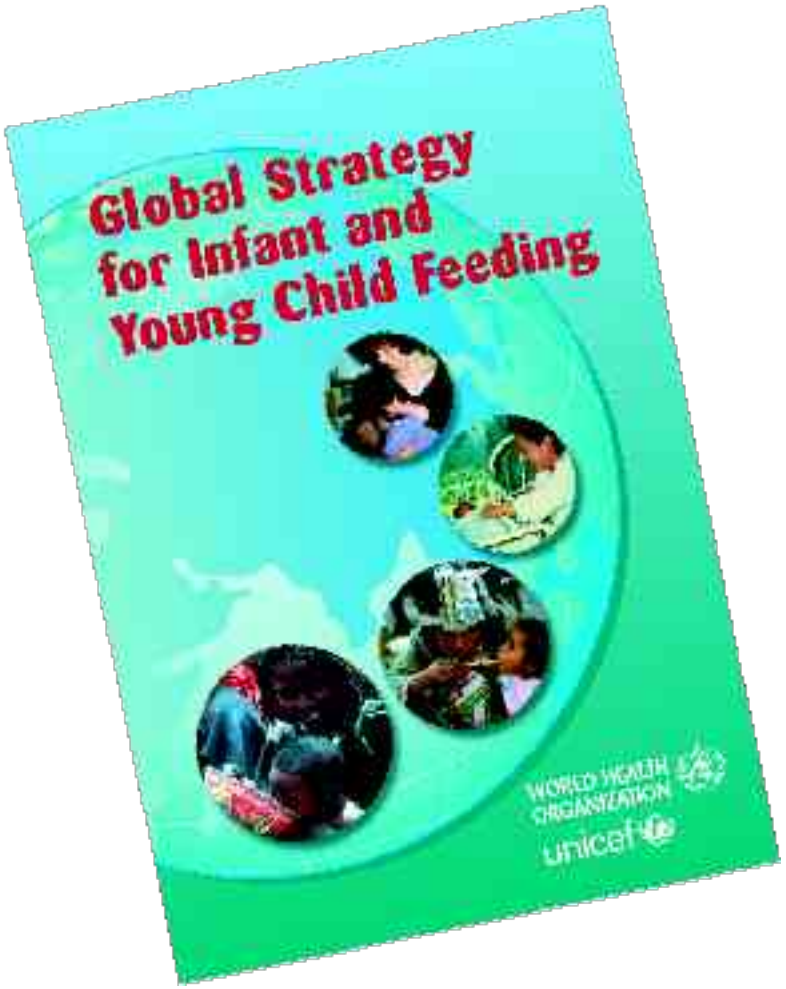
Myth 1: Breastfeeding should not be supported in a populations where there is HIV.

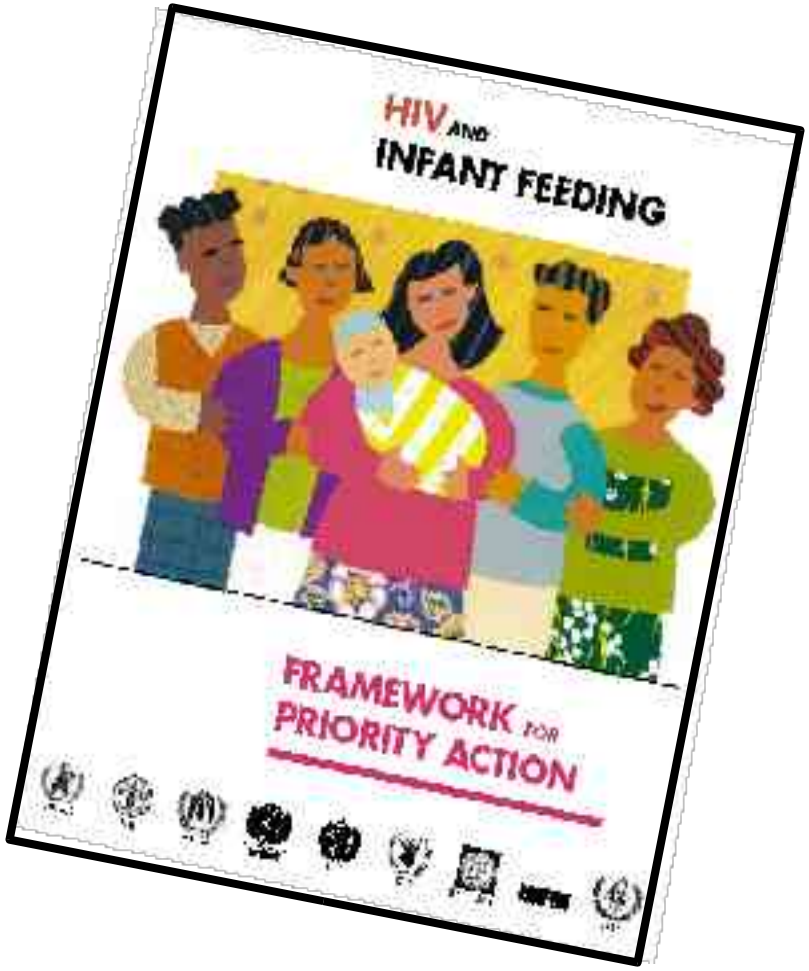
Conclusion: Given these findings, and UN recommendations:

- **exclusive breastfeeding should be encouraged for all for overall child survival, and**

- **until such time as every HIV+ mother can be identified and individually counselled, EBF would seem an advisable strategy to reduce MTCT as well.**

Myth 2: UNAIDS does not support breastfeeding in HIV-endemic situations





Global breastfeeding policy in the Context for discussion of HIV/IF:

- **Innocenti Declaration 1990**
- UN guidelines on HIV infant feeding (1998)
- Subsequent UN recommendations (incl. WHO consultative meeting Oct. 2000)
- Lessons learned in pilot sites
- Consultation of ROs, COs, and partners (e.g. representatives from WHO and WABA)
- MTSP 2000, UNGASS 2002
- **Global Strategy 2002**
- Programme guidance 2003
- **HIV and IF: Framework for Priority Actions 2004**

PMTCT goals

- UNGASS goal included in WFFC
  - To reduce the proportion of infants infected with HIV by
    - 20% by 2005 and
    - 50% by 2010.
  - This is **to be attained by ensuring 80% women accessing ANC** have information, counselling and other HIV prevention services.

- Dublin Declaration and Euro strategy goals (more ambitious):
  - To eliminate HIV infection in infants by 2010 as indicated by:
    - < one HIV infected infant per 100'000 live births,
    - < 2% of infants born to HIV infected women acquire infection

Intervention Framework to reduce infant infection

- Prevention of HIV in women
- Prevention of unintended pregnancies among HIV infected women
- Prevention of transmission
- Care and support

WHO/UNAIDS/UNICEF Guidelines on HIV&IF, basically unchanged 1997-2005

HIV- or status unknown

- Exclusive breastfeeding (EBF) for 6 months and continued breastfeeding for 2 years

HIV+

- When replacement feeding is **acceptable, feasible, affordable, safe and sustainable,** avoidance of all breastfeeding is recommended.* Otherwise EBF is recommended for the first months of life
- Access to information, follow up care and support including family planning and nutritional support

(*Terminology is defined in WHO/UNICEF Guidance of 2003/4)

UN Agencies' 5 Priority Program Interventions: Framework for Priority Actions addresses Myth 2

1. Support development of comprehensive Infant and young child feeding policies (as per the Global Strategy) incl. HIV & IF
2. Intensify support to implementation of the Code of Marketing of Breastmilk Substitutes
3. Intensify efforts to promote, protect and support **optimal infant and young child feeding practices**
4. Support HIV-positive women to succeed in their infant feeding choice in the context of HIV
5. Support country level learning, M&E and operational research

Conclusion: UNAIDS, and at least 8 other UN agencies, fully supports breastfeeding programming as a essential in HIV settings.

Myth 3: Breastfeeding should not be an option as it negatively impacts HIV+ Mothers' Survival.

Agree –

Nduati R, Richardson BA, et al. Effect of breastfeeding on mortality among HIV-1 infected women: a randomised trial Lancet. 2001

One study was published, with an extremely high maternal mortality overall, that indicated that HIV+ women who assigned to the breastfeeding group had higher mortality.

Myth 3: Breastfeeding should not be an option as it negatively impacts HIV+ Mothers' Survival.

Disagree –

Coutsoudis A, Coovadia H, et al. Are HIV-infected women who breastfeed at increased risk of mortality? AIDS 2001 Mar 30;15(5):653-5

WHO (statement 2001) concluded insufficient evidence to change policy – noted that it is wise in any case to address nutrition needs of HIV-infected women who are breastfeeding their infants

Sedgh G, Spiegelman D, et al. Breastfeeding and maternal HIV-1 disease progression and mortality. AIDS. 2004 Apr 30;18(7):1043-9.

L Kuhn, P Kasonde, et al. No increased risk of maternal mortality attributable to prolonged breastfeeding among HIV-positive women in Lusaka, Zambia. Bangkok session MedGenMed. 2004 Jul 11;6(3) **[XV International AIDS Conference Bangkok, Thailand, July 11-16 2004]**

Conclusion: The weight of the evidence, and international guidance, do not support this myth, and indicate that there is no measurable risk of increased mortality for HIV+ moms who breastfeed.

Myth 4: With instruction by health workers, most women will make an informed decision, and if they choose replacement feeding, they will prepare formula easily and properly.

- **HIV and Infant feeding counselling: Knowledge, attitude and practice of health workers in Wesley Guild Hospital, Ilesa, Nigeria E A Adejuyigbe, A I Odebiyi**
- **Most of the health workers had inadequate or incorrect knowledge for providing appropriate feeding counseling for HIV infected mothers**

MedGenMed. 2004 Jul 11;6(3):MoOrE1068 [XV International AIDS Conference Bangkok, Thailand, July 11-16 2004]

Infant Feeding Options

UNICEF, UNAIDS, WHO "HIV and Infant Feeding: A Guide for health care managers and supervisors" 2003

- Breastmilk Substitutes vs Replacements vs Artificial Feeding
  - Commercial infant formula
  - Home prepared formula
    - Modified animal milks
    - Dried milk powder and evaporated milk
    - Unmodified cow's milk
- Modified Breastfeeding
  - Early cessation of breastfeeding
  - Expressed and heat treated breastmilk
  - Exclusive, with or without cessation
- Other Breastmilk
  - Breastmilk banks
  - Wet nursing

Bacterial Contamination & Over-dilution of Commercial Infant Milk in South Africa: A Sub-Study of the National Prevention of Mother-to-Child-Transmission (PMTCT) Cohort Study

Erika Bergström [XV International AIDS Conference
Bangkok, Thailand, July 11-16 2004]

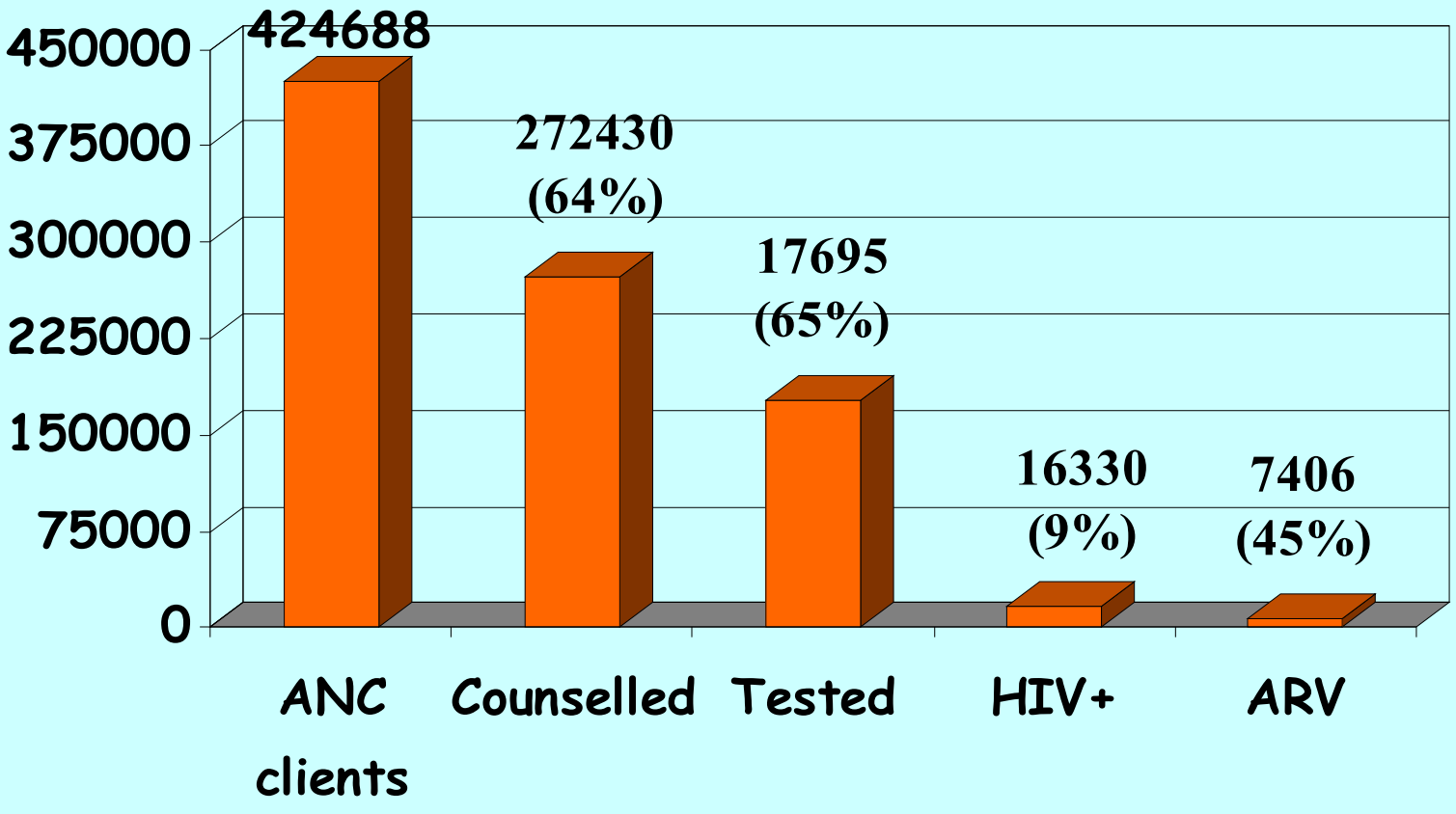
- As part of the PMTCT programme, all mothers had received counselling regarding safe preparation of artificial feeds and cleaning of bottles.
- Majority less than HS education and 72% had electric refrigerators at home.
- **Unacceptably high levels of contamination (38-81%) and over-dilution (14-47%)**

Nutritional adequacy and cost of home prepared infant milk (HPIM) in Kwa-Zulu Natal, South Africa (1)

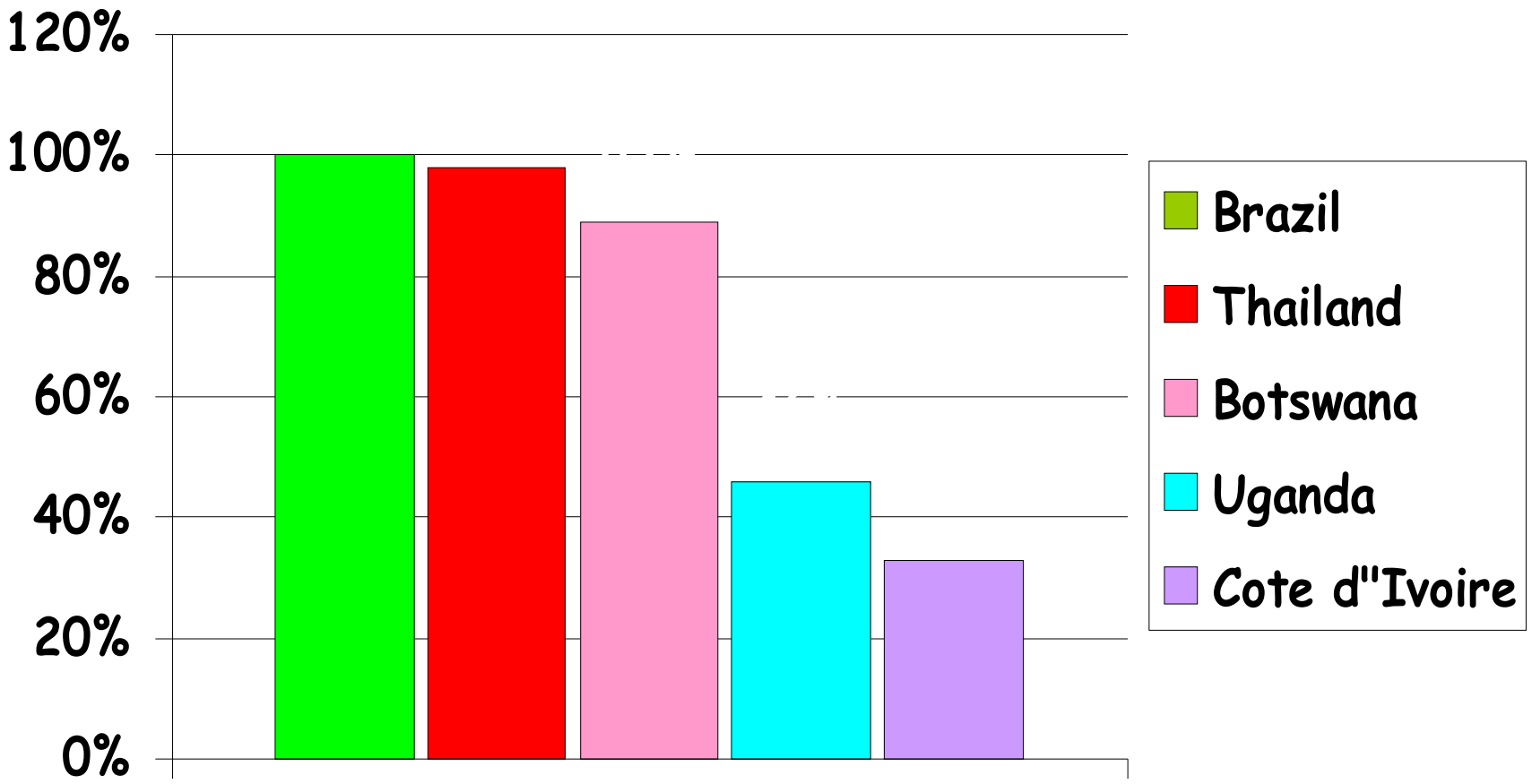
(Papathakis et al, 2002, MoOrF1030[XV International AIDS Conference, Bangkok, Thailand, July 11-16 2004])

- Assessed cost, preparation time, and nutritional adequacy w/ powdered or liquid full cream milk, water, sugar, and MN supplements
- **Findings: Home prepared formula is vitamin deficient and time consuming**
  - intakes of vitamins E, C, folic acid, pantothenic acid, zinc, copper, selenium, vitamin A, EFA were inadequate
  - cost was $9.80/month or 20% of average monthly income
  - preparation time was 20-30 minutes for 120 ml
- NB: WHO commissioned research to be reported in November 2004

PMTCT Services at Pilot Sites thru Dec 2001 (UNICEF Supported sites): Of the women reached in ANC, very few benefit from HIV treatment



Where HIV+ women receive counseling and free infant formula, its use is not optimal



Coutsoudis A, et al. Free formula milk for infants of HIV-infected women: blessing or curse? Health Policy Plan. 2002 Jun; 17(2):154-60.

- Controversy: whether HIV+ women in developing countries should choose formula or breastfeeding
- Case against providing free or subsidized formula to HIV+ mothers:
  - exacerbates disadvantages of formula feeding;
  - compromises free choice;
  - targets wrong beneficiaries;
  - creates a false perception of endorsement by health workers;
  - compromises breastfeeding;
  - discloses HIV status;
  - ignores hidden costs of formula preparation;
  - increases mixed breastfeeding;
  - requires complicated/costly admin.;
  - increases the 'spill-over' effect into the normal breastfeeding population.
- Recommendations: use affordable antiretrovirals to reduce MTCT; invest in high-quality, widely available HIV counselling; support choice of feeding and exclusive breastfeeding.

Myth 4: With instruction by health workers, most women will make an informed decision, and if they choose replacement feeding, they will prepare formula easily and properly.

- In spite of training programmes, most health workers remain misinformed and offer inadequate and incorrect information, and frequently offer biased counseling.
- Even with instruction, formula preparation is time consuming and often carried out incorrectly.
- CONCLUSION: Good counselling and support concerning infant feeding choices for HIV+ mothers is difficult, and women have difficulty safely and fully achieving their chosen feeding method.

Myth 5: Besides 1) exclusive breastfeeding, 2) support for healthy breastfeeding, 3) reducing duration of breastfeeding, 4) assessment of severity of mothers disease, and 5) predetermination of CD4 count… nothing can be done to reduce HIV passage via human milk.

- Heat treatment: individual or milk banks (Brazil)
- Possibility of treatment with microbicides (Urdaneta S, Wigdahl B, Neely EB, Berlin CM Jr, Schengrund CL, Lin HM, Howett MK. Inactivation of HIV-1 in breast milk by treatment with the alkyl sulfate microbicide sodium dodecyl sulfate (SDS). Retrovirology. 2005 Apr 29;2(1):28.)
  - Microbicidal treatment of HIV-1 infected breast milk as an alternative for prevention of mother-to-child transmission of HIV-1 through breastfeeding S Urdaneta, B Wigdahl, et al
  - ≥ 0.1% SDS quickly and irreversibly inactivates HIV-1 in breast milk. Treatment with 1% SDS destroys HIV-1 target cells in milk (CD4+ T cells).
- **Myth 5 Conclusion: Possibilities exist for reducing risk of passage by treating expressed breastmilk, at least for a transition period from EBF to RP**

Myth 6: With "3X5", antiretroviral treatment will be fully available, and the controversies on infant feeding will no longer be an issue.

- By the end of 2003 about 40 million people were living with HIV/AIDS,
- An estimated three million lives were lost in 2003,
- HIV/AIDS affects women and children with particular severity;
- Also concerned that, although about six million people in developing countries need antiretroviral treatment, only 440,000 currently receive it; WHA endorsed the "3X5" Initiative
- **"3 by 5" is the global TARGET to get 3 million people living with HIV/AIDS in developing and middle income countries on antiretroviral treatment by 2005.** It is a step towards the goal of providing universal access to treatment for all who need it as a human right.

Will ARVs treatment of mother and baby be the solution?

- Short course zidovudine for PMTCT is not associated with short-term clinical or lab toxicities, altered disease progression or increased risk of congenital malformations.
- The major short-term toxicity in infants is anemia, usually mild and reversible after discontinuation of treatment.
- Severe neonatal anemia and neutropenia were observed with prolonged use of AZT + 3TC (more than one month).
- Issues of diagnosis, treatment availability, accessibility, proper usage, and potential for resistance

Major issue: ARV resistance following a short-course PMTCT prophylaxis

- Zidovudine: Multiple mutations required to confer resistance. Very low prevalence of resistance reported, unlikely to impact of future Zidovudine treatment options.
- 3TC: Requires only one mutation to confer resistance. This occurs in up to 20% of cases of treatment for longer one month (even when given in combination with Zidovudine) and in up to 50% of cases where treatment is given for more than two months.
- Nevirapine: Requires only one mutation to confer resistance. There is a high prevalence of Nevirapine resistance, even when used in combination with Zidovudine, and this risk increases with multiple dosing (SA with single dose 39% and 67% with double dose).

Key recommendations in WHO guidelines on use of ARVs to prevent mother to child transmission of HIV -- 14 July 2004, Bangkok/Geneva --

- Treat women who need antiretroviral treatment (ARV) for their own health.
- Others HIV+ in ANC, use one of several antiretroviral regimens known to be safe and effective:
  - Zidovudine from 28 weeks of pregnancy plus single-dose nevirapine during labour and single-dose nevirapine and one-week zidovudine for the infant. This regimen is highly efficacious, as is initiating zidovudine later in pregnancy.
  - Alternative regimens based on zidovudine alone, short-course zidovudine + lamivudine or single-dose nevirapine alone are also recommended.

Key WHO recommendations , con't

- Although single-dose maternal and infant nevirapine is the simplest regimen to deliver, programmes should consider introducing one of the other recommended regimens where possible.
- Since women are all expected to eventually receive treatment, potential resistance has become a far greater concern. Therefore, using single-dose maternal and infant nevirapine remains a practical alternative when provision of more effective regimens are not feasible.

Myth 6: With 3X5, the issue of HIV and infant feeding will no longer be a problem.

- 3X5 will not reach the vast majority of HIV+ women.
- ARVs are not without risk and controversy.
- Longer term use of ARVs in undiagnosed children is not part of this, not has it been adequately evaluated as yet.
- Conclusion:
  - We know that 3X5 will not reach the majority, nor provide ongoing prophylaxis during breastfeeding,
  - We do not as yet have sufficient data to properly address the questions of safety and efficacy of ongoing ARV use during the duration of breastfeeding.

Given the myths and controversies, how can one develop programme guidance to balance risks?

- Recognize and identify stakeholders who may have disparate viewpoints
- Bring together the differing agendas
- Bring together differing expertise (e.g., public health perspectives, epidemiologists, biomedical researchers, clinicians, interest groups, etc.)
- Have all data available on hand for discussion
- Share disciplinary-based perceptions and interpretations
- Educate all concerning public health (vs clinical) concepts: model the implications of different scenarios, if possible.
- Develop consensus
- Act based on that consensus

Summary, questions unanswered, and conclusion

- About 2 million children have been infected with HIV/AIDS through breastfeeding in the last 20 years.
  - If we could find and diagnose all HIV-infected women, and ensure safe replacement feeding for children of HIV-positive mothers, we could prevent about 75 thousand cases of HIV.

- In the last year alone, recent estimate is that 1.3 million infants died because of lack of exclusive breastfeeding, or more than 20 million have died in the last 20 years from lack of breastfeeding.
  - If we could improve exclusive breastfeeding practices, we could:
    - save 1.3 million and more lives from common childhood infectious diseases.
    - reduce MTCT among the 90% untested HIV+ mothers by up to 50%, and, if the two recent studies (Coutsoudis et al. and Illiff et al) are proven to be correct, prevent about 30 thousand cases.

And many questions that would help in these decisions remain unanswered…

- Is the protection of EBF the same after 6 months?
- What options are there for the older child regarding replacement milk and alternative feeding strategies in vulnerable settings?
- What new risks do those practices introduce?
- How can one stop breastfeeding without increasing sub-clinical mastitis?
- How can one manage these practices without disclosure of HIV status?

AND

- Will ARV obviate all of these questions?
- Finally, are we capable of testing and treating one and all?

Conclusions

- Many myths are out there and are influencing decisions.
- Much work remains to be done by researchers
- Much work remains to be done by programme decision-makers to ensure best outcomes in each population
- We know enough now to make reasonable decisions, but we may not be using the latest data or the benefits of inter-disciplinary thinking.
- We should be on the side of overall outcome for the mother and child, not just on the side of a single disease.
- We must act now, and constantly review the impact of our actions, and modify as new findings become available if we wish to defeat this rapidly advancing disease while ensuring the best outcomes for all.

Thank you Muchas gracias

Arigato Merci *Danke*

Scheh-scheh **Shokhrun**

Спасибо Salamat po

Parakalofi ***Amasag'nalehu*** Shukriya