

Improving on HIV Free Survival: Impact of HIV Exposure for Children Born HIV Negative

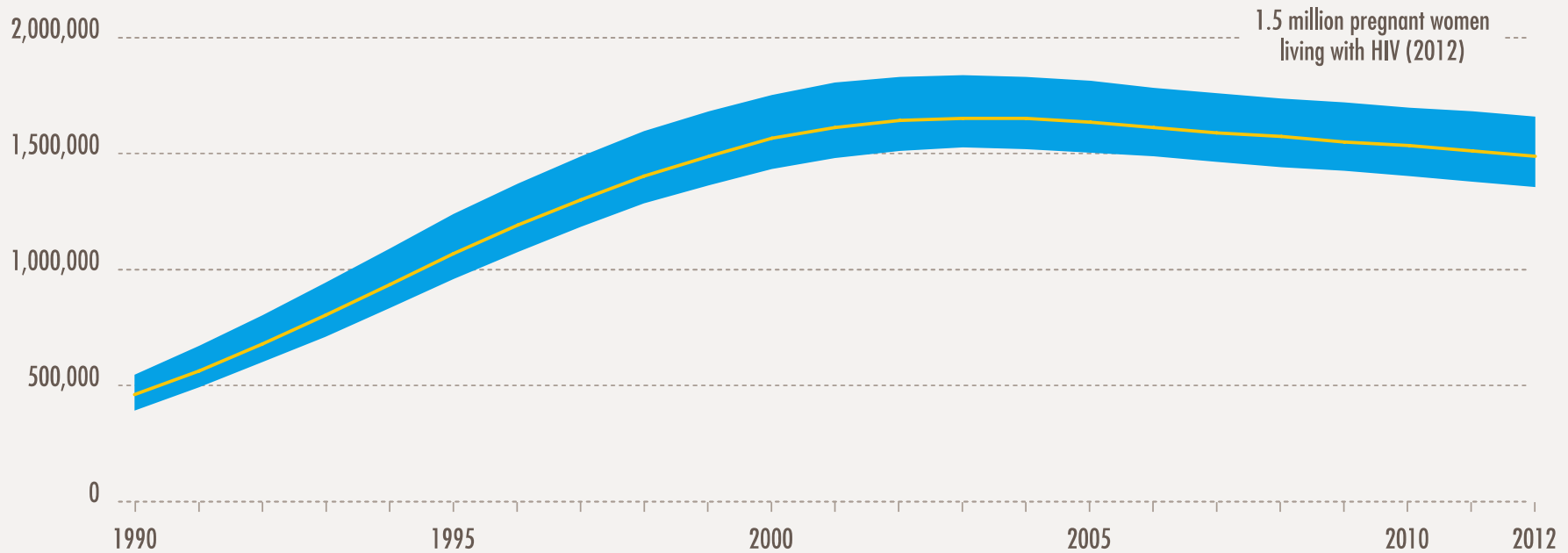
Nandita Sugandhi M.D.

Clinton Health Access Initiative



Increasing numbers of HIV Exposed infants and children

Estimated number of pregnant women living with HIV in low- and middle-income countries, 1990–2012



Note: The area in blue indicates the uncertainty ranges around the estimates.

Source: UNAIDS 2012 HIV and AIDS estimates.

Care for the HIV Exposed Infant

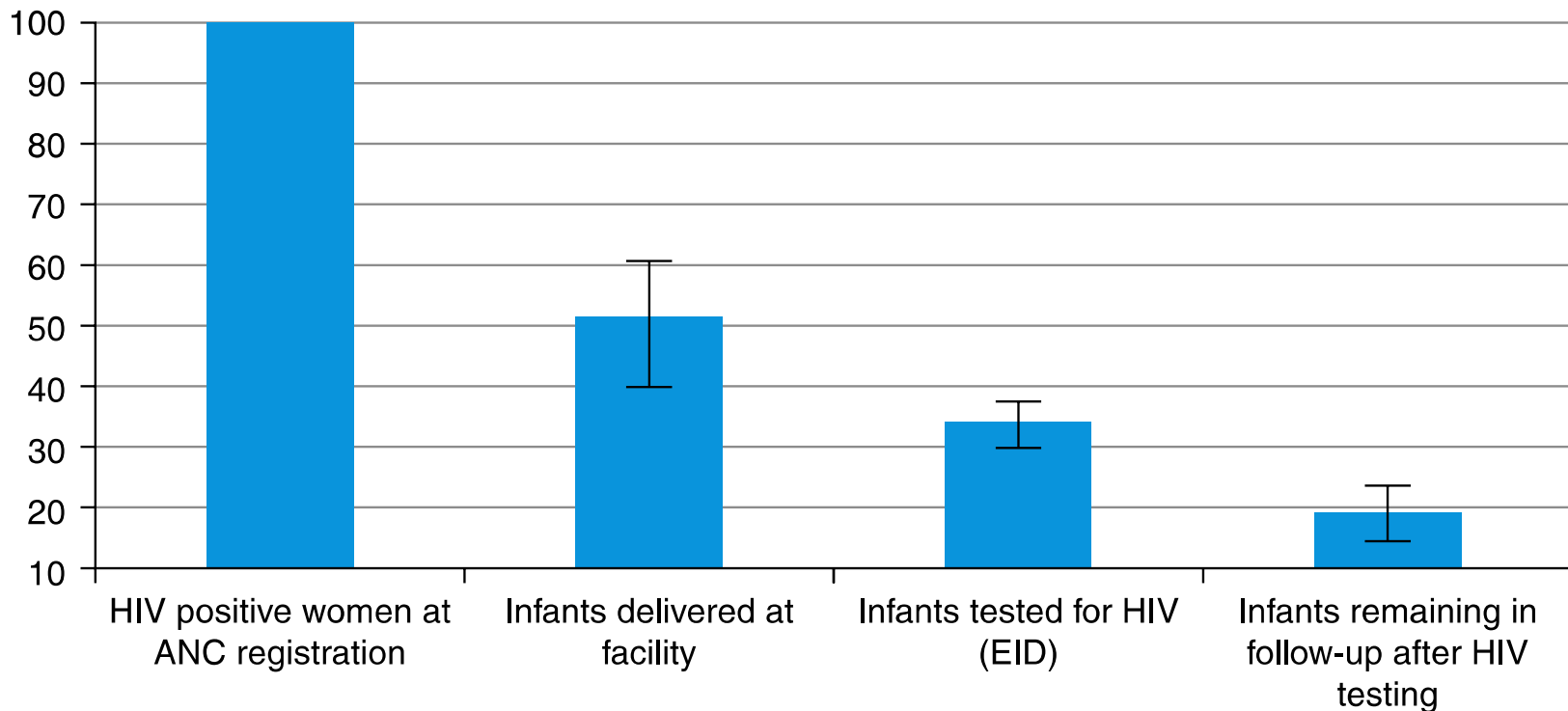
- Quality care and treatment for the MOTHER
- Optimal Infant feeding
- Infant ARV prophylaxis
- Cotrimoxazole prophylaxis
- EID at 6 weeks, retesting of well and sick children
AND confirmatory testing after weaning

Infant prophylaxis EID Repeat testing Confirmatory testing

HIV Exposed Infant Care Continuum

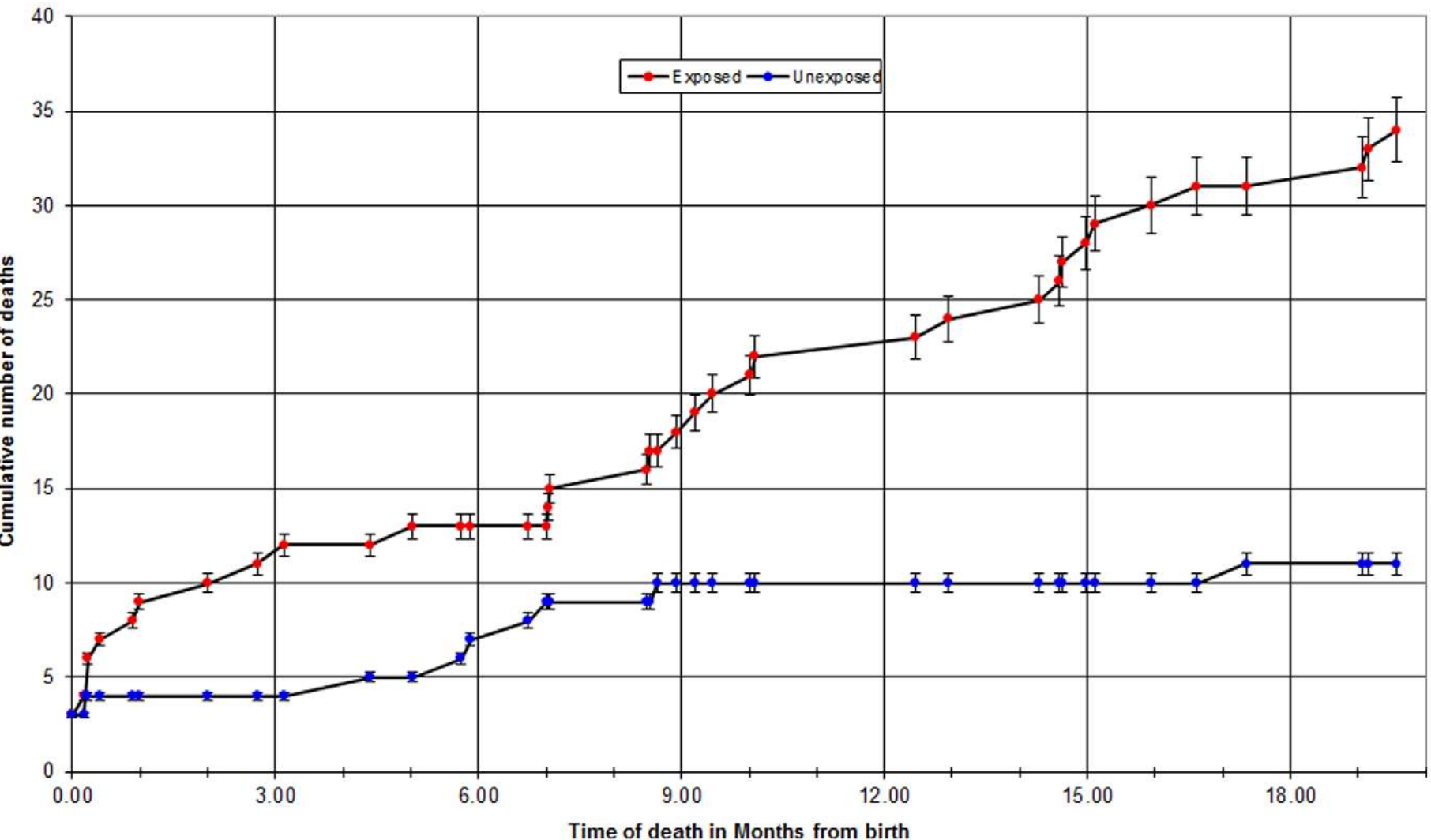
HIV-free Survival

Challenge: HEI get LTFU



Simulation of cumulative loss to follow-up along prevention of mother-to-child HIV transmission cascade

2 year mortality in HIV Exposed Uninfected Infants



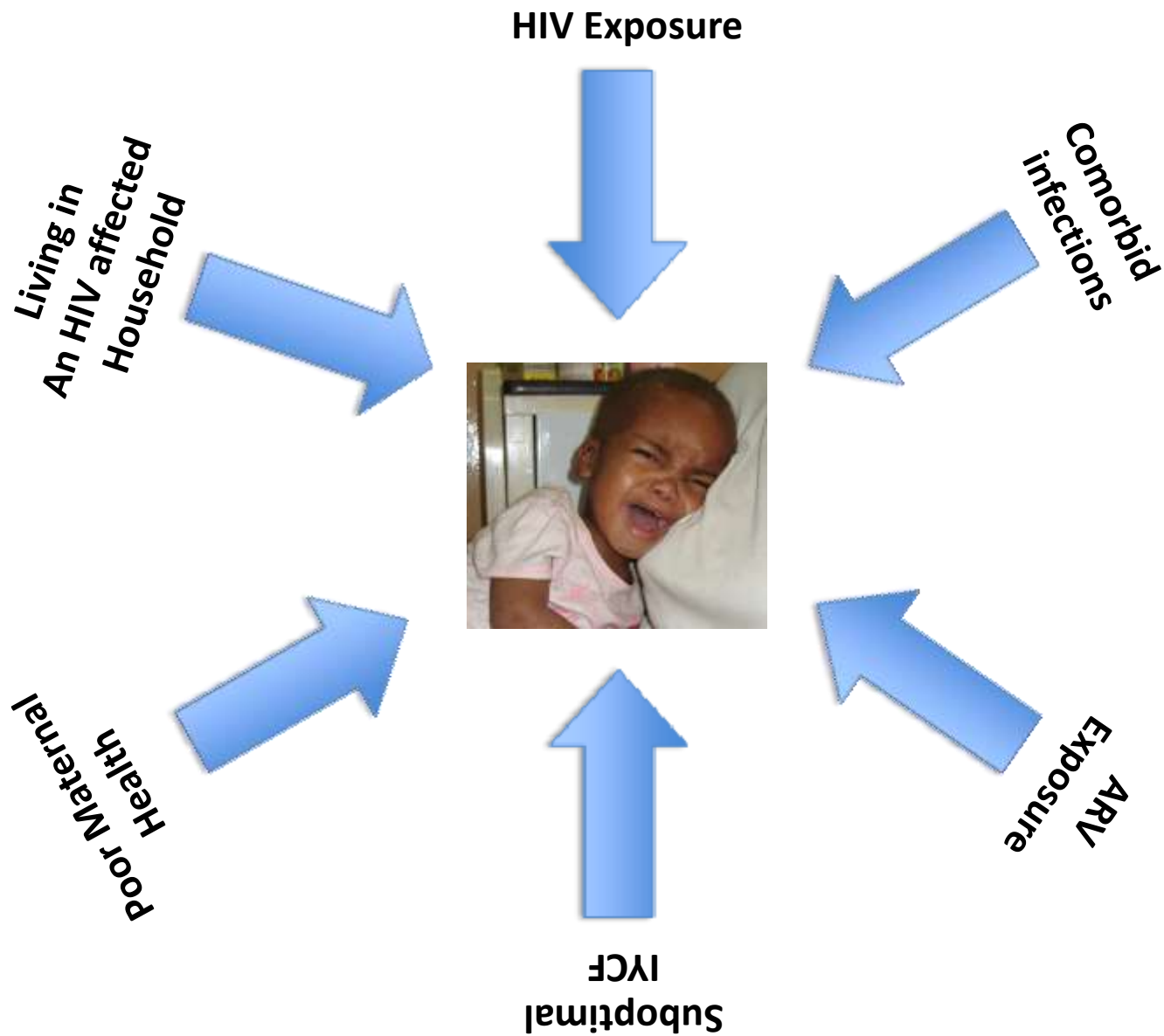
2 year mortality in HIV Exposed Uninfected Infants

Author	Year of publication	Country	HIV + mortality	HEU mortality	Non-exposed mortality
Newall et al	2004	sSA		7.65%	
Brahmbhatt et al	2006	Uganda	54%	16.5%	12.8%
Marinda et al	2007	Zimbabwe	33-67%	9.2 %	2.9%
Shapiro et al	2007	Botswana	29.5%	6.7%	1.6%
Mugwaneza et al	2011	Rwanda		4.2%	1.5%
Fawzy et al	2011	Zambia		13.6%	
Landes et al	2012	Malawi		18.75%	4.3%
Kourtis et al	2013	Malawi		3.4%	

Survival \neq Health: Increased Morbidity in HEU

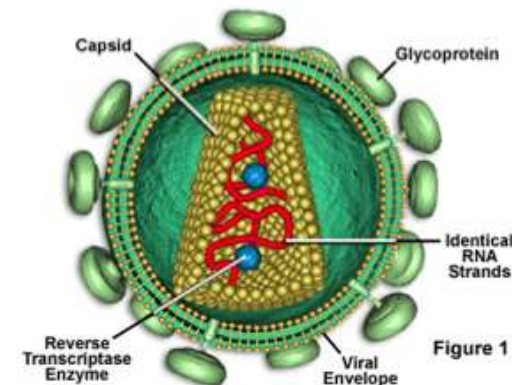


What contributes to poor outcomes?



Exposure to HIV virus

- Viral particles may cross placenta without resulting in infection
- Evidence of HIV-1 specific T cell response in HEU
- Impaired T cell response and decrease in thymic size reported¹
- May result in impaired immunity
- May impact neurodevelopment



¹Afran et al. (2013) *Clin and Experim Immun.* 176:11-12

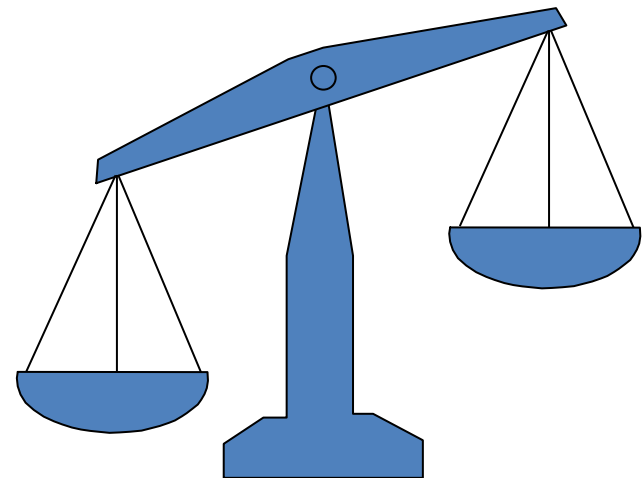
Figure 1

Comorbid Infections

- **CMV**
 - Increased risk of neonatal CMV infection
 - May cause growth stunting or psychomotor development retardation
- **TB**
 - High rates of TB-HIV coinfection
 - Infants and young children at high risk for active disease
- **Other common infections**
 - Herpes
 - Hepatitis B
 - Syphilis

Exposure to ARV's

- Premature delivery associated with use of PI-based regimens^{1,2}
- NRTI's associated with mitochondrial toxicity/dysfunction which may impact neurodevelopment, growth, hematologic parameters
- TDF affects bone mineralization- evidence is limited for infant exposed in utero



¹Shapiro et al. (2010) *N Engl J Med.* 362:24.

²Powis et al. (2011) *J Infect Dis.*204:506-514

Infant and Young Child Feeding

- Changing messages about Breast-Feeding
- Early weaning still practiced
- Food insecurity



Poor Maternal Health

- Maternal death and low maternal CD4 count increases risk of mortality in HEU¹
- Maternal adherence to ART improves under-5 mortality²
- Maternal stress impacts child's psychosocial adjustment and development³

¹Newell et al. (2004) *Clin Infect Dis.* 364:1236-1243

²Ndirangu et al. (2012) *Antiviral Therapy.* 17:81-90

³Sipsma et al. (2013) *AIDS Care.* 25:721-725



Living in an HIV affected household

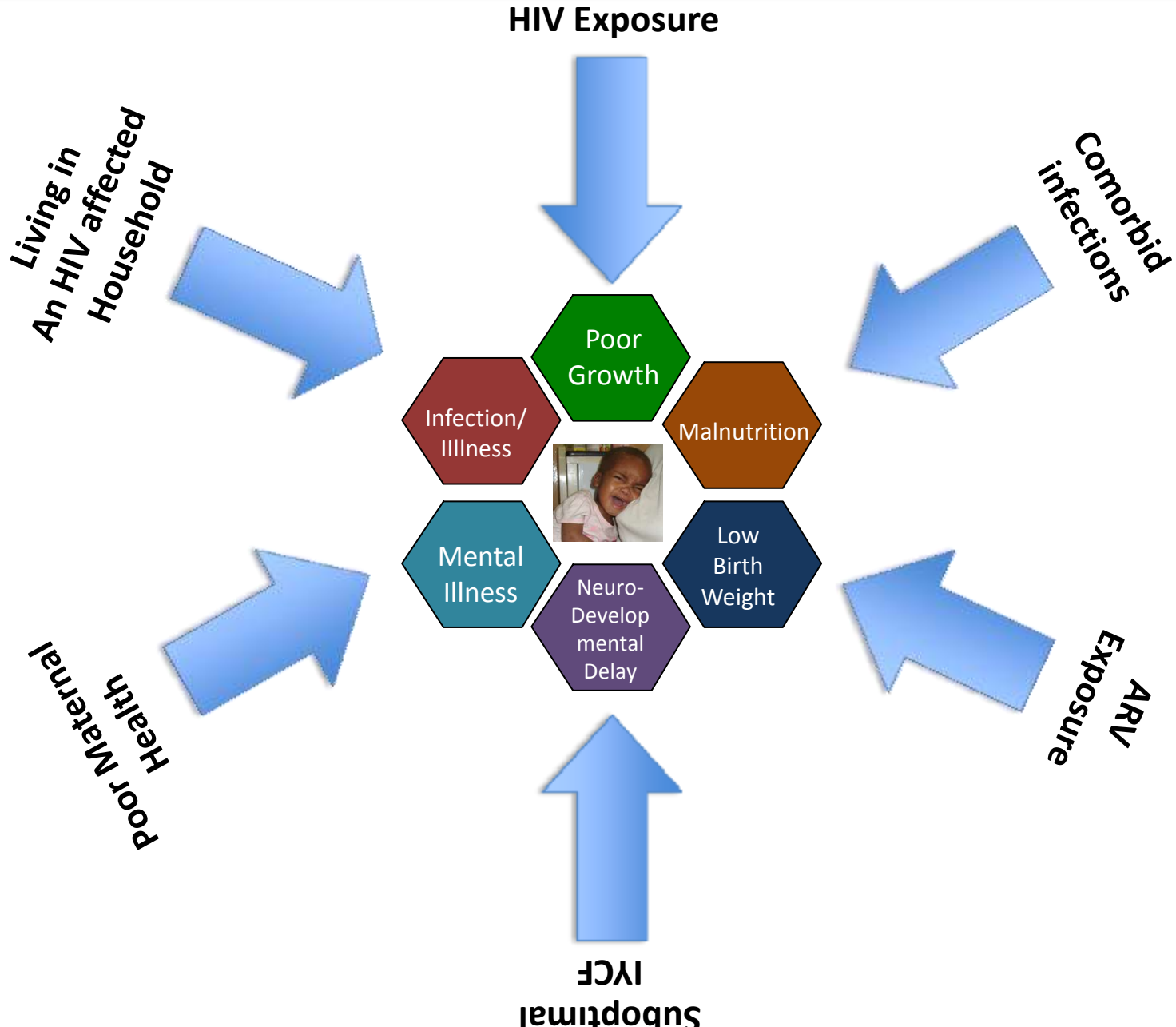
- 17.9 million children orphaned by AIDS¹
- Exposure to death, illness and household disruption
- AIDS orphans report higher levels of stigma from community²
- Poverty



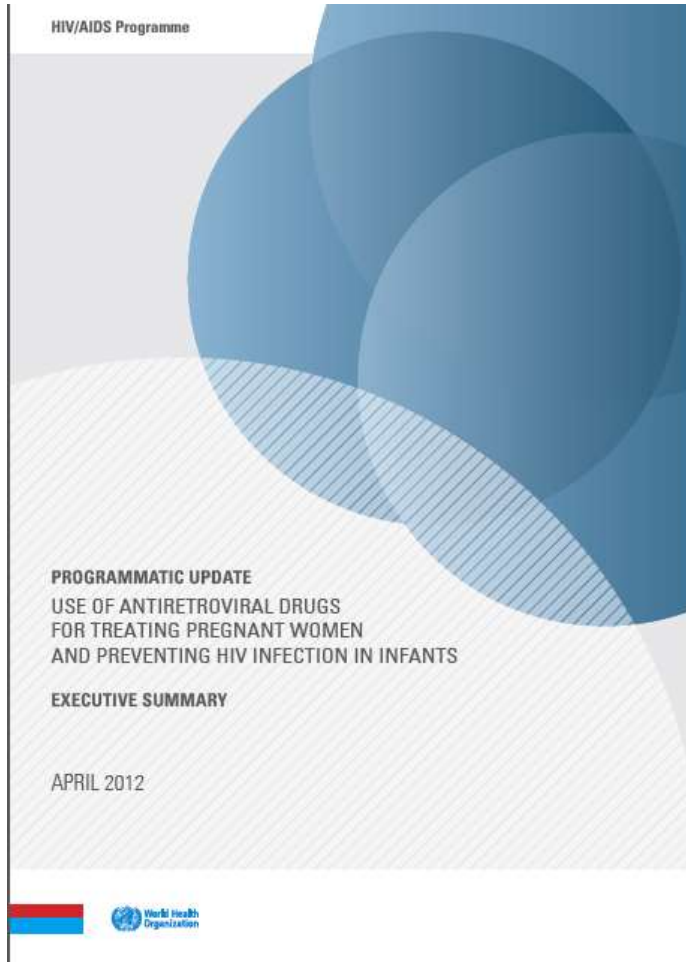
¹ UNAIDS 2012 Estimates

² Boyes et al. (2013) *Clin Psychol Sci.* 1:323-330

A Mixed Picture



B+ and the Elimination Agenda



GLOBAL PLAN TOWARDS THE ELIMINATION OF NEW HIV INFECTIONS
AMONG CHILDREN BY 2015 AND KEEPING THEIR MOTHERS ALIVE

2011-2015

What is needed next?

- Further research needed on impact of HIV exposure on HEU
- Longitudinal follow up of HEU critical to better understand outcomes
- Interventions to address and correct for disadvantages conferred by HIV exposure
- Set new goals beyond “HIV-free survival”

Thank you!