

Getting to Zero:
**HIV vaccines to eliminate the
pediatric HIV-1 epidemic**

IMPAACT Vaccine Working Group

Overview

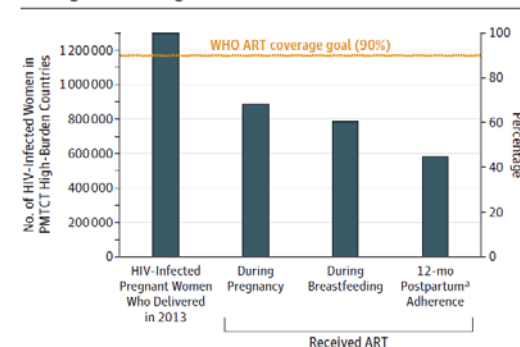
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Despite wide availability of ARV, pediatric HIV-1 continues to be a major public health challenge

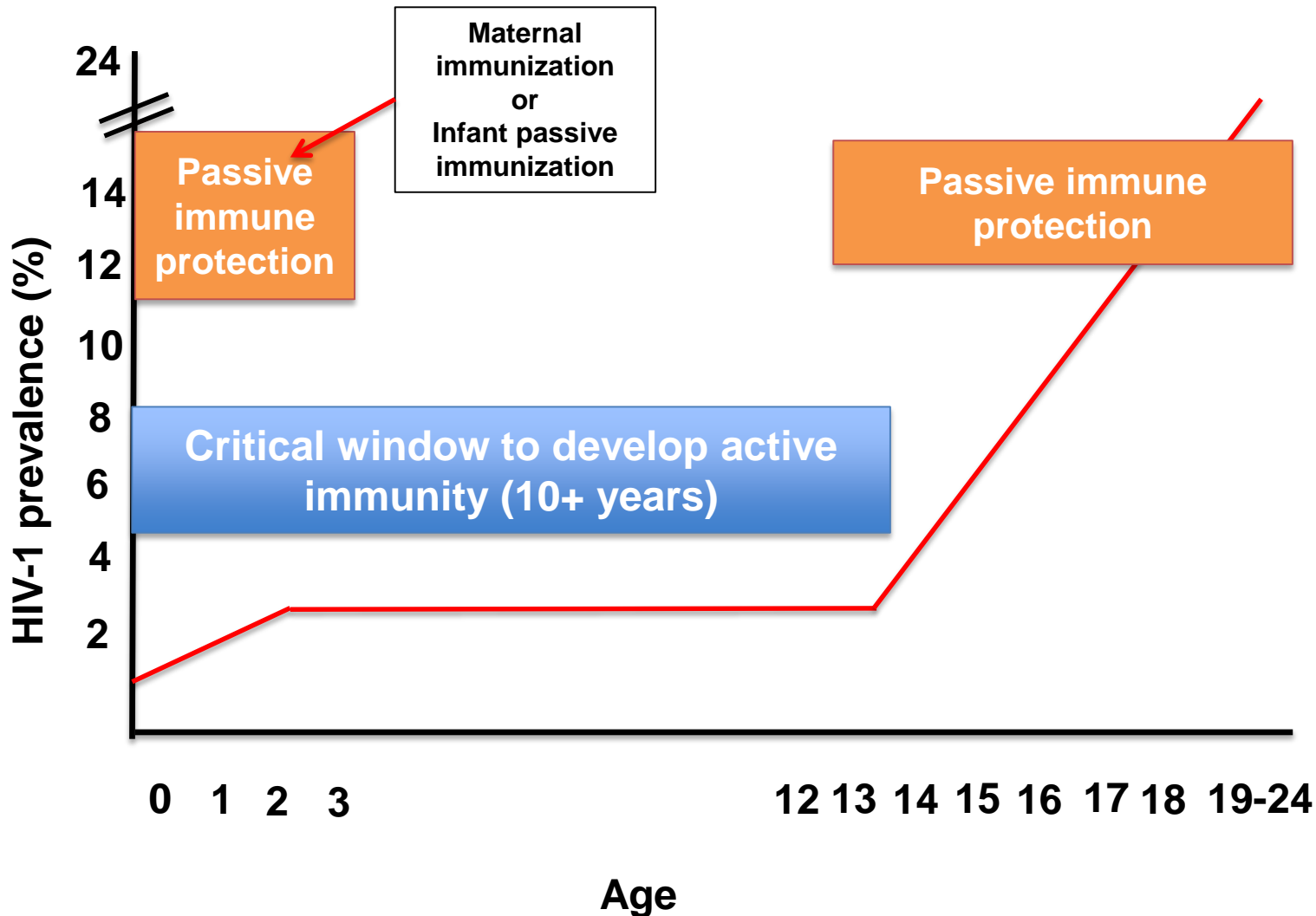
- >200,000 children become HIV infected annually
 - 700 infants become infected with HIV-1 daily
 - High rate of acquisition in early adolescence
- Current PMTCT will not eliminate MTCT:
 - Poor maternal coverage, adherence, and acute infection
 - high rates of prematurity (PROMISE)
- PrEP and other existing prophylaxis difficult to initiate in early adolescence

Additional interventions will be required to achieve an **HIV-free generation**

Figure. Maternal ART Coverage Goal and Currently Achieved ART Coverage in PMTCT High-Burden Countries



Bi-modal pediatric HIV-1 epidemic



Opportunities for immune-based maternal/infant interventions to reduce MTCT

Modeled after the successful Hep B passive/active maternal and infant immunization strategy

1. Enhancement of protective maternal antibodies during pregnancy (CHAVI-ID)
 - *In utero*, peripartum
2. Passive antibody immunization at birth for high risk infants (VRC01/LS – P1112)
 - Peripartum, early postnatal
3. Active immunization to prevent breast milk transmission (IMPAACT 2004)
 - Late postnatal transmission, acute maternal infection during lactation

Immune-based interventions to reduce transmission in early adolescence

1. Q3 month passive antibody administration (“Depo” like approach) with potent, long-acting bnAb
 - Young women, young MSM
2. Active immunization/boosting throughout childhood to prevent breast milk and early adolescent sexual transmission
(**IMPAACT2004, CAP523**)

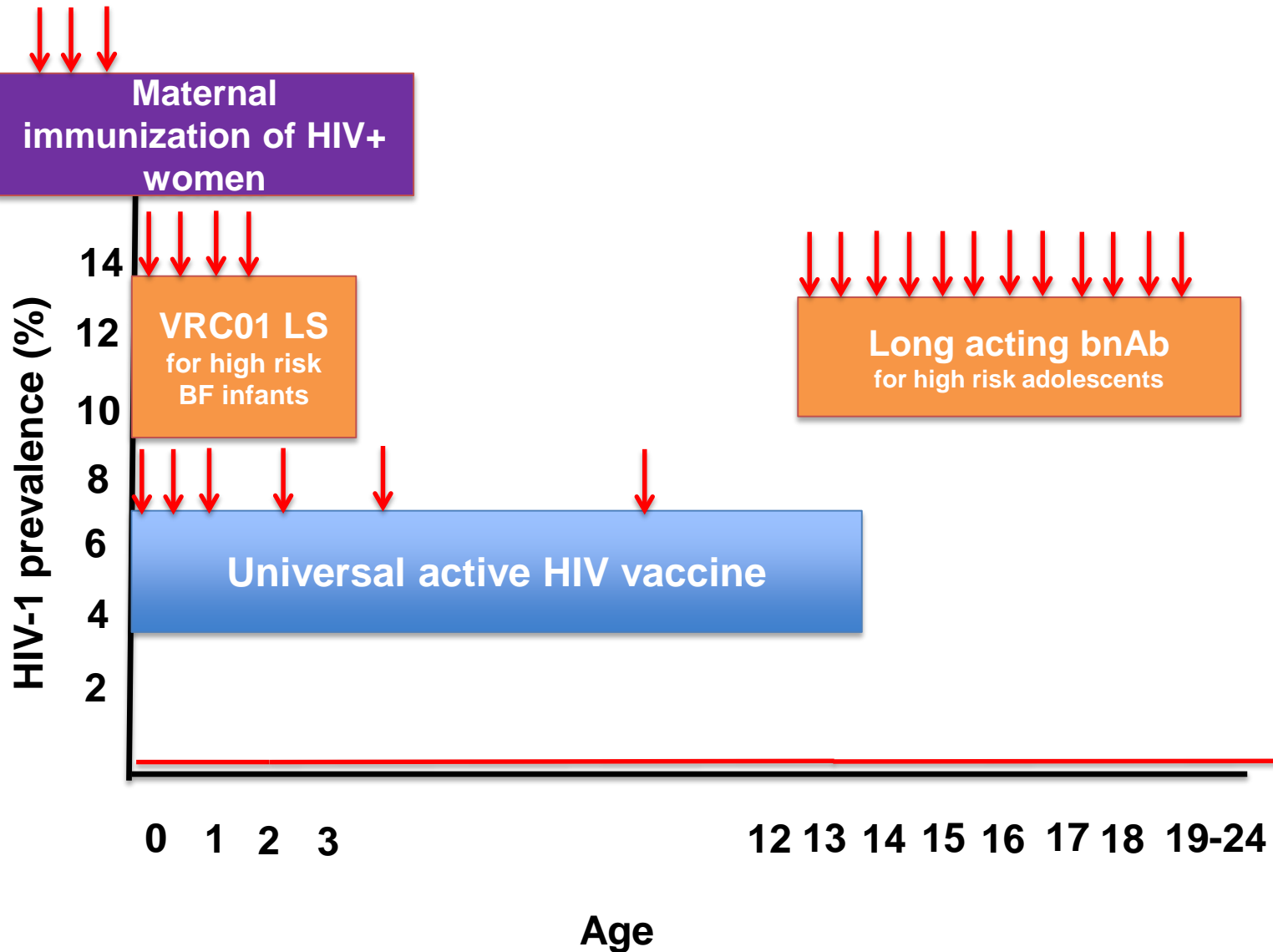
Next 5 years – infant and adolescent passive antibody trials

- 1. Passive antibody protection against breast milk transmission (VRC01/LS)**
 - PK/safety (**P1112**)
 - Efficacy in high transmission areas (partnership with Pepfar?)
- 2. Maternal immunization to enhance autologous virus neutralization**
 - Clade B/C rgp120 (CERES trial – CHAVI-ID)
- 3. Passive antibody protection of high risk adolescents**
 - PK/PD/tolerability (partnership with HVTN/PTN)
 - Efficacy (partnership with HVTN/PTN)

Next 5 years – infant active vaccination trials

- **Current HIV vaccine candidates don't elicit broad neutralization**
- **Novel strategies for induction of neutralizing B cell lineages – likely to need years of antibody maturation**
- **IMPAACT 2004**
 - ALVAC/Env immunization with Sanofi/GSK products
 - Same products as HVTN 702 efficacy study
 - Immune correlates from adult efficacy study could bridge to infant indication
- **Env Seq-1 (CAP 523)**
 - B cell lineage design Env vaccine to initiate broad neutralizing responses

Getting to zero pediatric HIV cases



Timeline of maternal/infant vaccine clinical studies

P1112 – passive VRC01 PK/safety

IMPAACT 2004 – infant Env vaccine safety/
immunogenicity

CERES trial – maternal Env vaccine safety/
immunogenicity in HIV+ women

CAP 523 EnvSeq-1 immunization in infants

