Aspirations, Innovations and a Touch of Reality - Reaching 90.90.90 for Children

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Columbia University
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Reaching 90.90.90

• Define 90.90.90
• Global update on pediatric care and treatment
• Testing, Treatment & Viral Suppression
  – Where we are now
  – Opportunities & innovations
  – Barriers to progress
• General reflections and considerations
“A new narrative on HIV treatment and a new final, ambitious, but achievable target,” UNAIDS, Oct 2014

By 2020, 90% of all people living with HIV will know their status

By 2020, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral treatment

By 2020, 90% of all people receiving antiretroviral treatment will have viral suppression

By 2020, 73% of all individuals living with HIV globally should be virally suppressed
New and current HIV infections among children, 0-14 years, globally

HIV infection among adolescents, 10-19 years of age

• Globally, it is estimated that there are approximately 2.1 million adolescents living with HIV
  – Includes perinatal and behavioral acquisition
  – 750,000 - 900,000 adolescents ages 10-14 years
  – 58% of adolescents with HIV are female
  – There were an estimated 250,000 new HIV infections among 15-19 year olds in 2013
    • 2/3 of all new adolescent infections occurred among girls

Number of adolescents by mode of infection, 25 countries
Pediatric 90-90-90

2.6 million children, 0-14 years of age

- 2.3 million diagnosed HIV+
- 2.1 million receiving ART
- 1.9 million virally suppressed
Infants, children and adolescents
90-90-90

- 3.7 million diagnosed HIV+
- 3.3 million receiving ART
- 3.0 million virally suppressed
By 2020, 90% of all children living with HIV will have known HIV status

HIV TESTING
Improving but inadequate uptake of EID: 42% of exposed infants tested in 2013
Entry into care and diagnostic testing in HIV-exposed infants, Malawi, June 2014-June 2015

Charts constructed using data from the Malawi Ministry of Health Q2 (April-June 2015) report

- Only 60% enrolled into care
- Only 40% of those enrolled were tested

Ideal 12 mo cohort

- HIV exposed infants
- Enrolled in HIV care
- Received diagnostic HIV test
90-90-90 for children 18mo-14yr
Kenya AIDS Indicator Survey (KAIS)

- 3681 children tested
- 28 (0.9% 95% CI:0.5-1.3) tested HIV positive
- 11 (39%) previously diagnosed
- 8 (73%) on ART
- 4 (50%) virologically suppressed

Ng’eno et al, JAIDS, 2014
Number of adolescents, 10-19 years, who know their status, Tanzania

Estimated number of adolescents (aged 10-19) living with HIV, 2013: 140,000

Number of adolescents (aged 10-19) living with HIV who know their status, 2013: Data not available

Number of adolescents (aged 10-19) living with HIV receiving ART, 2013: Data not available

Number of adolescents (aged 10-19) living with HIV who are virally suppressed, 2013: Data not available

http://allintoendadolescentaids.org
Strategies for identifying HIV-infected infants, children, and adolescents

Reaching 90-90-90

- Strengthen early infant diagnosis (EID) for HIV-exposed infants.
- Test all children of adults receiving any HIV service (PMTCT, Care, ART) through facility or home-based index case testing.
- Test all children and adolescents attending TB clinics, malnutrition services, and/or admitted to the pediatric ward.
- Test all children and adolescents receiving orphan and vulnerable children (OVC) services.
- In high prevalence settings (>5%), test mothers or infants attending immunization or under-5 clinics to identify HIV-exposed infants.

Strengthening the EID care cascade

HIV positive pregnant woman on ART

Infant enrolled in PMTCT follow-up

EID sample obtained at ≥6 weeks of age

Sample transported to laboratory

Sample tested for HIV at laboratory

EID results returned to the clinic

EID results returned to the family

Retained in care; repeat testing at end of exposure period

Immediate ART initiation
Innovations to strengthen the Early Infant Diagnosis (EID) and care cascade

Birth Testing
Point of Care (POC) Diagnostic Testing
Centralized transport schemes
SMS printers
SMS reminders
Appointment systems with active follow-up
Community health workers
HIV Infant Tracking System improves EID quality and retention, Kenya

Innovative on-line system, algorithm-based computer alerts for staff and text messaging alerts to mothers

Finocchiaro-Kessler et al, AIDS 2014
Facility and home based testing by Community Health Workers, Malawi

Ahmed S et al, JIAS, 2015
Routine PITC in primary health care clinics to identify adolescents with HIV, Zimbabwe

Ferrand R et al, CID 2010

Kranzer K et al PLOS Medicine 2014

6 primary care clinics, ages 6-15 years, 2013

2 primary care clinics, ages 10-18 years, 2009

Ferrand R et al, CID 2010
Obstacles along the road to 90-90-90

- Defining and obtaining CONSENT to test infants, children and adolescents
- Health worker shortages, capacity, roles and responsibilities
- Supply chain challenges
By 2020, 90% of those with diagnosed HIV infection will receive sustained antiretroviral treatment
An estimated 832,000 children, 0-14 years, received ART in 2014.

Estimated proportion of eligible adults and children receiving ART by year.

Antiretroviral coverage in children by region, 2000-2014, UNAIDS estimates
ART initiation among HIV-infected infants, Malawi, June 2014-June 2015

Majority of infected infants not being identified or started on ART

Charts constructed using data from the Malawi Ministry of Health Q2 (April-June 2015) report
Early infant diagnosis ART initiation
Francistown, Botswana, 2005-2012

N=153

Mothers received counseling

N=123

Infants received ART

N=82

Alive and on ART

Motwere-Chiwa, MMWR, 2014
Improvements over time but most children initiate ART at advanced disease stage

Davies MA et al, PLOS One 2013
Access to CD4 still limited, particularly at the primary care level, Lablite Project

Regular access to CD4 testing among facilities providing ART

Malawi

Uganda

Zimbabwe

Chan AK et al BMC Health Services Research 2014
High rates of attrition (death and loss to follow-up) among children on ART

67% retention at 36 months
Strategies for increasing the number of infants, children & adolescents initiating ART

Reaching 90-90-90

• **Universal treatment** for all infants, children, and adolescents

• **Expand ART access**
  – Decentralization, nurse managed ART, community-based ART

• **Newborn HIV Testing**
  – Earlier identification and engagement of HIV-infected infants, POC diagnostics
Improved ART access and uptake among pregnant and breastfeeding women, Malawi

Increase in number of ART sites

Transition from prophylactic ARV regimens for PMTCT to Option B+ in Malawi

8 fold increase in maternal ART initiations

Schouten, Presentation at SADC Meeting, 2012

Substantial increase in ART initiations for pregnant & breastfeeding women, Malawi

In 1st year of B+ implementation, the number of pregnant and breastfeeding women initiating ART increased 748% (CDC, MMWR 2013)

New ART initiations among pregnant and breastfeeding women, percentage of all new ART initiations attributed to this population, Malawi 2008-2012 (CDC, MMWR 2013)
Increase in ART uptake with Option B+ in 7 countries, EGPAF, 2011-2013
Option B+ simplifies delivery of PMTCT

- Reduced steps in the cascade
- No need for CD4 or clinical staging to initiate ART
- Harmonizes regimens for the PMTCT and ART programs
- Easily implemented by nurses and non-specialist physicians
Children, 0-14 years, newly enrolled in HIV and newly initiating ART, ICAP Kenya

![Graph showing ART for ALL children <10yrs]
Expand access to ART for children

• Decentralization to primary care facilities
  – Enhance health worker capacity to treat infants, children and adolescents at lower level facilities
  – Ensure integrity of the ARV supply chain

• Innovations in service delivery: family-focused care, community, school and home based ART

<table>
<thead>
<tr>
<th>Lost to Follow-up/100 PYs on ART</th>
<th>Mortality Rate/100 PYs on ART</th>
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<tbody>
<tr>
<td></td>
<td>PHF</td>
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<tr>
<td>Overall</td>
<td>9.8</td>
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<td>Rwanda</td>
<td>0.92</td>
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<td>Tanzania</td>
<td>2.5</td>
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<td>Mozambique</td>
<td>14.1</td>
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<td>Kenya</td>
<td>18.1</td>
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<td>Lesotho</td>
<td>12.9</td>
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Fayorsey R, JAIDS 2014
Newborn testing may lead to more infants starting treatment early
Obstacles along the road to 90-90-90

• Pressing need to engage with the behavioral and psychosocial issues affecting children and families affected by HIV particularly disclosure and sexual and reproductive health
• Better drugs and drug formulations for pediatric populations
• Address health worker shortages, capacity, roles and responsibilities
• Supply chain challenges
Initiation is only the first step in a lifetime of antiretroviral treatment
By 2020, 90% of those receiving antiretroviral treatment will have viral suppression

VIRAL SUPPRESSION
Viral suppression in the pediatric population

- Rates of viral suppression vary by population, age, gender, drug regimen, calendar year, duration of treatment, lower limit of detection, study design, frequency of measurement
- Published rates of viral suppression with first-line ART generally range from ~60% to 90%
  - Cross-sectional analysis of adults and children on ART in Swaziland: <10yr (n=588) 71% suppression; 10-19yr (n=580) 65% VS; 20+yr (n=10,808) 86%
  - Among 4803 children on ART in South Africa, in crude analyses, at any time-point on treatment, suppression was 65.6% (95%CI 62.7-68.4%) in community based adherence support (CBAS) children; 55.5% (95%CI 54.1-57%) in non-CBAS children

Jobanputra K et al PLOS ONE 2015
Fatti G et al AIDS Care 2013
Viral suppression on ART among children participating in the ARROW study

<400 copies per mL: global p=0.77

<80 copies per mL: global p=0.72

CDM

LCM

Years since randomisation (ART initiation)

Suppressed (%)

ARROW Trial Team, Lancet 2013
Rates of viral suppression among 649 perinatally infected youth, US

![Graph showing rates of viral suppression among perinatally infected youth.](image-url)

Kahana, JAIDS, 2015
Strategies for achieving viral suppression among infants, children & adolescents

Reaching 90-90-90

• Better drugs: more potent, robust, durable, safe, long acting, fixed dose combination regimens
  – Integrase inhibitors, long acting formulations (LAF)

• Innovative models of care and approaches to adherence support

• Addressing the developmental complexities across the trajectory from infancy through adulthood, for individuals, within families and communities
Risk of psychotic exacerbation/relapse lower for long-acting injectable risperidone vs oral risperidone
Colorado’s Effort Against Teenage Pregnancies Is a Startling Success

By SABRINA TAVERNISE  JULY 5, 2015

WALSENBURG, Colo. — Over the past six years, Colorado has conducted one of the largest experiments with long-acting birth control. If teenagers and poor women were offered free intrauterine devices and implants that prevent pregnancy for years, state officials asked, would those women choose them?

They did in a big way, and the results were startling. The birthrate among teenagers across the state plunged by 40 percent from 2009 to 2013, while their rate of abortions fell by 42 percent, according to the Colorado Department of Public Health and Environment. There was a similar decline in births for another group particularly vulnerable to unplanned pregnancies: unmarried women under 25 who have not finished high school.
Dual therapy with cabotegravir long acting and rilpiverine long acting injectable, LATTE and LATTE-2
Zvandiri community care and support model, Zimbabwe

<table>
<thead>
<tr>
<th>Early steps</th>
<th>Next steps</th>
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<tr>
<td><strong>Clinical care:</strong></td>
<td><strong>Community care:</strong></td>
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<td>• Diagnosis</td>
<td>• Support groups: psychosocial support,</td>
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<td>• Monitoring</td>
<td>counseling, positive living education,</td>
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<td>• Management of opportunistic infections</td>
<td>nutrition, gardens, treatment literacy</td>
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<td>• Counseling</td>
<td>• Community outreach: psychosocial</td>
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<td>• ART</td>
<td>support, counseling, home-based care,</td>
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<td>• Prevention of mother-to-child transmission</td>
<td>positive living education, child</td>
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<td>tracing, treatment literacy, caregiver</td>
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<td>training, adolescent sexual</td>
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<td>and reproductive health</td>
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<td>• Adherence supporters: psychosocial</td>
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<td>• Support and training center: psychosocial</td>
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<td>adolescent-led information, education,</td>
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<td>and communication materials; recreation</td>
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<td>activities; skills training; education</td>
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<td>and medical assistance.</td>
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<th>Providers:</th>
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<tr>
<td>• Ministry of Health and Child Welfare</td>
<td>• Zvandiri Community Care and Support Model</td>
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<td>• City Health Private Clinics</td>
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Bolster key family and youth processes

VUKA & CHAMP+ASIA
Obstacles along the road to 90-90-90

- Prolonged duration for drug development
- Adherence to chronic, daily medication regimens is poor across multiple disease
- Pressing need to engage with the behavioral and psychosocial issues affecting children and families affected by HIV particularly disclosure and sexual and reproductive health
Aspirations, Innovations and a Touch of Reality - Reaching 90.90.90 for Children

- Targets are good but justifiably aspirational
  - Relatively good experience with 3x5, MDGs
- Opportunity to direct attention to pediatric populations, somewhat neglected
- Achieving 90.90.90 will require focused attention, political will, innovation, and more than a bit of luck
- Into the future, however, the best hope for children will be to PREVENT new infections – another target (elimination) we now have the tools to achieve
Cuba ends mother-to-child transmission of HIV and syphilis

By Jamie Gumbrecht, CNN

Updated 10:46 AM ET, Wed July 1, 2015

(CNN) — Cuba is the first country in the world to eliminate mother-to-child HIV transmission, the World Health Organization announced.

Officials said it shows that an end to the AIDS epidemic is possible, and they expect more countries to seek validation from the World Health Organization. The country was also the first to eliminate mother-to-child transmission of syphilis.

"Eliminating transmission of a virus is one of the greatest public health achievements possible," Dr. Margaret Chan, the WHO director-general, said in a Tuesday press release. "This is a major victory in our long fight against HIV and sexually transmitted infections, and an important step
THANKS EVERYONE!