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THE DOUBLE DIVIDEND

A Synthesis of Evidence for Action to improve survival of HIV-'exposed' children in the era of eMTCT and renewed child survival campaigns



ACRONYMS

3TC	Lamivudine
ABC	Abacavir
ARV	Antiretroviral drugs
ART	Antiretroviral treatment
AZT	Zidovudine
CHAI	Clinton Health Access Initiative
CHAP	Children with HIV Antibiotic Prophylaxis (CHAP)
CHER	Children with HIV Early Antiretroviral Therapy
CHW	Community health worker
DRC	Democratic Republic of Congo
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
EID	Early Infant Diagnosis
EFV	Efavirenz
EPI	Expanded Program on Immunization
FDC	Fixed dose combination
FTC	Emtricitabine
HW	Health worker
IATT	Inter-Agency Task Team on Children affected by HIV/AIDS
ICCM	Integrated Community Case Management
IMCI	Integrated Management of Childhood Illnesses
LPV/r	Lopinavir/Ritonavir
MDG	Millennium Development Goal
MNCH	Maternal newborn child health
NRTI	Nucleoside Reverse Transcriptase Inhibitor
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitor
NVP	Nevirapine
PADO	Pediatric Antiretroviral Drugs Optimization meeting
PCR	Polymerase Chain Reaction
PEPFAR	President's Emergency Plan for AIDS Relief
PHC	Primary Health Care
PITC	Provider initiated testing and counseling
PK	Pharmacokinetics
PMTCT	Prevention of mother to child transmission
TAF	Tenofovir alafenamide fumarate
TB	Tuberculosis
TDF	Tenofovir
UNICEF	United Nations Children's Fund
UNAIDS	Joint United Nations Program on HIV/AIDS
WHO	World Health Organization

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The main aim of the paper is to synthesize the evidence and programming experience to improve child health and HIV-related outcomes. It is intended to stimulate a wider dialogue among policymakers, health care providers, researchers and donors about what is needed to put necessary action into motion.

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INTRODUCTION

What is the Double Dividend?

The "[Double Dividend](#)"¹ is intended to catalyse accelerated action towards the dual goals of ending paediatric HIV and AIDS and improving child survival. Around the world countries are recognizing the need for alignment between management, messaging and services for maternal and child HIV and broader maternal, newborn and child health (MNCH). In practice, this means strengthening linkages and integration across the health system, and acknowledging emerging evidence of the vulnerability of all children, including children 'exposed' to HIV, infected and uninfected.

HIV- 'Exposed':

A child born to an HIV positive mother who may or may not be HIV Infected. The period of exposure is from pregnancy through the end of breastfeeding.

Infants born to HIV positive mothers, whether HIV-infected or not, may have higher risk of morbidity and mortality than infants who are not exposed to HIV.^{2,3,4} As the success of eliminating mother-to-child-transmission of HIV grows and fewer children acquire HIV in early infancy, there is a danger of children exposed to HIV being neglected. As a new issue, only just emerging in the literature, few programmes have taken the evidence into account within overall maternal and child health efforts.

This initiative goes beyond HIV. Supporting children who are exposed to HIV contributes to wider child health targets. Whether children become infected with HIV or not, if they are exposed to HIV during pregnancy, birth or breastfeeding, morbidity and mortality rates are higher than that of children not exposed to HIV in this way. Especially in high prevalence countries, HIV infection exacerbates common killers of children such as pneumonia and diarrhoea and hinders the effectiveness of interventions. It may also contribute to repeated episodes of acute malnutrition and hampers its recovery.

The *Double Dividend* is not a separate initiative, but relies on strong and genuine linkages with partners and other initiatives such as *Every Woman Every Child*,⁵ *A Promise Renewed*⁶ and the post-2015 agenda. *The Double Dividend* is about the search for new and improved entry points to find and better serve children who are exposed to HIV – regardless of their HIV status, while strengthening service delivery platforms through strategic investments from which all children can potentially benefit. In so doing, the dual goals of ending paediatric HIV and improving child survival can be met.

Integrating HIV related screening and services into a wider range of child health and support services is essential to identifying these children and retaining them in care. For example, when infants are brought for their regular health

and growth monitoring, or for routine immunization – usually accompanied by their mothers – HIV testing can be offered at the same time, following some initial screening, to detect high risk children. The focus of the *Double Dividend* is on strengthening the performance of the maternal, newborn and child health platform including through integrating HIV services with basic antenatal, postnatal and child health, and nutrition services. Expansion of these efforts could significantly improve overall survival of women and children and accelerate progress towards reaching MDGs 4, 5 and 6 by 2015.

This paper provides the evidence and emerging data that supports both the need for the *Double Dividend* and the means by which it may succeed.

The time is now for a renewed dialogue to advance, treatment, care and support for HIV-infected women and children, when the international community has committed to accelerating progress on newborn, child and maternal survival through *A Promise Renewed*.

BACKGROUND

Progress on HIV is essential to achieving MDGs 4, 5 and 6

Child deaths are down, but Millennium Development Goal 4 will not be reached without dramatically reducing AIDS-related deaths, as well as other major causes of under-five mortality. In 2013, UNICEF and WHO reported that 6.6 million children under five-years-old died in 2012, with nearly 75 per cent of all the deaths attributable to six conditions: neonatal causes, pneumonia, diarrhoea, malaria, measles, and HIV and AIDS. Malnutrition contributes to 45 per cent of death to children under five.⁷ While this represents an estimated 50 per cent decline in child deaths since 1990, the rate of reduction will need to be quadrupled in order to reach Millennium Development Goal 4: a reduction in the global rate of under-five mortality by two thirds by 2015. This is equal to an additional 3.5 million children's lives needing to be saved in the next 18 months.⁸

An integrated approach to overall health has been endorsed as part of the [Secretary General's Global Strategy for Women's and Children's Health](#), and other important initiatives such as the *Global Plan to Eliminate New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive (Global Plan)*⁹ and *A Promise Renewed*.¹⁰ The latter – *A Promise Renewed* - is a global movement

In September 2000, building upon a decade of major United Nations conferences and summits, world leaders came together at United Nations Headquarters in New York to adopt the United Nations Millennium Declaration – which committed to a new global partnership, and a deadline of 2015 with time-bound targets which became known as the eight Millennium Development Goals (MDGs). The *Double Dividend* relates mostly to the following MDGs:

GOAL 4: Reduce child mortality: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

GOAL 5: Improve maternal health: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

GOAL 6: Combat HIV and AIDS, malaria and other diseases: Have halted by 2015 and begun to reverse the spread of HIV and AIDS; Achieve, by 2010, universal access to treatment for HIV and AIDS for all those who need it

launched in 2012 to improve the health of women and children, based on the premise that child survival is a shared responsibility among governments, civil society, individuals and the private sector. The goal, also aligned with *Every Woman Every Child*, is to convert commitments into action to ensure the health and survival of mothers and children around the world. The 2013 African Union Declaration on Abuja Actions Toward the Elimination of HIV and AIDS, Tuberculosis and Malaria in Africa by 2030 also calls for support through mobilization of governments, the private sector and other stakeholders. Several initiatives currently call for effective integration of HIV within sexual and reproductive health (SRH) and MNCH services to increase maternal and paediatric HIV intervention coverage and to strengthen systems for provision of more comprehensive, effective and efficient health and HIV services.^{11,12,13}

Building on the momentum of these international and regional initiatives (See Annex 2), UNICEF, WHO and EGPAF have come together to form a leadership group to engage global and national stakeholders with Ministers of Health from the 21 African countries facing the greatest burden of paediatric HIV infections and mortality.ⁱ Through political and technical support, this group of UN agencies, implementers and donor partners are working towards stronger integration of HIV services into MNCH platforms to eliminate new paediatric HIV infections, to keep HIV-positive mothers alive, and to ensure all HIV-infected and exposed children are identified and linked to care. Success in each of these outcomes will contribute to the global goals of a two-thirds reduction in child mortality and a 50 per cent reduction in HIV-related child and maternal mortality.

Putting mothers first to protect children

The correlation between maternal and child survival is well recognized, but the extent of the contribution of HIV infection to this relationship has not been well understood. The direct impact of transmission of HIV infection to the infant on child mortality is clear, but the indirect effects are less well understood. What has been shown by multiple studies is that a mother's ill health and/or death has a negative impact on a child's life even in the absence of HIV transmission to the child.^{14,15,16}

In 2006, modelling demonstrated that ART, which delays HIV disease progression, contributed significantly to reducing HIV-related adult mortality at the population level.¹⁷ Furthermore, there is evidence that declining early child mortality at population level was associated with expanding maternal ART.¹⁸ A systematic review in 2012 of more than 9,000 mothers in **KwaZulu-Natal, South Africa**, either HIV-positive or HIV status-unknown, who delivered more than 12,000 children in rural settings found a 49 per cent reduction in under-five mortality over a seven-year period. The introduction of maternal ART was identified as a key factor in this reduction. Furthermore, the authors found that HIV-exposed infants and children (HIV-infected and -uninfected) whose mothers became ill or died were at a significantly increased risk of mortality.^{19,20,21}

In 2012, there were an estimated 1.5 million HIV-positive pregnant women globally.²² Without intervention, nearly half of these women will pass on HIV to their children during pregnancy, childbirth or through breastfeeding.²³ In the absence of antiretroviral treatment and care, most HIV-infected children die before their fifth birthday, with 50 per cent of these deaths occurring by 24 months of age.^{24,25} However, through major global initiatives, such as the Global Plan, US President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) have had a significant impact on the landscape, particularly through increasing coverage of services to prevent mother-to-child transmission (PMTCT).

In 2013, the WHO Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection (2013)²⁶ recommended initiation of ART for all pregnant and breastfeeding women living with HIV. This means the initiation of maternal ART is no longer dependent on CD4 count or clinical stage. The mounting evidence on the impact of ART on maternal and child mortality, as well as the evidence demonstrating the significant reduction of HIV transmission in sero-discordant couples was an important element of the rationale supporting this shift to simplification of treatment.^{27,28,29,30} This approach is intended to minimize operational challenges, and boost retention in care – and ultimately accelerate achievement of the ambitious goal of eliminating new HIV infections among children by 2015, and keeping their mothers alive.

In addition to the 2013 WHO recommendations on initiating treatment for all HIV-positive pregnant women, retaining women in care is also a challenge. High rates of loss-to-follow-up along the care continuum of care are reported for women, and the situation for their children

ⁱ The 21 high burden priority countries included in the Global Plan are: Angola, Botswana, Burundi, Cameroon, Chad, Cote d'Ivoire, DR Congo, Ethiopia, Ghana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, South Africa, Swaziland, Uganda, Tanzania, Zambia and Zimbabwe.

appears to be even worse.^{31,32,33}

Placing women at the centre of the approach has been recognized as an important part of the recent acceleration of results. In 2012, 65 per cent of women who were HIV-positive and pregnant were reached with antiretrovirals (ARVs) in the 21 priority countries in Africa.³⁴ Ensuring all HIV-positive pregnant women and mothers have access to and remain in care is critical to achieve the most ambitious goals of increased maternal and child survival.

HIV-exposed children

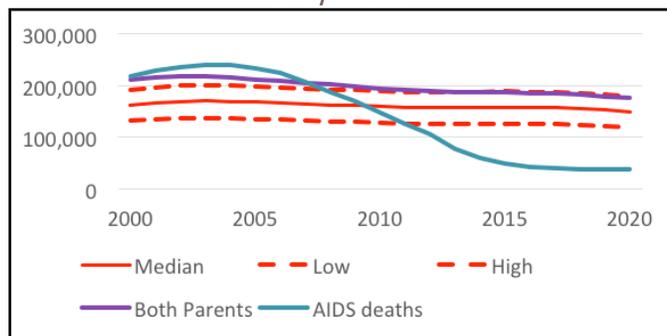
Concerns over the impact of HIV on children have been evident for decades, however the *Double Dividend* draws attention to an emerging body of evidence that suggests the needs of 'all' children born to women living with HIV need to be taken into account.

Relatively new information suggests that, as compared to children who are not exposed to HIV, children who are exposed to HIV during pregnancy, birth or breastfeeding, but are not infected with HIV, may have slower early growth, and experience more illness and even death.^{35,36,37}

A recent meta-analysis of seven studies looking at mortality rates in HIV-exposed children vs HIV-unexposed children 0-4 years of age suggested a 2.5 times increased risk of mortality for children HIV-exposed.³⁸ Using data from 2012, there were an estimated 6.4 million HIV-exposed children aged 0-4 years born to mothers who were HIV-infected. On a theoretical exercise, extrapolating this data to the HIV-exposed children in 2012, there might have been approximately 140,000 (110,000-170,000) additional deaths due to HIV-exposure, approximately one-third more than the number of AIDS-related deaths to HIV-infected children 0-4 years of age. Ninety-five per cent of the excess deaths were in sub-Saharan Africa (17 per cent in East Africa, and 39 per cent in both southern Africa and West and Central Africa).

Various factors are thought to have contributed to this excess mortality, including reduced capacity of mothers who are HIV-infected to provide care and support due to their own

Figure 1: Excess Mortality among HIV-Exposed Children 0-4 years old



Source: UNICEF and Futures Institute, November 2013

illness, belief that early cessation of breastfeeding will keep the child alive, increased levels of poverty as a result of maternal illness and inability to work and exposure to illness such as tuberculosis (TB), diarrhoea or other illnesses from their immune-compromised parents. While further analyses and studies will help to fully understand all the possible implications of these findings, actions to address this problem would include ART for mothers living with HIV infection and breastfeeding education, counselling and support.^{39,40} As Figure 1 suggests, without urgent action, even with the current rate of PMTCT, while AIDS-related deaths may decrease in the coming years, overall mortality will not shift for HIV-exposed children under 4 years of age.

HIV exacerbates morbidity and mortality from common childhood illnesses

The majority of children living with HIV live in areas with high prevalence of other conditions, including pneumonia, diarrhoea, TB, malaria and malnutrition. Studies show that mortality rates for HIV-positive children – even when they are using ART – are estimated to be up to 30 times higher than mortality among HIV-unexposed children, largely due to common childhood illnesses and opportunistic infections.^{41,42,43}

While accurate estimates of children co-infected with HIV and TB are hampered by significant diagnostic challenges, TB is the leading cause of death among people living with HIV in sub-Saharan Africa, responsible for up to 15 per cent of HIV related maternal mortality. TB is known to be a significant cause of childhood morbidity and mortality globally. Furthermore, there has been a significant increase in the rate of co-infection of TB and HIV in pregnant women. Studies have shown that women who are pregnant and living with HIV are at an increased risk of transmitting both TB and HIV to their infants.^{44,45,46} The increasing understanding of the correlation and impact of TB and HIV on maternal and child survival has led to movements calling for improved integration of TB activities into HIV and MNCH platforms.

According to the US Center for Disease Control, diarrhoeal diseases account for one in nine child deaths worldwide. In children with HIV, diarrhoea is even more lethal with a death rate 11 times higher than the rate for children without HIV.⁴⁷ Furthermore, in Malawi, it was found that more than 50 per cent of children admitted with severe pneumonia also had HIV.⁴⁸ Through the Children with HIV Antibiotic Prophylaxis (CHAP) trial in Zambia, a 67 per cent reduction in child mortality among children living with HIV with the use of cotrimoxazole (CTX) was found. This and other evidence, led to WHO recommending the use of CTX for all HIV-exposed infants. Despite known effectiveness and relatively low cost of the intervention, CTX coverage remains low in most countries, but ranges widely from 3 per cent to 88 per cent.⁴⁹ WHO is currently revising recommendations on CTX prophylaxis for HIV-exposed children and adults with

a clearer focus on survival.

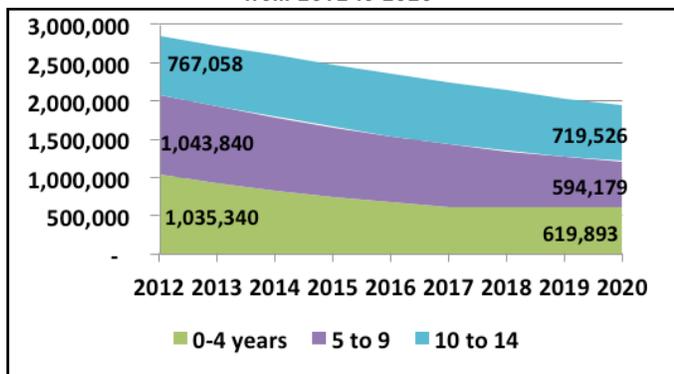
This suggests that children and families exposed to HIV need greater attention regardless of their HIV status.⁵⁰

Paediatric HIV infections will continue through 2020 and beyond

While success of major national, regional and international initiatives has reaped benefits not only for the health and well-being of mothers living with HIV, but also for the 850,000 infants born 'without' HIV from 2005 to 2012, but gaps remain.⁵¹ Since the baseline year for the Global Plan (2009) there have been an estimated 1.3 million new paediatric HIV infections globally; 1.2 million in sub-Saharan Africa, where approximately 90 per cent of paediatric infections occurred, amounting to 230,000 in 2012 alone.⁵² Based on projections using a Spectrum model, it was estimated at the recent Paediatric Antiretroviral Drug Optimization meeting (PADO),⁵³ that in the year 2020 there will be nearly 1.9 million HIV-infected infants, children and young adolescents (0-14 years of age), with an estimated 1.6 million needing ART in the 21 sub-Saharan African priority countries (See Figures 2 and 3; Annex 1).

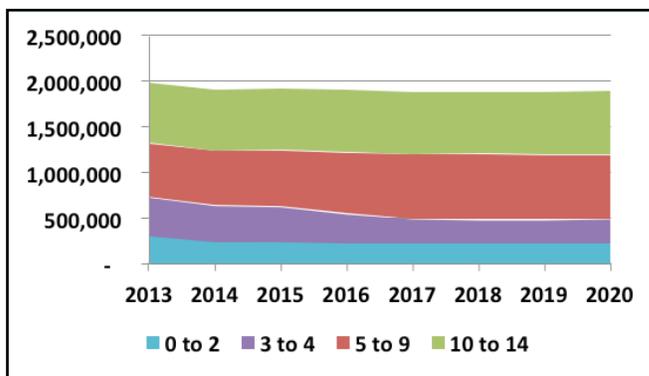
These estimates highlight the likelihood that there will continue to be a significant number of children living with HIV who will require treatment despite the ART coverage targets set by 2020. While a decrease in new HIV infections among infants and young children is projected over time, even with 95 per cent of PMTCT coverage the graph line is more likely to show a plateau for some time, rather than a dramatic drop. Importantly, as PMTCT efforts continue to reduce the number of infants with HIV, there will be a shift to an increase in the average age of all children living with HIV. Globally, in 2012 new infections among children dropped to 260,000 and AIDS-related deaths in children decreased to 210,000 in 2012.⁵⁴ This represents 52 per cent and 24 per cent declines, respectively, since 2001. However, the dramatic drop in new infections among children makes them

Figure 2: Projected number of children living with HIV from 2012 to 2020



Source: Paediatric Antiretroviral Drug Optimization meeting (PADO) Treatment 2.0 Drug Optimization; Oct 2013

Figure 3: Projected number of children in need of ART to 2020



Source: Paediatric Antiretroviral Drug Optimization meeting (PADO) Treatment 2.0 Drug Optimization; Oct 2013

harder to reach.

Accordingly, rapid adjustments in services are needed to expand the current focus on providing ART for children less than five-years-old to cater to older children, which demands an integrated approach across sectors

Most HIV-exposed children are not tested early or enough

In 2012, only 39 per cent of infants born to women with HIV were tested within the recommended first two months of life in low- and middle-income countries.⁵⁵ And only four of the 21 priority countries of the Global Plan reached at least 60 per cent coverage with early infant diagnosis (EID) in 2012 (Lesothoⁱⁱ, Namibia, South Africa and Swaziland).⁵⁶ Without dramatic improvements to systematic and sequential testing of all HIV-exposed children throughout the exposure period, access to treatment will remain sub-optimal. The widespread use of reliable, accurate, sensitive, and affordable rapid tests for older children, and virological testing for infant diagnosis remains challenging.⁵⁷

A delay in identifying and initiating ART in infants with HIV dramatically increases the rate of infant mortality.⁵⁸ The Children with HIV Early Anti-Retroviral Therapy (CHER) study investigating the impact of early treatment in children with HIV in South Africa found that ART initiated at a median age of 7 weeks reduced early mortality from 16 per cent to 4 per cent, a relative reduction of 76 per cent. Additionally, the authors found an overall 75 per cent reduction in disease progression.⁵⁹ Despite this, most exposed infants are not tested for HIV. A study found that of more than 28,000 children born to women living with HIV, 59 per cent of the children received their first test between 6 weeks and 6 months of age.⁶⁰

ii Lesotho's value is based on 2011 coverage estimates. No 2012 value was reported.

Infant HIV testing is critical - it is not about one test at one point in the exposed infant or child's life. Both virologic testing and the use of sequential serology testing are cost-effective tools that can help identify HIV infections. Expanding testing to common paediatric entry points is needed to increase identification of children.

In 2010, WHO released guidance related to HIV testing in infants and children,⁶¹ which included the following key recommendations:

- It is strongly recommended that HIV virological testing be used to diagnose HIV infection in infants and children below 18 months of age and that all HIV-exposed infants should have an HIV virological test at 4-6 weeks of age;
- In infants with an initial positive virological test result, it is strongly recommended that ART be started without delay and, at the same time, a second specimen be collected to confirm the initial positive virological test result;
- HIV antibody testing should be used to screen for HIV exposure in children <18 months of age and can be used to diagnose HIV in children >18 months of age;
- Infants with signs or symptoms suggestive of HIV infection should be tested with an HIV antibody test to determine HIV exposure and if positive, virological testing should be done.

In September 2013, WHO convened a group of experts to discuss technical and programmatic issues which are expected to be reflected in a technical update planned for January 2014. Key issues related to infant diagnosis and virological testing that were identified for review include:

- **A review of emerging data on HIV virological testing:** Virological testing at 4-6 weeks of age remains the optimal timing for testing sensitivity to identify the greatest proportion of in utero and early intra-partum infections. This does not appear to be affected by maternal ART or more effective prophylaxis to mothers or infants. Consideration is now being given to adding a virological test at birth (in addition to testing at 6 weeks or later) in order to more quickly identify and treat HIV-infected infants who have a high risk of early death. In addition, in settings with a high rate of institutional deliveries or early postnatal follow up (such as for BCG vaccination), birth testing

may afford an opportunity to identify and retain more infants. However, data to support this intervention are limited and the additional costs of this approach should be evaluated.⁶²

- **A review of data related to the use of rapid HIV antibody tests among older infants and children:** There is a lack of data on the use of HIV antibody tests and test performance according to age. Programmatic data suggest that these tests are underutilized to screen for HIV-exposure and that provider-initiated testing and counselling for children (to improve HIV case finding) should be scaled up further. Several studies have demonstrated that rapid HIV antibody testing prior to virologic testing is a cost effective means of targeting which children need viral load testing.^{63,64}

Feasible, Reliable Point-of-Care Diagnostics

Advances in point-of-care (POC) diagnostics are expected to make decentralized testing of HIV – with speedier linkage to care and treatment – a viable option as soon as 2014. Representative of the new generation of devices is SAMBA (Simple Amplification Based Assay), a nucleic acid-based POC platform capable of processing both early infant diagnosis (EID) and routine viral load (VL) tests in less than two hours.

In recent trials, SAMBA VL tests demonstrated gold-standard results with 97 per cent overall accuracy compared to central lab technologies. Similar accuracy has been attained in trials of SAMBA's EID tests. Additional trials underway in Uganda and Kenya, and soon in South Africa and Nigeria, will measure the impact of POC testing on time to treatment, loss to follow-up and retention in care. Designed for resource-limited settings, the dual-test SAMBA platform will make implementation more economical and simpler for rollout to lower level facilities.

Source: Developed by the Diagnostics Development Unit of Cambridge University and produced by its spinout company, Diagnostics for the Real World.

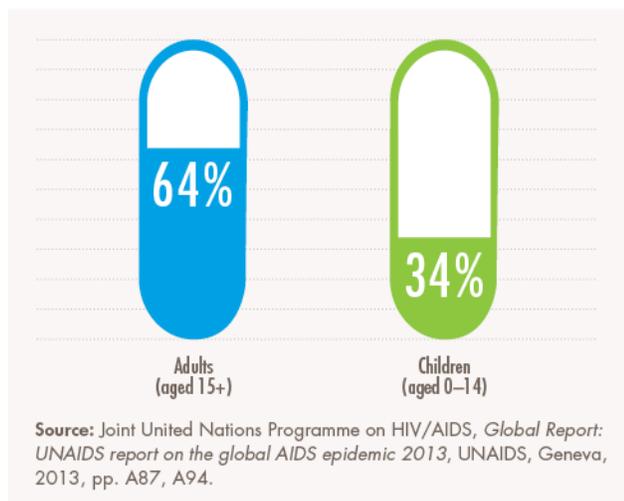
- **A review of the pipeline of for virological testing:** The evolution in testing platforms with the possibility of point-of-care (POC) virologic tests for early infant diagnosis (EID), as well as dual platform capability (EID and viral load testing) is closer at hand. The availability of POC testing would push for de-centralization of laboratory capacity and greatly increase access to rapid identification of HIV-infected infants.⁶⁵ However, POC strategies should

be considered in conjunction with centralized testing, particularly in low prevalence settings or in settings with a strong PMTCT programme and few new infant infections.

- A review of national adoption of guidelines and identification of operational innovations that will improve service delivery of infant testing:** In 2012, UNICEF and WHO published a review of four countries in Africa with a high HIV prevalence to better understand the patterns of paediatric HIV testing and barriers and bottlenecks. Their findings revealed that while many children were tested in PMTCT programmes, the majority of positive test results were identified at other entry points, such as paediatric inpatient wards and nutrition clinics, when children were presenting with severe illnesses. Furthermore, children testing in PMTCT programmes were frequently tested after 6 weeks of age and experienced an average turnaround time for test results as great as 8 weeks. Lastly, there was a glaring short supply of testing and data on the final status of the infant at 18 months.⁶⁶ These and other findings suggest that greater work is needed to improve the cascade from HIV testing to treatment initiation through both PMTCT programmes and through identifying HIV-infected children in other settings, such as nutrition clinics and in-patient wards and linking them to timely treatment.
- Recognition of the growing body of evidence suggesting the feasibility of integrating provider-initiated HIV testing (PITC) in other routine child health services, such as immunization clinics, paediatric inpatient units and nutrition clinics, which would create efficiencies in facilities, increase access to testing and help normalize HIV testing, in particular for high prevalence regions.**^{67,68,69} While

Figure 4: Adult vs Paediatric Coverage

Percentage of adults (aged 15+) and children (aged 0–14) living with HIV receiving antiretroviral therapy in low- and middle-income countries, 2012



there are still knowledge gaps, findings from a literature review undertaken by UNICEF suggests that integration of EID within immunization clinics resulted in increased EID testing rates compared to when provided in PMTCT alone. Equally important, preliminary analysis suggests that there was no negative impact on the uptake of immunizations.

- Recognition of critical research gaps:** Better data on the feasibility and costs of birth testing are needed, as are more robust data on the performance of rapid HIV antibody tests in infants and young children. Information on successful strategies to improve retention from testing to results return and treatment initiation is needed. Finally, understanding the perspectives of communities and women living with HIV as they related to HIV testing and treatment of young infants will be important to identify barriers to service uptake and retention.

Children are only half as likely as adults to receive treatment

While the identification of the HIV-infected infant and/or child is critical, timely access to treatment is equally important.

For the more than 1.5 million children aged less than five years that are projected to be living with HIV in 2015, provision of HIV treatment can reduce their mortality by up to 90 per cent, contributing substantially towards MDG 4.⁷⁰ However, in 2012 ART was only reaching 34 per cent of children in need of treatment and there continues to be a widening gap between adults on ART and children on ART (See Figure 4). Where ART coverage in children increased by 11 per cent between 2011 and 2012, adult ART coverage grew by over 20 per cent in the same period.⁷¹ Even with focus on increasing access to diagnostics to identify HIV-exposed infants, access to timely initiation of ART is critical. The gap between diagnosis and initiation of ART results in many infants and children dying early.⁷²

Continuing care remains a challenge

As PMTCT services improve and continue to reduce HIV transmission during the ante-partum and intra-partum periods, it is expected that the proportion of HIV transmission events will increase during the breastfeeding period.⁷³ Retention in care is a major challenge facing all PMTCT programmes, and a recent review suggests that the postnatal period has the greatest risk of loss-to-follow-up.⁷⁴

Retention of the HIV-exposed infant is even more dire. A review of records in a routine service area found that one third of HIV-exposed infants never returned after testing and that 70 per cent were lost-to-follow-up by 4 months of age.⁷⁵ A review of EID conducted in multiple countries in Africa and Asia, between 2006 and 2009, found very few facilities that had referral mechanisms between EID and paediatric ART services, resulting in significant attrition of infants following

HIV and Child Health Integration Opportunities

At the decentralized service delivery points, Rwanda's Integrated Management of Childhood Illness (IMCI) approach is used for service delivery for children irrespective of HIV status. The expanded programme of immunization (EPI) monitoring tools, i.e., the child health card and registers, are used to identify HIV-infected children in the care systems and paediatric HIV indicators are integrated within the routine data collection.

South Africa updated the IMCI chart booklet to incorporate paediatric ART initiation; ensuring the use of the IMCI chart booklet to manage children exposed, affected and infected with HIV and AIDS.

The government of **Zimbabwe**, in partnership with EGPAF, piloted the integration of HIV status information on the national child health card, as well as additional training and support of staff to utilize the cards as a prompt during well-child visits. Results included increased identification of HIV-exposed children in need of HIV testing.

Source: EPI/PMTCT pilot project: Integration of Health Services for HIV-exposed infants into routine immunization services, 2008.

In **Zambia**, CHAI is undertaking an evaluation of the impact on both EID and EPI uptake in integrated service delivery. A description of positive and negative consequences will help drive national policy on integration of paediatric HIV testing in routine child entry points.

Source: Personal communication with CHAI Zambia country team

HIV testing along the continuum of care in three of the countries. Only 22 per cent (Senegal), 37 per cent (Uganda) and 38 per cent (Cambodia) of infants testing positive by PCR test were subsequently initiated on ART.⁷⁶

UNTAPPED OPPORTUNITIES

Decentralized and integrated child health and HIV services

In 2011, WHO released a Technical Guidance Note

suggesting that the decentralization of services to primary health facilities and providing ART services in the context of MNCH can result in greater, earlier and regular antenatal care (ANC) which would serve to identify and initiate early maternal and child ART, improve retention in ANC throughout maternity and the postnatal period, as well as improve overall birth outcomes among all women and children.⁷⁷ One suggestion is to leverage the ongoing progress to decentralize and simplify ART for pregnant women by including paediatric HIV testing and paediatric ART in all PMTCT and MNCH sites that are expanding and decentralizing to accommodate treatment for all pregnant and breastfeeding women.ⁱⁱⁱ As these programmes scale up ART services to pregnant women across MNCH, simultaneous scale up of HIV testing and paediatric ART across MNCH should follow.⁷⁸

Several countries are at different stages of the process of decentralization of services, for example:

- Starting in 2006, **Rwanda** led the way with the incorporation of ART (adult and paediatric) into all health facilities – by 2012, 94 per cent of health facilities provided paediatric ART. Recognizing the efficiencies that can be gained through simplification of coordination, management and provision of services, the National Technical Working Group in Rwanda includes staff from HIV and MNCH sectors and is chaired by an MNCH manager. Paediatric HIV is integrated in both the national HIV and AIDS and eMTCT plans, which are housed within the MNCH strategic plan.⁷⁹
- The high burden of paediatric HIV and its impact on child survival drove **South Africa** to develop the Blue Print for Action in 2012 which calls for the integration of HIV and AIDS with TB, Maternal and Child Welfare and nutrition.⁸⁰
- With an existing commitment to MNCH, PMTCT services in **Mozambique** were fully integrated into MNCH services in 2006. As a result, by the end of 2010, 86 per cent or 909 out of the total 1,063 facilities providing MNCH services, provide PMTCT (up from 0.8 per cent or 8 in 2002), driving coverage from 4.5 per cent in 2005 to an estimated 86 per cent of estimated HIV-positive pregnant women receiving some type of ARV therapy for PMTCT in 2012.⁸¹
- In 2011, the Ministry of Health in **Malawi** rolled out treatment for all HIV-positive pregnant and breastfeeding women. Several factors were considered in determining this approach in Malawi, including low retention in care with earlier more complex approaches, weak laboratory and infrastructure capacity to provide CD4 testing results for all, as well as relatively high fertility rates. In order to reach all women, Malawi made the decision to decentralize and integrate ART services into all MNCH settings. These efforts resulted in quite

iii Formerly referred to as Option B/B+.

immediate improvements in key indicators, such as the number of pregnant and breastfeeding women starting ART and staying on treatment (retention rates).⁸² As the programme matured in 2013, and beyond, increases in the number of children initiating ART, with lower loss-to-follow-up rates and improved child survival outcomes were evident. This progress was attributed in large part to simplification of the approach, alongside decentralization of HIV-related services and integration into primary health facilities.⁸³ (See box on Malawi).

The tools and evidence are at hand. Integrating HIV services into the broader MNCH platform and leveraging existing campaigns and initiatives to incorporate HIV services are promising strategies to increasing coverage and retention of more comprehensive services for all and reaching MDGs 4, 5 & 6.

The call for acceleration of progress on newborn, child and maternal survival through *A Promise Renewed*, and successful child health programmes, such as integrated management of childhood illness (IMCI), integrated community case management (ICCM) and nutrition rehabilitation centres, provide opportunities to strategically engage with policy makers toward the integration of HIV elements into these systems, and to efficiently allocate HIV investments to strengthen child survival systems. With the latest scientific advances and new guidelines recommending a longer period of health supervision for pregnant women, mothers and infants, the delivery of PMTCT and paediatric HIV services depends even more on the ANC setting and the larger MNCH programmes in each country. Key opportunities for identifying individuals in need of HIV-related services, and to deliver counselling, testing, prevention care and treatment include:

- ANC visits,
- Facility births
- Reproductive health programmes
- Newborn and postnatal and well-child visits
- Outpatient visits
- In-patient paediatric wards

- Community and outreach efforts

Few countries have ascertained how to effectively integrate HIV interventions, including HIV testing, into these primary health services. Some countries have integrated HIV information into the “well baby” under-five card used in routine visits as a way to prompt health workers to provide HIV interventions. Others have adopted provider-initiated-testing and counselling (PITC), but a gap remains in comprehensive integration.

Integrated approaches to postnatal follow-up could go a long way to improving outcomes for all children in addition to those who are HIV-exposed and HIV-infected, and offers the potential for a less stigmatizing approach for mothers. Greater investment in postnatal care and continued support for those at risk could address specific needs of most infants and children. Tracking children born to mothers with HIV and assuring access to interventions to decrease the burden of common childhood illnesses will help decrease morbidity and mortality among HIV-exposed children. These children have contact with health systems through various services such as the expanded programme

Lifelong ART for pregnant women: Malawi blazes the trail

In 2011, the Government of **Malawi** pioneered offering lifelong simplified treatment for all pregnant and breastfeeding women using a provider-initiated (not mandatory) ‘test and treat approach’ regardless of CD4 count or any other preconditions. For pregnant women living with HIV, simplified treatment, which consists of a fixed-dose, single-pill, triple-drug regimen taken once per day, was made widely available, including through lower-level health-care facilities. The number of pregnant and breastfeeding women living with HIV started on ART had increased from 1,257 in the second quarter of 2011, to 10,663 in the third quarter of 2012. By December 2013, 12 of the 21 Global Plan priority countries in Africa had adopted the same policy of offering ART for all pregnant and breastfeeding women living with HIV for life, and an additional six countries had adopted a policy of continuing through the breastfeeding period, rather than lifelong.⁸⁷

Further country progress details are available from the website of the Inter-Agency Task Team on the Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and Children: www.emtct-iatt.org and at www.childrenandaids.org

The 2013 WHO Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection were developed in the spirit of simplification and harmonization across populations with HIV. Specifically, for adults and adolescents over 10 years and 35 kg, they recommend:
<ul style="list-style-type: none"> • Initiation of ART for all with severe or advanced HIV clinical disease or < 350 cells/mm³; • Initiation of all others on ART at a higher CD4 threshold of < 500 cells/mm³;
First line regimen recommendations simplified to include:
<ul style="list-style-type: none"> • Tenofovir (TDF) + 3TC (or FTC) + Efavirenz (EFV) as a fixed dose combination (FDC); • Secondary options suggested if the above is not available.
For children, while the categories (when to start and what to start) are the same, the content is very different. These include:
<ul style="list-style-type: none"> • Initiation of ART for all with severe or advance HIV clinical disease; • Initiation of all children below 5 years of age, prioritizing children younger than 2 years or WHO stage 3-4 or CD4 count < 750 cells/mm³ or < 25 per cent; • After 5 years of age, initiation of treatment is similar to that of adults, CD4 cell count less than 500 cells/mm³ prioritizing those with WHO stage 3-4 or CD4 count < 350 cells/mm³;
Current recommendations for ART in children include:
<ul style="list-style-type: none"> • For children less than 3 years: Lopinavir/ritonavir (LPV/r)-based ART as initial regimen; in the absence or lack of feasibility of LPV/r, the use of Nevirapine (NVP) with AZT + 3TC or Abacavir (ABC) + 3TC is recommended; • For children to 3 to 10 years of age: EFV with either ABC + 3TC or AZT + 3TC; • For children greater than 10 years and more than 35 kg, regimen should align with adult recommendations.

of immunization (EPI), outpatient under-five clinics, nutrition monitoring and rehabilitation services including vitamin A supplementation services, and treatment for pneumonia and diarrhoea within ICCM. Increasing health worker skills in HIV identification in children, as well as strengthening linkages among these services, are important opportunities for better HIV case finding and the drive toward improved child health and survival for all.⁸⁴ For example, children born to women with HIV whose HIV status is not known may present with malnutrition and/or failure to thrive as a result of advanced HIV disease, or TB co-morbidity. While there may be other contributing factors, including overall food insecurity and lower birth weight, HIV co-morbidity should be considered in high HIV burden settings. Appropriate HIV testing and access to treatment should be initiated accordingly as part of the treatment package. Opportunities to link child health services across a more comprehensive model, including HIV, will have a greater impact on child survival.

The simplification and harmonization of treatment

In 2011, WHO and the UNAIDS Secretariat launched *Treatment 2.0*,⁸⁵ an initiative with a holistic vision based on the strategic use of ARV, designed to achieve and sustain universal access and maximize the preventive benefits of ART. *Treatment 2.0* aimed to expand access to HIV diagnosis, treatment and care through a series of innovations in five priority work areas: drugs, diagnostics, costs, service delivery and community mobilization. The principles and priorities of *Treatment 2.0* address the need for innovation and efficiency gains in HIV programmes, in greater effectiveness, intervention coverage and impact in terms of both HIV-specific and broader health outcomes.⁸⁶ In 2013,

WHO released the WHO Consolidated ARV Guidelines which promotes an optimization in ARV use, recommending one ARV regimen (TDF+3TC or FTC+EFV) as the preferred first in line option for all adults, including pregnant and breastfeeding women, and adolescents; this combination is available in fix-dose combination (FDC), in line with the *Treatment 2.0* approach.⁸⁷

Five pillars^{iv} have been described in the context of the specific needs of HIV-exposed children.⁸⁸ The first pillar of *Treatment 2.0* focused on the optimization and simplification of HIV treatment, with the call for the development of fixed-dosed combinations (FDCs) and more child-friendly, easy-to-store formulations.

Although advances have been made to simplify and harmonize ART for children, some challenges still persist, with reduced availability of child-friendly ARV formulations and FDCs for different age ranges and weights and documented resistance to reverse transcript inhibitors from maternal and neonatal exposure. Cost, palatability and difficulty with storage of current Lopinavir/Ritonavir (LPV/r) formulations have been identified as some of the challenges.⁸⁹

The WHO PADO meeting held in Dakar, Senegal in October 2013, aimed to identify medium and long-term priorities. Currently available formulations and gaps have been analyzed and advancements in developing child-friendly, heat-stable, solid LPV/r-based 4-in-1 formulations in minitabs (with 3TC and either AZT or ABC) as well as fixed-dosed granule-based formulations were presented. Nevertheless, we need to be cautious until results of these investigations are published. When available, these formulations will cover the

iv The Five Pillars are: 1. Antiretroviral drugs and regimens 2. Diagnostics 3. Reducing costs 4. Service Delivery 5. Involving the communities

most urgent needs to expand treatment in children younger than 3 years old, where lack of access to ART dramatically impacts mortality. Lack of FDC to expand treatment among the group of children aged 3 to 10 years, and the need for formulations that permit more robust second line options were highlighted.

Drug needs for the medium-term (defined as the next five years) and long-term (five to 10 years) have been analyzed by global experts under the scope of optimized first and sequencing strategies. Dolutegravir and TAF have been highlighted as drugs with a high potential for wide weight and age ranges as a first line option. Paucity of data in neonates, especially in pharmacokinetics (PK), has been recognized and the need to systematically include this scope when approval and registration procedures are initiated has been recommended.

Though only nine drugs are currently recommended for use in children, in many countries, the number of different combinations used for treating HIV in children can number up to 50. This fragmentation of demand across multiple drug formulations creates complexity that increases pressure on existing procurement and distribution systems in countries, which have been described as weak. Such demands create

Nurse initiated ART

In 2010, **South Africa** undertook a large rollout of the training of health professionals on nurse initiated management of ART (NIMART). Projects that use nurses to decentralize HIV treatment have been shown to increase ART uptake and reduce workload at referral facilities, enabling doctors to concentrate on complicated cases. Nurse-led ART Initiation in **Swaziland** (NARTIS) has increased the number of facilities able to provide ART to 124 of 157 (79 per cent) and increased the number of children initiating ART from 42 per cent in 2010 to 81 per cent in 2012.

a barrier in the current push to initiate HIV-infected children on ART.⁹⁰ The optimized IATT formulary list of paediatric ARV has been updated by the Child Survival Working Group and Supply Chain Management Working Group in a recent meeting (11-12 September 2013, Geneva, Switzerland; See Annex 3) which was presented in PADO. This list is intended to reduce market fragmentation and simplify the process of procurement. Participants agreed to update the list regularly to keep it in line with currently available formulations. The updated list includes 10 products for “optimal” use and 13 for “limited use.” Countries are encouraged to use this list as a reference for procurement.

New recommendations on treatment will require an

Community outreach and linkages

In **Rwanda**, both community health workers (CHW) or health workers (HW) conduct home visits to trace loss-to-follow-up and provide health education and serve as a linkage between HW at the facility.

South Africa has a Primary Health Care Re-engineering Initiative looking at CHW structures which include household visits, shared health promotion messages, identification of issues, as well as supporting the tracking of patients who have not returned to the clinic.

increased investment in drugs and a rationalization in expenditures. Cost-effectiveness studies may help prioritization of new guidance implementation so that a country can invest in the best interventions with the largest impact. Coordinated efforts by global actors including industry, funders, governments, advocates, civil society and normative agencies are essential to increase the availability of optimal formulations for all ages. The conclusions and recommendations of PADO are part of the WHO March 2014 Supplement.

Linkages and retention in care

An overview of barriers and solutions to improve linkages and retention of children in the ART cascade that are applicable to maternal and child services, includes, but is not limited to, long wait times and understaffing.⁹² Recently at an IATT workshop held in Tanzania, countries were invited to present tools that they have piloted or adopted to address issues of long wait times. **Namibia** successfully implemented and is in the process of evaluating a patient flow assessment which evaluates the time spent per provider in order to arrange clinic flow to increase efficiency. Others have introduced simple appointment books which stagger patients and reduce the burden of wait time on the families as well as the pressure on the health facility staff.

While the challenge of insufficient staffing is significant, many studies have shown that adopting task-shifting or -sharing to nurses and community health workers (CHWs) is an effective way to relieve provider workload and increase retention. A review of studies looking at task shifting and paediatric ART demonstrated that the ART care resulted in outcomes comparable to those provided by physicians and should be considered in a scale up plan for paediatric HIV treatment.^{93,94}

There are numerous examples of the impact a strengthened link between the community and health facility has on retention of women and children in care systems, the identification of women and children who may require HIV testing and ART.⁹⁵ CHWs can be extremely effective

in delivering MNCH preventive interventions,⁹⁶ as well as community based interventions for common childhood illnesses.⁹⁷ These interventions and additional HIV-specific activities and interventions are included in the WHO/ UNICEF materials given to CHWs namely Caring for the Newborn in the Community, Caring for the Sick Child in the Community, and Caring for the Healthy Child in the Community, all part of the ICCMs. But more work needs to be done to quantify, evaluate and study comparative costs of these efforts to support a more harmonized model that can be recognized, remunerated and integrated into wider health systems.

Monitoring systems

In the past 10 years there has been a major shift in the thinking around monitoring and evaluation in all health sectors, but most notably around HIV. This has come about as a result of many factors but most significantly with the large infusion of financial support through PEPFAR and the Global Fund. With the shift from reporting coverage to tracking the scale up of services associated with the *Global Plan* came improvements in processes for reporting on results and moving toward ensuring quality of care, but there has been a growing recognition that the reporting systems are limited, for both mothers and their children. These systems have not kept pace with the move toward integration of HIV services across the broader MNCH platform.

Following the *Treatment 2.0* model of simplification and harmonization across the HIV lifespan, there is a need to develop and pilot integrated data tracking systems. These should include key indicators across the MNCH platform, including paediatric HIV and child survival. While there is no single national system, some countries have begun to develop mother/child cohort tracking mechanisms (Malawi) or some have incorporated HIV monitoring and evaluating into child immunization clinics (Rwanda and South Africa). These examples should be used as stepping stones to further streamline simpler systems to track progress and the impact of national health policies.

CONCLUSION

Just as HIV can attack the ability of a child to thrive physically and socially, if undetected, HIV also hampers the success of any number of interventions aimed at improving outcomes of all kinds. While dramatic progress has been made since the UN Millennium Declaration⁹⁸ was adopted and the MDGs were established around three separate global goals relating to HIV, maternal health and child survival, there has also been growing recognition that the ambitious 2015 targets cannot be reached if HIV and MNCH initiatives continue to be viewed as separate vertical programmes. Scaling up and improving patient outcomes around both HIV and maternal and child health require similar investments in primary health

services, health workforce expansion and training, and better supply chain management. From a programmatic standpoint, integrated HIV and MNCH programmes are critical to increased service access and uptake and reduced loss-to-follow-up that can lead to overall healthier communities.

We know that HIV can have a broad, devastating reach: without intervention, children exposed to HIV through pregnancy, birth or breastfeeding, whether they are infected with HIV or not, are at a greater risk of morbidity and mortality than children not exposed to HIV. Furthermore, children with HIV are at a greater risk of dying from a secondary illness such as diarrhoea or pneumonia, or suffering from repeated episodes of malnutrition, without ever having been tested or treated for the underlying cause.

The global response to the HIV and AIDS pandemic has made remarkable progress. Efforts such as *Every Woman, Every Child, A Promise Renewed* and *The Global Plan towards the Elimination of New HIV infections among Children by 2015 and Keeping Their Mothers Alive* have helped secure significant political and donor commitments on various elements of the MNCH agenda. Because these efforts purposely targeted the issue of HIV-related maternal mortality, they have successfully connected HIV to MNCH efforts, improving HIV outcomes by improving access to high-quality, integrated HIV and reproductive health services. The *Double Dividend* builds on these proven successes; however, a change in how the global health community approaches paediatric HIV care and treatment requires greater understanding of HIV-related child mortality and national-level opportunities to increase children's access to and retention in HIV services.

Going forward, partners should work with countries to put greater focus on HIV-infected and HIV-exposed children within the HIV and AIDS response to increase the integration of paediatric HIV into child survival platforms, not as part of a new political obligation, but rather as a cross-cutting strategy that will accelerate achievement of all existing HIV, maternal and child health commitments. We must develop new strategies for health care delivery with specific goals and steps to achieve these goals. New health service delivery strategies should include the introduction of innovative technologies and programme approaches to overcome systems bottlenecks, housed within a family-focused model of service delivery expanded to include the community. Monitoring progress to know the impact of these changes will be essential. The tools are available but there is a need to draw collective attention to these issues and not leave children behind as we work to end paediatric HIV and improve overall child survival.

ANNEX 1: TECHNICAL NOTE

The primary inputs of Spectrum to the estimate number of births to women with HIV include background demographic data and epidemic characteristics based on surveillance data adjusted to fertility rates. The risk of HIV transmission based on breastfeeding status and on the efficacy and coverage of PMTCT interventions is accounted for in the model that calculates the number of new infections. The number of children in need of ART is subsequently estimated by including assumptions around mortality patterns based on the age the patient is infected and the mortality risk attached to the change in CD4 levels children experience as HIV progresses. Children will have a given probability to be started on ART and this will affect the risk of mortality as well as the overall number of children considered to be in need of ART at any given time (irrespective of when and whether they have started). WHO and UNAIDS developed scenarios to explore the future potential changes in number of HIV infected children and in need of ART by 2020. A full scale up scenario (max) of adults on ART, PMTCT and paediatric ART (95 per cent, 95 per cent and 100 per cent, respectively) has been developed and compared to a scenario where countries maintain their 2012 coverage. For children a maximum ART coverage of 100 per cent has been assumed to better express total ARV needs. An intermediate scenario was later identified to reflect critical differences between countries in their current performance.

Assumptions used for the intermediate scenario

Adult ART		PMTCT		Paediatric ART	
Expected	Current	Expected	Current	Expected	Current
95%	>75%	95%	>75%	100%	>75%
90%	50-75%	90%	50-75%	90%	50-75%
85%	25-50%	80%	25-50%	80%	25-50%
80%	<25%	70%	<25%	70%	<25%

For the 21 sub-Saharan African priority countries, these scenarios resulted in very similar numbers: 1,931,768 (range 1,905,934-1,933,598) children living with HIV and an estimated 1,593,251 (range 1,883,387 - 1,402,393) children in need of ART.

ANNEX 2: INTERNATIONAL AND REGIONAL COMMITMENTS

National action on HIV and MNCH are no longer being driven predominantly by global commitments - African regional bodies are taking more visible roles in shaping how the continent faces its major public health challenges. The result is that instead of relying on global campaigns to create national momentum, advocates can tap into regional advocacy platforms to provide Africa-based political leadership and amplify calls for action on paediatric HIV.

Specifically, there are two African Union-supported initiatives that could be instrumental in weaving paediatric HIV into existing high-level HIV and MNCH efforts.

- **The Campaign to Accelerate Reduced Maternal Mortality in Africa (CARMMA)**⁹⁹ is an initiative to intensify actions aimed at the reduction of maternal and associated infant mortality in Africa. Country-level CARMMA initiatives have been launched in 40 countries so far, most often with significant political support from the country's first lady. The CARMMA initiative is hoping to be a major actor in advocating implementation of the African Union's new Plan of Action Towards Ending Preventable Maternal, Newborn and Child Mortality¹⁰⁰ that includes numerous elements related to HIV, maternal health and child mortality.

- **AIDS Watch Africa (AWA)**¹⁰¹ is an advocacy and accountability platform comprised of African Union Heads of State and Government that strives to mobilize resources and build stronger leadership around efforts to combat HIV, AIDS, TB and malaria. The AWA was first formed in 2001, but has re-energized its leadership efforts around implementation of the African Union Roadmap on Shared Responsibility and Global Solidarity for AIDS, TB and Malaria Response in Africa¹⁰² and the Abuja Actions Toward the Elimination of the HIV and AIDS, Tuberculosis and Malaria in Africa by 2030.¹⁰³

Political Commitment	Select Provisions
UN Millennium Declaration (UN General Assembly, 2000)	Millennium Development Goals 4&5: "Reduce the under-five mortality rate by two-thirds, and reduce maternal mortality ratio by three quarters by 2015." Millennium Development Goal 6: "To have halted by 2015 and begun to reverse the spread of HIV and AIDS, malaria and other major diseases."
Global Plan Towards the Elimination of New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive (UNAIDS, 2011)	"This strategy provides the foundation from which national plans will be developed and implemented and encompasses a range of HIV prevention and treatment measures for mothers and their children together with essential maternal, newborn and child health services as well as family planning, and as an integral part of countries' efforts to achieve Millennium Development Goals 4 and 5, as well as 6." "National leaders will build a vibrant coalition between the HIV and maternal, newborn and child health constituencies around the goals of eliminating new HIV infections among children by 2015 and keeping their mothers alive. National leaders and in-country partners will exert political leadership to ensure that the development and private sectors fully support the goals of elimination of new HIV infections among children by 2015 and keeping their mothers alive and promote greater synergies and the strategic integration of prevention of mother-to-child HIV transmission programmes and maternal, newborn and child health programmes, as well as family planning services."
African Union Plan of Action Towards Ending Preventable Maternal, Newborn and Child Mortality (African Union, 2013)	"Integrate comprehensive MNCH and PMTCT; Scale up access to Anti-Retroviral treatment (ART) especially for children and adolescent access within the continuum of care."
A Promise Renewed (UNICEF, 2012)	Pledge to end preventable child deaths, including prevention and treatment of paediatric HIV infections "Strong relationship between maternal health, HIV transmission risk and child survival: Infants who are HIV infected are 17-30 times more likely to die; and when a mother with HIV dies, her children are at least 4 times more likely to die."

<p>Declaration of the Special Summit of African Union on HIV/AIDS, Tuberculosis and Malaria “Abuja Actions Toward the Elimination of the HIV and AIDS, Tuberculosis and Malaria in Africa by 2030”</p> <p>(African Union, 2013)</p>	<p>“Eliminate mother-to-child transmission of HIV while keeping mothers alive and addressing the disproportionate impact of the three diseases on children, women and girls.</p> <p>“Integrate sexual and reproductive health and rights, family planning and HIV/AIDS services through reinforcing earlier commitments to enhance maternal, newborn and child health status, ensuring the integration necessary to facilitate synergies between HIV/AIDS, TB, Malaria and Maternal, Newborn and Child Health (MNCH) programmes.</p> <p>“Take deliberate and bold action to accelerate children and adolescent access to Anti-retroviral (ARV) treatment within the continuum of care, support the Treatment 2015 campaign championed by UNAIDS and WHO and invite pharmaceutical industries to explore possibilities of extending the exploration date of the ARVs.”</p>
<p>Political Declaration on HIV and AIDS: Intensifying Our Efforts to Eliminate HIV and AIDS</p> <p>(UN General Assembly, 2011)</p>	<p>“Commit to working towards the elimination of mother-to-child transmission of HIV and substantially reducing AIDS-related maternal deaths by 2015;</p> <p>“Commit to develop and implement strategies to improve infant HIV diagnosis, including through access to diagnostics at point of care, significantly increase and improve access to treatment for children and adolescents living with HIV, including access to prophylaxis and treatments for opportunistic infections, as well as increased support to children and adolescents through increased financial, social and moral support for their parents, families and legal guardians, and promote a smooth transition from pediatric to young adult treatment and related support and services;</p> <p>“Commit, by 2015, to working with partners to direct resources to and strengthen the advocacy, policy and programmatic links between HIV and tuberculosis responses, primary health-care services, sexual and reproductive health, maternal and child health, hepatitis B and C, drug dependence, non-communicable diseases and overall health systems, leveraging health-care services to prevent mother-to-child transmission of HIV, strengthening the interface between HIV services, related sexual and reproductive health care and services and other health services, including maternal and child health, eliminating parallel systems for HIV related services and information where feasible and strengthening linkages among national and global efforts concerned with human and national development, including poverty eradication, preventative health care, enhanced nutrition, access to safe and clean drinking water, sanitation, education and the improvement of livelihoods”.</p>

ANNEX 3: IATT OPTIMAL AND LIMITED USE LISTS OF PAEDIATRIC ARV FORMULATIONS

OPTIMAL				
Drug Class (or FDC)	Product	Formulation	Dosage	Rationale for List
NRTI	AZT	Oral Liquid	50mg/5ml	For use inPMTCT
NNRTI	EFV	Tablet (scored)	200mg	
NNRTI	NVP	Tablet (dispensable, scored)	50mg	
NNRTI	NVP	Oral Liquid	50mg/5ml	For use in PMTCT
PI	LPV/r	Tablet (heat stable)	100mg/25mg	
PI	LPV/r	Oral Liquid	80/20 mg/ml	
FDC	AZT/3TC	Tablet (dispensable, scored)	60/30 mg	
FDC	AZT/3TC/NVP	Tablet (dispensable, scored)	60/30 mg	
FDC	ABC/3TC	Tablet (dispensable, scored)	60/30 mg	
FDC	ABC/3TC/AZT	Tablet (non-dispensable, scored)	60/30/60 mg	
LIMITED USE				
NRTI	3TC	Tablet (dispensable)	30mg	To be used with TDF single formulation
NRTI	TDF	Oral powder*	40mg/scoop	For use in special circumstances when ABC or AZT cannot be used for patients with Hepatitis B, until an appropriate FDC becomes available *Product is administered as an oral powder, not reconstituted with liquids
NRTI	TDF	Tablet	150mg	See above
NRTI	TDF	Tablet	200mg	See above
NNRTI	ETV	Tablet	25mg	Special circumstances in 3rd line where appropriate

NNRTI	ETV	Tablet	100mg	See above
PI	RTV	Oral liquid	400mg/5ml	For boosting of non co-formulated PIs and super-boosting PI during TB co-infection
PI	ATV	Solid oral dosage form	100mg	Use in alternative 2nd line for children over 6 years old when boosting with separate RTV is available
PI	ATV	Solid oral dosage form	150 mg	See above
PI	DRV	Tablet	75mg	Special circumstances in 3rd line where appropriate and when boosting with separate RTV is available
Integrase Inhibitor	RAL	Chewable tablet (scored)	100mg	For use in 3rd line where appropriate
FDC	D4T/3TC/NVP	Tablet (dispensable, scored)	6/30/50mg	Special circumstances where patients cannot be transitioned to a preferred or alternative NRTI
FDC	D4T/3TC	Tablet (dispensable, scored)	6.30mg	See above

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