

# Infant HIV Testing Training Curriculum for Healthcare Providers: **PARTICIPANT MANUAL**



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# Foreword

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With the expansion of antiretroviral therapy (ART) and prevention of mother-to-child HIV transmission (PMTCT) programmes, the estimated number of new HIV infections among children has declined by 41%, from 280 000 in 2010 to 160 000 in 2018(1). Infants who are HIV-infected are at high risk for disease progression in the first year of life. In fact, without treatment, one third of infants with HIV die before they reach one year of age and over 50% die by two years(2). As such, it is critical to initiate HIV-infected infants on ART as early as possible. The key to early access to treatment is early diagnosis of HIV infection. This requires early identification of HIV-exposed infants, HIV testing, and retention of HIV-exposed infants in care to ensure ongoing follow-up with additional testing according to national guidelines, including determination of final HIV status at the end of breastfeeding.

Serological testing (also referred to as antibody testing) cannot confirm HIV infection in infants and children under 18 months of age; instead, infant virological testing through nucleic acid testing (NAT), is required for infant HIV diagnosis. Although virological testing is more costly than serological testing, widespread scale-up has resulted in cost reductions; however, bottlenecks and long turnaround times remain due to delays in sending samples for testing, delays in sample transportation to laboratories, delays in return of results to caregivers, and stock outs. Point of care (PoC) and near PoC NAT has recently been introduced for infant virological testing; this technology has the potential to reduce turnaround time to hours or days rather than weeks or months. This technology offers additional modalities for expanding infant HIV testing services to sites where barriers to conventional NAT have proven most challenging. Issues of quality assurance, site selection for PoC and near PoC platforms, and machine maintenance must be considered prior to implementation.

Since 2010, the World Health Organization (WHO) has recommended that routine NAT of HIV-exposed infants in resource-limited settings should begin at 4–6 weeks of age; this early first test is commonly referred to as early infant diagnosis or EID. WHO also recommends that infants with HIV-negative results be tested again at 9 months of age using a NAT, and again at 18 months of age or 3 months after breastfeeding has ended (whichever is later)(3). In addition, in their 2016 guidelines and 2018 technical report, WHO states that the addition of NAT at birth can be considered where feasible, but only in parallel with efforts to strengthen and expand existing infant HIV testing approaches. Birth testing is an addition to, and does not replace, testing at 4–6 weeks(3, 4).

With the scale up of virological testing of infants, much progress has been made in diagnosing HIV early and providing ART for children. However, in 2018 only 54.9% of newborns exposed to HIV received an HIV test within the first two months of life(5). In addition, over half (54%) of all children living with HIV were accessing treatment in 2018, up from 15% in 2009(6), but still far short of global targets(7).

**Overview of the Infant HIV Testing Guides:** In 2009, the Centers for Disease Control and Prevention (CDC) released a standardized guidance for early infant HIV diagnosis, referred to as the *Early Infant Diagnosis of HIV Implementation Guide*, to guide programs to plan for and implement these services as part of PMTCT and paediatric HIV-related interventions. This was one among many sets of tools developed to increase the proportion of HIV-exposed infants receiving comprehensive quality care, including timely infant HIV testing. This book, the 2019 *Guide*, is an update to the 2009 version; it has been revised based on guidelines released over the last decade and lessons learned from implementation experience. The *Guide* has now been renamed the *Infant HIV Testing Guide*, to reflect a focus on the complete cascade of testing for HIV-exposed infants from birth until 18 months of age or 3 months after the end of breastfeeding (whichever is later).

Two books of the *Guide* have been revised and are released in this 2019 edition:

- **Book 1: *Implementation Guide for Programme Managers*** covers programme planning and helps with decisions related to infant HIV testing, including the interface between the clinic and laboratory, monitoring and evaluation, supportive supervision, and linkages between service delivery points. This book focuses on the components that are critical to the management of strong, high quality infant HIV testing services.
- **Book 2: *Training Curriculum for Healthcare Providers*** is a complete training curriculum updated with the 2016 and 2018 WHO guidelines. Book 2 also includes job aids to support quality infant HIV testing and counselling and early messages to educate women and communities about the comprehensive package of care that all HIV-exposed infants need throughout breastfeeding along with the importance of maternal health and family planning.

Based on the experiences and data shared from years of implementation of infant HIV testing services, the *Infant HIV Testing Guide* has been revised with the following in mind:

- Infant HIV testing has emerged as an essential service linking PMTCT with paediatric HIV care and treatment.
- Attention has been previously focussed on testing at 4–6 weeks of age but HIV testing at this time point is just one component of a cascade of testing that all HIV-exposed infants should receive as part of a comprehensive package of care that does not end until 18 months of age or 3 months after all breastfeeding has stopped (whichever is later) and the child is no longer at risk of HIV transmission.

It is our wish that these books will support countries to scale up and further improve comprehensive care and testing for HIV-exposed infants so that all mothers living with HIV can be supported to prevent HIV transmission to their infants and that infants who become infected are diagnosed early and linked to life-saving treatment.

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## Acknowledgements

In 2009, the U.S. Centers for Disease Control and Prevention (CDC) made available the first version of the *Early Infant Diagnosis of HIV Implementation Guide* (now re-titled *Infant HIV Testing Guide*). This 2019 edition of the *Guide* is divided into two books:

- *Book 1: Implementation Guide for Programme Managers*
- *Book 2: Training Curriculum for Healthcare Providers*

The *Guides* have been developed and revised with contributions from multiple authors from CDC and other organizations. The original *Guide* was produced by CDC, authors and contributors included Tracy Creek, Lydia Lu, Michelle McConnell, Chin-Yi Ou, Emilia Rivadeneira, Martha Rodgers, Nathan Shaffer, Shambavi Subbarao, and Amilcar Tanuri. It was later revised with input from CDC and other organizations, including Michelle Adler, Joy Chih-Wei Chang, Helen Dale, Dennis Ellenberger, Sarah Kidd, Olusheyi Lawoyin, Lydia Lu, Mira Mehta, Emilia Rivadeneira, and Nandita Sughandhi,. CDC student interns Meghan Duffy and Allison Doyle facilitated organization of the *Guide*. The 2019 update of the *Guide* was led by members of the Maternal and Child Health Branch and the International Laboratory Branch of CDC: Michele Montandon, Helen Dale, Paul Rashad Young, and R. Suzanne Beard. Other contributors to the revised *Guide* include Gloria Anyalechi, Zena Belay, Ashley Boylan, Sara Forhan, Susan Hrapcak, Mackenzie Hurlston, Kelsey Mirkovic, Surbhi Modi, Monita Patel, Emilia Rivadeneira, and Jason Williams.

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*\*A detailed table of contents for each module (Modules 1–6) can be found at the beginning of the module.*

# Acronyms

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AIDS	Acquired immune deficiency syndrome
ART	Antiretroviral therapy
ARV	Antiretroviral
AZT	Zidovudine
BCG	Bacillus Calmette–Guérin
CD4	T-lymphocyte CD4 cell count
CDC	U.S. Centers for Disease Control and Prevention
DBS	Dried blood spots
DNA	Deoxyribonucleic acid (genetic material)
EID	Early infant diagnosis
HIV	Human immunodeficiency virus
IMCI	Integrated Management of Childhood Illness
IPT	Isoniazid preventive therapy
MTCT	Mother-to-child transmission (of HIV)
NAT	Nucleic acid testing
NVP	Nevirapine
POC	Point of care
PCP	<i>Pneumocystis jirovecii</i> pneumonia
PCR	Polymerase chain reaction
PCV	Pneumococcal conjugate vaccine
PEP	Post-exposure prophylaxis
PMTCT	Prevention of mother-to-child transmission (of HIV)
QA	Quality assurance
RDT	Rapid diagnostic testing
RNA	Ribonucleic acid (genetic material)
SMS	Short message service
STI	Sexually transmitted infection
TAT	Turnaround time
VL	Viral load
WHO	World Health Organization

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