



**SUPPLEMENTARY MATERIAL FOR PRODUCT GUIDE:
PUTTING HIV AND HCV TO THE TEST**

Supplementary material includes national recommendations on infant diagnosis, testing of pregnant and breast-feeding women, CD4, and viral load testing, across 55 low- and middle-income countries, sourced from the IAPAC database.

JULY 2015

Targeted viral load testing that is **OPTIONAL** versus **NECESSARY** for switch to 2nd line

Haiti	Not necessary.
India	Optional. The clinical status, CD4 cell count and plasma VL (if available) can be used in an integrated fashion to determine whether HIV disease is progressing while a patient is on ART; and whether a change should be made from first-line to second-line therapy.
Morocco	Necessary to CONFIRM treatment failure
South Sudan	Necessary to CONFIRM treatment failure.
Myanmar	Necessary to diagnose ART failure. Where VL is not available, use immunological criteria (CD4 count) to confirm clinical failure.
Zimbabwe	Switch to second-line therapy based on combination of clinical monitoring & minimum laboratory testing (CD4 count). Access to VL testing is not widely available but should be considered when having to switch to second line therapy.

General recommendation: Please refer national guidelines on the use of infant diagnosis, HIV and routine viral load testing across 19 low- and middle-income countries between 2017 and 2024

Data on guidelines was available from the IAPAC database. Analysis was performed until June 2018.

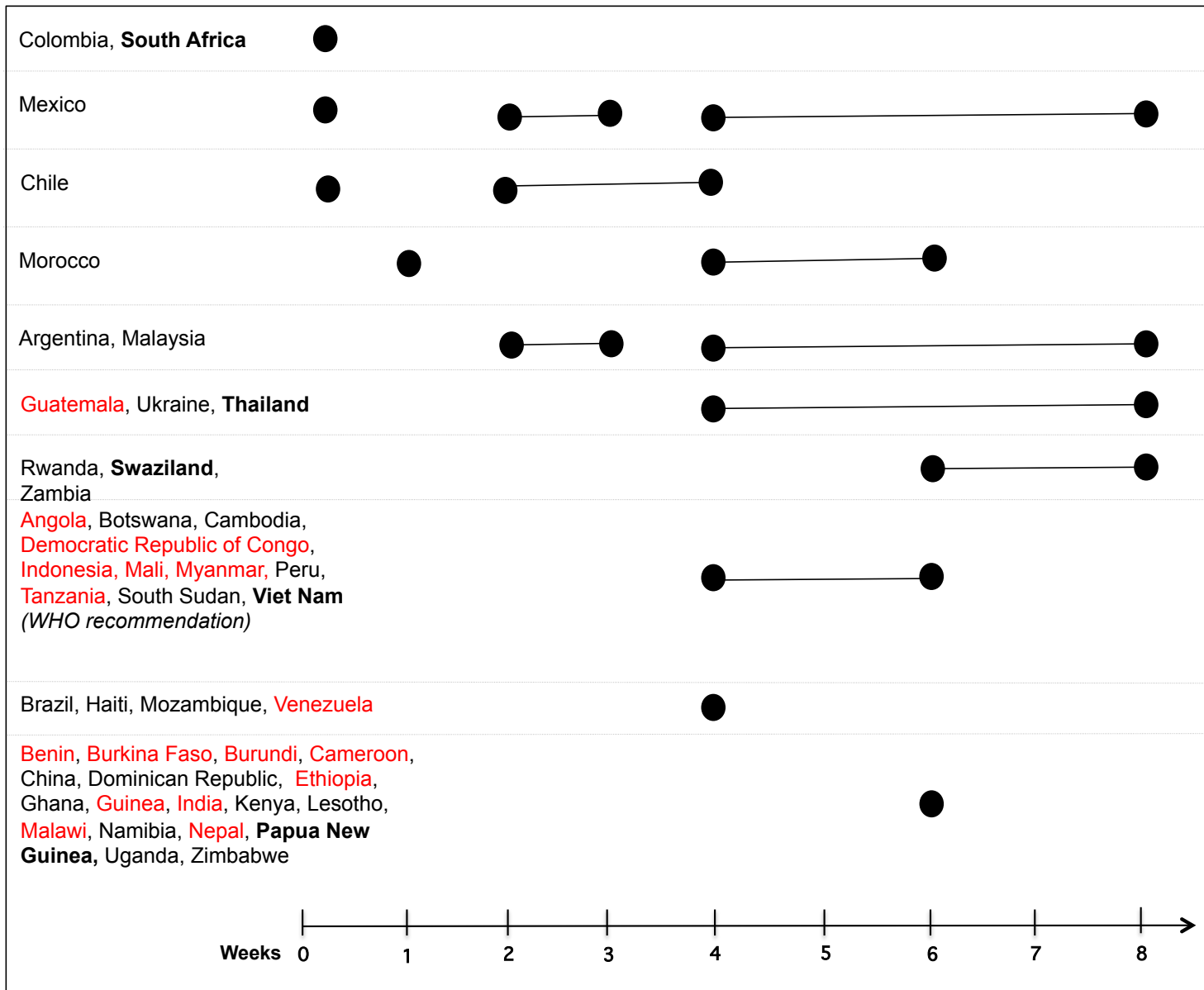
Highlighted cells indicate changes between guideline versions.

COUNTRY	Botswana		Brazil		Cameroon		Democratic Republic of Congo		India		Kenya		Lesotho		Malawi		Mozambique		Myanmar			Namibia		Nigeria		South Africa		Uganda		United Republic of Tanzania		Zambia		Zimbabwe				
	ART 2012	ART 2008	Adult ART 2013	ART 2014 and Pediatric ART 2014	ART 2014	ART 2012	ART 2008	ART 2015	ART 2010	ART 2014, ART 2010 update and PMCT 2013	Adult ART 2007 and ART 2011 update	ART 2014	ART 2011	ART 2014	ART 2010	ART 2014	Adult ART 2010 and 2011 update, and Pediatric ART 2011	ART 2014	ART 2011	ART 2007	ART 2014	ART 2010	ART 2014	ART 2012 and PMCT 2013	ART 2010 and PMCT 2010	ART 2010 update	ART 2012	ART 2008	ART 2014	ART 2010 and PMCT 2010	ART 2008	ART 2013	ART 2010	ART 2011	ART 2010			
Infant diagnosis (using a virological test for HIV exposure [infants <18 months of age])	When	4-6 weeks, 6 weeks post-exposure, 18 months (double serological test) if infant is not breastfeeding	NA	After 1 month, 2 months (if negative on subsequent results), 12 months (serology), 2-2.5 months after starting on ART, PCR	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	NA	6 months (serology), 6 months (serology), 6 months (serology)	6 months (serology), 6 months (serology), 6 months (serology)	6 weeks or asymptomatic HIV, 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks or asymptomatic HIV, 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)	6 weeks (serology), 6 months (serology), 12 months (serology), 18 months (serology), 24 months (serology)				
	Type of test	HIV DNA PCR	HIV DNA PCR	NA	HIV DNA PCR	HIV DNA PCR	NA	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	NA	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR
	Confirmation (type of test)	HIV DNA PCR	HIV DNA PCR	NA	HIV DNA PCR	HIV DNA PCR	NA	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	NA	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR	HIV DNA PCR
CD4 testing for treatment initiation and monitoring	ART initiation (adults >16yrs)	350	350	Imprecise of CD4 count	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
	Initiation (Imprecise of CD4 count)	TS, WHO stage II or IV, CD4 category C, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV	For all people living with HIV (and their partners)	TS, WHO stage II or IV, CD4 category C, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	TS, WHO stage II or IV, WHO stage III or IV	
	Treatment monitoring	3 months, 6 months and every 6 months thereafter	3 months, 6 months and every 6 months thereafter	Every 6 months	NA	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months	Every 6 months
Viral load (HIV RNA) testing (for treatment monitoring)	ART initiation (children <16yrs)	NA	NA	CD4 <350 and VL <100,000	CD4 between 350-500 and VL <100,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Treatment monitoring	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3-6 months, then every 6 months thereafter	NA	6 months, yearly thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter	3 months, 6 months, every 6 months thereafter
	Virological failure (breakthrough)	VL <1000 after 6 months post ART or VL <1000 after 12 months post ART or VL <1000 after 24 months post ART	VL <1000 after 6 months post ART or VL <1000 after 12 months post ART or VL <1000 after 24 months post ART	Undetectable VL 6 months after beginning or modification of ART or in individuals who experienced undetectable VL on ART	NA	VL <1000	Undetectable	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	VL <1000	

Abbreviations: ART = antiretroviral therapy; ID = early infant diagnosis; HTC = HIV testing and counselling; NA = not applicable; PMCT = prevention of mother to child transmission; VL = viral load

*Viral serology tests are performed by rapid diagnostic tests measuring antibodies to HIV

Timing of Early Infant Diagnosis (EID) for HIV-Exposed Infants within 2 Months of Birth (Source: IAPAC)



- In 2013, the percentage of HIV-exposed infants receiving a virological test within 2 months of birth was <30% in **countries in red** and >70% in **countries in bold** (source: UNAIDS GARPR 2014).
- Seven countries without recommendations and two countries (Nigeria and Sudan) recommending EID at first encounter are not shown.

Frequency of HIV testing in pregnant and breastfeeding women (Source: IAPAC)

	Pregnancy			Labour	Post delivery (breastfeeding)						Countries
	First trimester	Second trimester	Third trimester		Immediately after delivery	6 days	6 weeks	3 months	6 months	Post 6 months	
1	✓	✓	✓		✓			✓	✓	3 monthly	South Sudan
2	✓	✓	✓			✓	✓		✓		Uganda
3	✓	✓	✓				✓	✓	✓	3 monthly	South Africa, Zambia
4	✓	✓	✓					✓	✓	3 monthly	Burkina Faso, Cameroon
5	✓	✓	✓		✓						Sierra Leone
6	✓	✓	✓								Malawi
7	✓		✓	✓							Ecuador
8	✓	✓									Kenya
9	✓		✓				✓		✓	6 monthly	Zimbabwe
10	✓		✓					✓	✓	3 monthly	Botswana, Lesotho
11	✓		✓		✓						Venezuela
12	✓		✓								Ghana, Namibia, Tanzania
13	✓					✓					Ethiopia
14	✓										Burundi, Chile, Guatemala, India, Malaysia, Mexico, Rwanda

Note: Countries in bold recommend more frequent testing only for high risk women.

This table does not include Swaziland that recommends testing during every antenatal visit and at 6 weeks, 10 weeks, 14 weeks, 6 months, 9 months, 12 months, 15 months and 18 months post delivery.

The remaining 29 countries did not have any recommendations.

We assume that first test is during the first trimester.

If the first visit is during the second trimester, all countries in rows 1-12 will test women in the second and third trimester.

Countries in rows 13 and 14 will test women once in the second trimester.

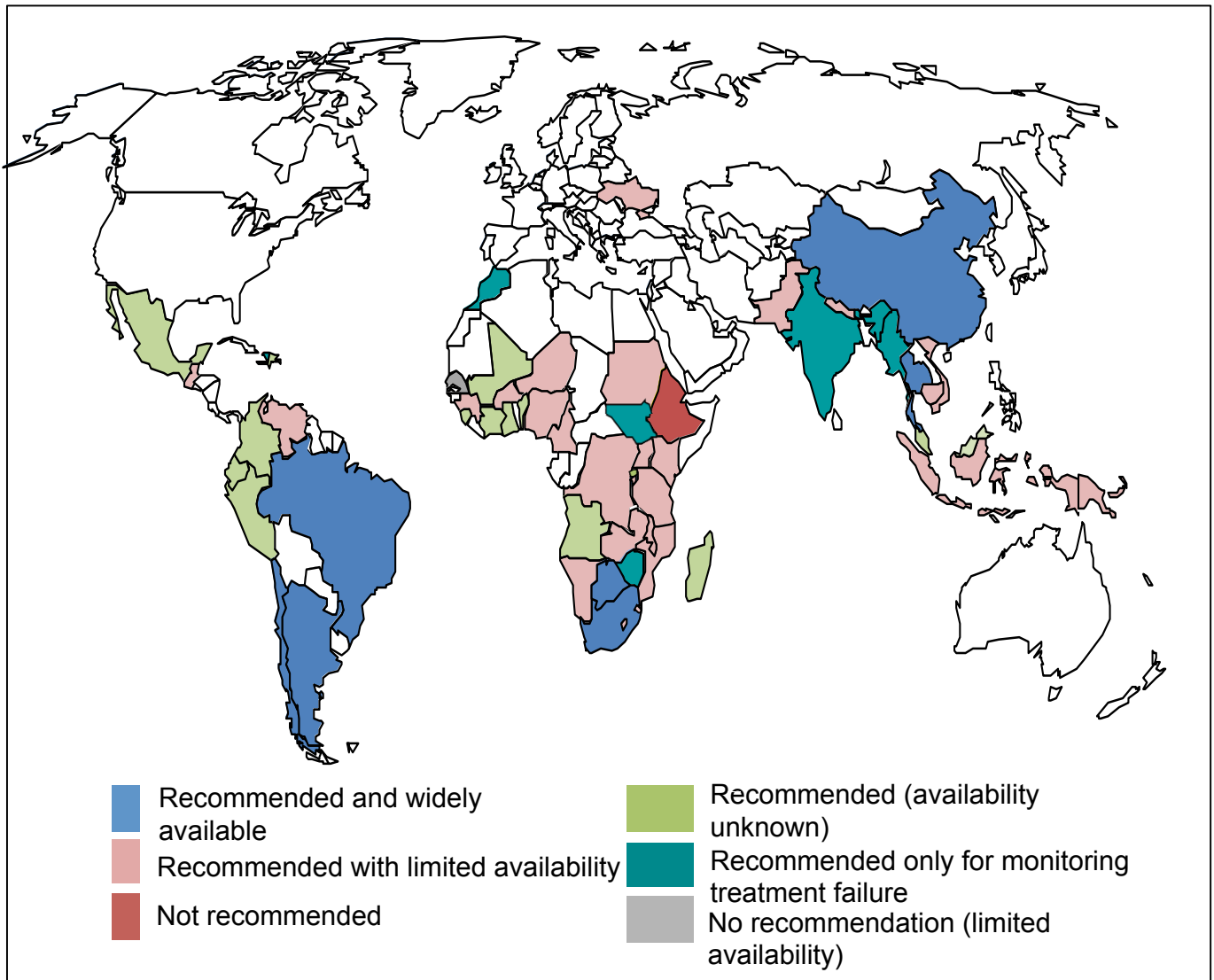
Frequency of HIV testing post delivery remains the same.

Frequency of CD4 Testing after ART Initiation from 55 Low- and Middle-Income Countries (Source: IAPAC)

FREQUENCY	NO. OF COUNTRIES	COUNTRIES
Month 1; 3-monthly thereafter	1	Madagascar
Every 3 months	1	Ukraine
Every 3-months for 1 year; 6-monthly thereafter	1	China
Every 3-4 months	2	Malaysia, Sierra Leone
Every 3-6 months	4	Angola, Argentina, Colombia, Pakistan
Month 3 and 6; 6-monthly thereafter	2	Botswana, Burkina Faso
Month 3; 6-monthly thereafter	1	Nigeria
Month 3; every 4-6 months thereafter	1	Chile
Every 4-6 months	2	Dominican Republic, Mexico
6-monthly (WHO recommendation)	28	Benin, Brazil, Burundi, Cambodia, Cote d'Ivoire, Democratic Republic of Congo, Ecuador, Ethiopia, Guatemala, Guinea, Haiti, India, Indonesia, Lesotho, Mali, Mozambique, Myanmar, Nepal, Niger, Papua New Guinea, Peru, Rwanda, South Sudan, Sudan, Tanzania, Viet Nam, Zambia, Zimbabwe
Every 6-12 months	1	Venezuela
Month 6; yearly thereafter	1	Ghana
In case of virologic failure	1	Namibia
Month 12	1	South Africa
Every 6 months. Stop once two consecutive CD4 count >350	3	Cameroon, Swaziland, Thailand
Not recommended	3	Kenya, Malawi, Uganda
Recommendation not available	2	Morocco, Senegal

Note: Availability of CD4 testing services is limited in at least 15 countries in red that recommend routine CD4 monitoring.

Recommendation on Use of Viral Load Testing for ART Monitoring and its Availability (Source: IAPAC)



Recommendations on the Frequency of Viral Load Testing for ART Monitoring (Source: IAPAC)

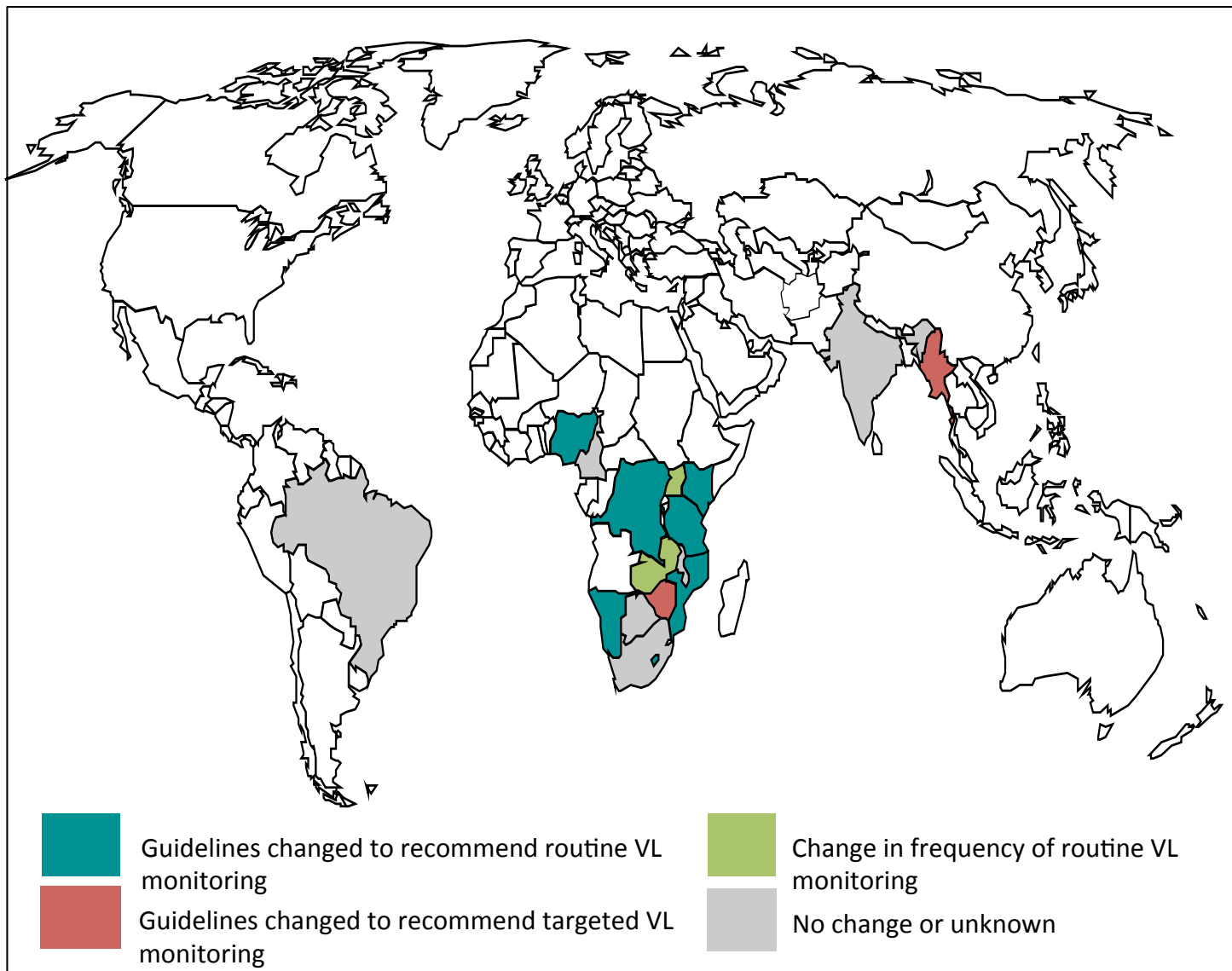
MONTH AFTER ART INITIATION	Month 1	Month 3	Month 6	Month 9	Month 12	Month 18	Month 24	Post the last VL test
Angola, Burundi, Dominican Republic, Ecuador, Guatemala, Malaysia*, Mali, Niger, Nigeria, Pakistan**, Papua New Guinea, Venezuela, Viet Nam			✓		✓	✓	✓	6-monthly
Argentina***, Colombia***	✓		✓		✓	✓	✓	3-6 monthly
Ukraine		✓	✓	✓	✓	✓	✓	6-monthly
Botswana, Brazil, Chile*, Mexico, Peru, Sierra Leone		✓	✓		✓	✓	✓	6-monthly
Thailand		✓	✓		✓		✓	Yearly
Benin, Burkina Faso, Cameroon, China, Cote d'Ivoire, Democratic Republic of Congo, Ghana, Indonesia, Kenya, Lesotho, Madagascar, Mozambique, Namibia, Nepal, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia <i>(WHO recommendation)</i>			✓		✓		✓	Yearly
Guinea, Rwanda					✓		✓	Yearly
Malawi			✓				✓	Biennially
Cambodia							✓	Yearly

Note: *Chile and Malaysia recommend viral load monitoring every 4-6 months.

**Pakistan recommends it every 3-6 months.

***Argentina and Colombia recommend viral load monitoring at 4-6 and 4 weeks, respectively and then every 3-6 months.

Changes in the recommendation on use of viral load for monitoring of people on ART in 17 high-burden countries (Source: IAPAC)



Note: Myanmar earlier recommended routine VL testing in settings where VL was widely available