

Fakhriddin Nizamov¹, Olivier Epaulard², Marta Boffito³, Justyna Kowalska⁴

**TESTING AND VACCINATION TO ENSURE THE ELIMINATION
OF MOTHER-TO-CHILD TRANSMISSION OF HIV, SYPHILIS,
AND HEPATITIS B: PROCEEDINGS FROM UNICEF, WHO AND ESCMID
SUBREGIONAL WORKHOP IN KYRGYZSTAN**

¹United Nations Children's Fund (UNICEF) Regional Office for Europe and Central
Asia, Almaty, Kazakhstan

²Clinical Infectious Disease Department, University of Grenoble, France

³Chelsea and Westminster Hospital NHS Foundation Trust, Imperial College London,
London, UK

⁴Infectious Diseases Observational Research Unit, Medical University of Warsaw,
Warsaw, Poland

ABSTRACT

The Eastern Europe and Central Asia countries face multiple and diverse challenges in the fight against HIV, hepatitis B and syphilis vertical transmission. In addition accurate data collection and reporting on vertical transmission prevention outcomes are inconsistent across some countries, making it difficult to track progress and identify areas for improvement. The two-day subregional workshop in Bishkek, Kyrgyzstan March 2026 brought together international experts and national implementers from Kyrgyzstan, Tajikistan, Uzbekistan, Kazakhstan, and Moldova to align on integrated screening, the continuum of care, and prevention to eliminate vertical transmission of HIV, syphilis, and hepatitis B. Expert sessions showcased recent evidence and policies, as well as service delivery innovations such as opt-out testing in emergency departments, vaccination during pregnancy and long-acting prevention modalities. Participants engaged actively through plenaries and three working groups that co-created actionable recommendations in screening, care, and prevention. Based on group discussions, some key recommendations to ensure triple elimination were developed for the Kyrgyzstan Ministry of Health's consideration.

Keywords: *HIV, HBV, syphilis, workshop, EECA*

INTRODUCTION

The Eastern Europe and Central Asia (EECA) region is characterized by low HIV prevalence among the general population (except for Ukraine), and the epidemic is concentrated in key populations with onward transmission to their sexual partners (1,2). The prevalence of hepatitis B and syphilis is known to a lesser degree, with fragmented epidemiological data and new cases not being individually reported. However even this fragmented information do provide evidence of significant existing prevalence outside cohorts vaccinated at birth (3-6).

Elimination of vertical transmission (EMTCT) is a critical goal in the fight against the HIV/AIDS epidemic (7). EECA countries confirmed their commitment to EMTCT and requested international organisations to support them in achieving EMTCT goals, as well as impact and process/programme indicators. UNICEF and WHO provided support to achieve high ART coverage and prevent mother-to-child transmission of HIV (8-12). In 2024, 94% of pregnant women living with HIV received ART to prevent mother-to-child transmission in EECA. This represents the highest coverage rate worldwide. High HIV testing during antenatal care and widespread prevention efforts have resulted in notable success in reducing mother-to-child transmission of HIV. The annual rate of mother-to-child transmission of HIV decreased by more than fivefold, from 33.8 to 6.3 per cent between 2000 and 2024. Around 17,000 new infections due to vertical transmission have been averted in 2024.

Still, accurate data collection and reporting on vertical transmission prevention outcomes are inconsistent across some countries, making it difficult to track progress and identify areas for improvement (13,14). EECA countries lack integrated electronic surveillance systems, and digitalisation in the medical field requires a future-focused approach and investment (15). Addressing barriers to achieving MTCT elimination in EECA requires a comprehensive approach that includes reducing stigma, continuing efforts to improve healthcare infrastructure, increasing awareness, and strengthening data collection and reporting systems.

With 94% coverage of HIV testing and treatment, the EECA region countries enter the next step in ensuring the path towards the elimination of vertical transmission. Countries can use gathered experience and lessons learned to extend success to other

programs, such as syphilis and hepatitis B, to reach triple elimination targets. Further progress requires legislative changes, which necessitate multi-stakeholder involvement, including the gathering of research evidence and consultation with non-governmental organisations. WHO and UNICEF support for national stakeholders will be crucial to achieving the ambitious goals of triple elimination at the national and regional levels. Kyrgyzstan is one of the countries in Central Asia that is strengthening the national program for the triple elimination of vertical transmission of HIV, syphilis and hepatitis B and was selected to host the sub-regional workshop. The new draft Health State Programme of Kyrgyzstan, submitted to the government for approval, includes recommendations for the triple elimination of HIV, syphilis, and hepatitis B. The programme section of State Programme on mother and child health protection aims to promote important measures on PMTCT and the triple elimination of HIV/hepatitis B/syphilis, such as the implementation of rapid multiplex testing for HIV, hepatitis B, and syphilis, as well as increasing testing among pregnant women and their sexual partners; providing comprehensive and accessible medical and psychosocial services for women, children, and their families; implementing hepatitis B vaccination for pregnant women; and offering a comprehensive package for preventing vertical transmission of HIV-including counselling, early diagnostics and treatment, and promoting treatment adherence (3).

Healthcare managers in the country need updated knowledge on PMTCT of HIV, syphilis, and hepatitis B, yet this limitation is a common barrier also for high income countries (16). An improved understanding of the changing epidemiology, best practices, and new technologies for screening and prevention will help national authorities effectively implement the triple elimination programme. The country's healthcare system is struggling to implement integrated service delivery. The capacity to carry out combined HIV, syphilis, and hepatitis B screening and to manage cases effectively will help in achieving national plans for the elimination of vertical transmission of HIV, syphilis, and hepatitis B. Furthermore, healthcare managers' monitoring and evaluation capacities require enhancement. Developing skills to track progress, measure outcomes, and report data will be crucial for informing policy decisions and achieving the elimination of vertical transmission of HIV, syphilis, and hepatitis B (3). In addition, rights-based approaches should be included in healthcare plans aimed at the triple elimination of vertical

transmission. There is a need for practical tools to address human rights, stigma, and the importance of partner and family engagement (17-20).

INTERVENTION AND OBJECTIVES

In order to share state-of-the-art evidence and guidance on HIV, syphilis, and HBV screening, treatment and prevention in pregnancy and postpartum a subregional workshop was organized as a joined effort of UNICEF and European Society of Clinical Microbiology and Infectious Diseases (ESCMID) Foundation in Bishkek, Kyrgyzstan 12-13 March 2026.

The main objective was to enable clear understanding and therefore application of the WHO triple elimination initiative (www.who.int/initiatives/triple-elimination-initiative-of-mother-to-child-transmission-of-hiv-syphilis-and-hepatitis-b) for national policies relevant to prevention, screening, and management of HIV, hepatitis B and syphilis during pregnancy and postpartum. Invited experts were requested to present and discuss Kyrgyzstan's and other countries' achievements, challenges, policies and service-delivery models that reduce vertical transmission of HIV, hepatitis and STIs.

Emphasis was put on enabling peer learning and co-create country-level actions on integrated screening, care, and prevention. For this reason lively Q&A session on screening algorithms, infant prophylaxis choices, vaccination efficacy, and vaccine procurement pathways was provided. Peer exchange on barriers (migrants, decentralized regions, rapid testing, workforce and financing gaps) linking international evidence to local realities was encouraged during the meeting.

Workshop organisers prepared an official invitation to the MoHs, outlining the workshop's rationale and objectives, and requested that MoHs nominate participants responsible for the triple elimination initiative. MoHs nominated participants. From Tajikistan, Uzbekistan, Kazakhstan, and Moldova, MoHs nominated participants at the national level. From Kyrgyzstan, participants were nominated at the national and regional levels, representing all services providing testing, vaccination, treatment, and care to ensure the elimination of mother-to-child transmission of HIV, syphilis, and hepatitis B. The representatives from the regions were health managers at all levels of care, public health practitioners and clinicians.

Three thematic working groups were established to discuss challenges and produce concrete, time-bound actions across Screening, Care, and Prevention, with a focus on Kyrgyzstan. The groups included representatives from Kyrgyzstan's HIV, syphilis, and hepatitis B services. Participants from other countries also joined the groups based on their interest and experience.

To facilitate discussion, organisers developed a short guide for group facilitators, including key information from Kyrgyzstan's EMTCT pre-validation assessment, questions to identify key challenges, and agreed actions (recommendations) to strengthen integrated service delivery. Working group participants identified specific challenges that hinder the integration of HIV, syphilis and hepatitis B services in Kyrgyzstan. Based on identified challenges, they developed recommendations to strengthen testing and vaccination to eliminate vertical transmission of HIV, syphilis, and HBV.

Participants from Tajikistan, Uzbekistan, Kazakhstan, and Moldova actively participated in discussions, shared their experiences, and helped define actionable recommendations.

The recommendations were developed with a focus on Kyrgyzstan's experience and priorities. However, given that all invited countries are from the same region, have healthcare systems established during the Soviet era, and, most importantly, the pre-validation assessment conducted in these countries identified similar challenges and bottlenecks, the developed recommendations can be adopted for implementation in all countries participating in the subregional workshop.

MEETING OUTCOMES

Firstly, the technical insights provided by international experts highlighted the progress achieved by countries from EECA region. Secondly ongoing challenges, and shifting priorities in eliminating vertical transmission of HIV, syphilis, and hepatitis B across Europe and Central Asia were discussed. Despite significant advances in service coverage and clinical capacity, the region still faces structural, behavioural, and health system barriers that hinder the effectiveness of screening, treatment, and prevention efforts. Current evidence shows that high-performing maternal and child health systems, enhanced antenatal services, modern diagnostics, and integrated care pathways are crucial for

maintaining progress and achieving triple elimination. Detailed proposals reflecting discussed challenges are discussed below and summarized in Table 1.

SCREENING

International experts highlighted that comprehensive, early, and repeated screening during pregnancy forms the foundation of all effective EMTCT programmes. Many countries in the region have achieved very high HIV testing coverage among pregnant women, often exceeding 95 per cent, largely due to strengthened antenatal care (ANC) systems and the institutionalisation of routine testing protocols. The shift away from outdated confirmatory methods, such as Western Blot, towards rapid, molecular, and dual tests has significantly accelerated diagnostic processes. National algorithms now frequently include rapid HIV confirmation, viral load testing, and the systematic use of nucleic acid amplification tests for early infant diagnosis. These developments have enabled earlier detection of maternal infections, timely initiation of antiretroviral therapy, and quicker identification of transmission events (21).

Rapid tests enable same-day decision-making in antenatal settings and are increasingly replacing older confirmatory methods. Testing protocols for pregnant women have evolved to include immediate counselling, linkage to care, and quick confirmation, allowing earlier initiation of therapy and reducing the period during which transmission can occur. Additional focus has been given to the high vulnerability of pregnant women to new HIV acquisition and the importance of considering seroconversion risk throughout pregnancy and breastfeeding (22).

Syphilis screening depends on treponemal and non-treponemal antibody testing, many of which are available as rapid tests and can guide treatment without the need for laboratory confirmation. Since the risk of intrauterine transmission persists even without symptoms and can occur at any stage of the disease, experts emphasised that early detection remains essential (23). The regional rise in congenital syphilis, partly driven by migration and by late or missed maternal diagnoses, underscores the importance of systematic testing at the first antenatal contact and re-testing later in pregnancy.

Hepatitis B screening is recommended for all pregnant women and primarily involves HBsAg testing, followed if positive-by HBeAg testing to assess infectivity (16). The presence of HBeAg and high HBV DNA levels greatly raises the risk of transmission

during labour. Experts emphasise that rapid tests facilitate effective integration of hepatitis B screening into antenatal care. Universal HBV screening helps healthcare providers identify women who need antiviral prophylaxis during pregnancy and supports immediate planning for newborn vaccination and immunoprophylaxis (24). The experts repeatedly emphasized that failing to identify hepatitis B infection before delivery markedly increases the chances of infants developing chronic HBV infection, which poses lifelong risks of cirrhosis and hepatocellular carcinoma.

The introduction of co-testing solutions, including WHO-prequalified triple antenatal diagnostic panels, marks a significant step forward in integration (25). However, several structural barriers remain. Women who are not pregnant often face limited access to HIV and STI testing, reflecting narrow risk-based approaches that exclude the broader female population (3). Late diagnoses continue to be common across all assessed countries, particularly among migrants, women living in rural areas, and those facing cultural barriers that hinder health-seeking behaviour.

CARE

Care recommendations focus on quickly starting effective treatment for infected mothers, well-organised intrapartum management, and regular monitoring of exposed infants. For HIV, the experts explained how modern antiretroviral strategies-especially integrase inhibitor-based regimens achieve viral suppression much faster than older regimens (26-29), which is crucial for women who start treatment late in pregnancy. Evidence shows that viral suppression before delivery nearly eliminates intrapartum transmission, emphasising the importance of early diagnosis and immediate treatment. Continuity of care remains equally vital after birth, both for maternal adherence and for organised follow-up of infants. Early infant diagnosis through PCR testing at four to six weeks, along with additional testing during breastfeeding, ensures the prompt detection of infection in infants and allows rapid initiation of therapy, significantly improving survival outcomes.

Care pathways for syphilis focus on prompt maternal treatment with benzathine penicillin G, which remains the only reliably effective therapy for preventing fetal infection. Treatment should ideally be initiated more than 30 days before delivery, and serological monitoring throughout pregnancy is essential to evaluate treatment response

and detect reinfection. The experts stressed that congenital syphilis is entirely preventable when screening, treatment, and follow-up are consistently implemented (30).

For hepatitis B, care depends on a combined maternal-infant approach. Pregnant women with high HBV DNA levels need antiviral therapy with tenofovir from the late second or early third trimester to significantly lower viral load before birth (1,31). For infants, immediate immunoprophylaxis through a birth dose vaccine-administered within the first 24 hours of life and, when needed, hepatitis B immune globulin, provides the most effective strategy for preventing chronic HBV infection. Completing the vaccine series and conducting serological testing at 9-12 months confirms immunity and enables timely management of any breakthrough infections. Care pathways also reassure that breastfeeding is safe once neonatal immunoprophylaxis has been properly administered.

Experts highlighted significant operational challenges within care systems across Eastern Europe and Central Asia. These included fragmented service delivery that requires pregnant women to navigate multiple facilities, barriers related to stigma and discrimination, inconsistencies in feeding counselling, and inadequate integration of maternal, HIV, and sexual health services (32). Continuity of care for exposed infants remains at risk due to migration, socioeconomic vulnerabilities, and limited digital tracking systems, which contribute to missed follow-up visits and delayed diagnoses.

PREVENTION

Preventive strategies outlined by experts combine biomedical, behavioral, and structural interventions (33). International experts stressed that the prevention of vertical transmission requires integrated, people-centred approaches grounded in equity, quality, responsiveness, efficiency, and resilience (8). Many improvements in the region have arisen from strong political commitment, national coordination structures, and increasing domestic investment in HIV, reproductive health, and hepatitis programmes (14). For HIV, prevention includes the use of PrEP for women at significant risk during pregnancy or breastfeeding, counselling on reducing exposure, and systematic partner testing to prevent maternal seroconversion – a major driver of residual infant infections. Expert evidence showed that maternal seroconversion during breastfeeding carries one of the highest risks of vertical transmission (34); therefore, pregnant and postpartum women must be regarded as a high-risk group even if testing was negative earlier in pregnancy. The importance of

consistent, culturally appropriate counselling on breastfeeding was emphasised, given that non-exclusive or unstructured feeding practices significantly increase transmission risks.

Preventing congenital syphilis relies on universal and repeated screening, prompt maternal treatment, and partner notification to prevent reinfection. Experts emphasised the importance of tackling structural risk factors such as limited health-seeking autonomy for women, late antenatal bookings, and the impact of migration and poverty on access to care.

Hepatitis B prevention mainly depends on vaccination, which is underperformed among adults in EECA, even among key groups (35). Universal birth dose vaccination, administered within 24 hours, is the most effective intervention, backed by extensive long-term data showing decreases in chronic HBV prevalence and liver cancer rates among vaccinated populations. Maternal vaccination during pregnancy was also found to be safe and beneficial for protecting women without prior immunity (36).

The international experts emphasized that EMTCT efforts cannot succeed without addressing broader human rights issues (17). Stigma, discriminatory practices, punitive legal environments, and inconsistent access to contraception undermine women's ability to seek testing, adhere to treatment, and make autonomous reproductive decisions (32). Integrated care models, robust surveillance systems, community engagement, and patient-partnered service environments were recognised as essential elements of sustainable prevention systems.

PROPOSED COUNTRY ACTION PRIORITIES

Results of two-day workshop and Working Group recommendations were summarized in Table 1 as challenges and agreed actions. Over the next year, the Kyrgyzstan health system should prioritise establishing a strong legal and regulatory framework that allows full data integration and effective multisectoral coordination. This starts with updating and approving legislation governing information sharing among private laboratories, private clinics, and public facilities. The regulatory base should ensure that all providers submit timely, complete, and confidential data and that this data flows directly into the national e-lab system. Once the legal foundation is in place, the e-lab platform must be fully utilised, including mandatory data entry at the primary healthcare level and routine involvement of private laboratories, to maintain and use a comprehensive national dataset for decision-making.

Simultaneously, the adoption of rapid diagnostic tests-single, dual, and triple-into primary healthcare settings should be standardised. To facilitate this shift, uniform protocols must be created to specify how rapid tests are employed, how results are documented, and how follow-up actions are managed across all facilities. Enhancing coordination mechanisms between vertical programmes is crucial at this point, especially between STI services and HIV/hepatitis care services. These mechanisms should include operational dashboards that monitor screening coverage, treatment uptake, and care outcomes in real time.

Within the same timeframe, a reallocation of existing government funds for STI testing should be undertaken so that testing for HIV, syphilis, and hepatitis B in pregnant women can be consolidated within a single laboratory system. This restructuring will address the current fragmentation where syphilis testing is conducted in separate facilities while HIV and hepatitis B testing take place elsewhere. By centralising laboratory processes, the system can improve efficiency, reduce delays, and ensure that screening for the three infections is conducted in accordance with harmonised standards.

Once the legal, financial, and organisational foundations are secured, a pilot of point-of-care testing for pregnant women should be launched in selected districts or regions. This pilot will use rapid tests in primary health care settings and maternity services to demonstrate feasibility, assess operational challenges, and generate cost-effectiveness data. The results of the pilot should be synthesised into a clear policy brief for the Ministry of Health, highlighting the implications for scaling up integrated screening nationwide.

Simultaneously, integrated service delivery should be enhanced at all levels of care. Primary health care facilities, maternity hospitals, and higher-level institutions must be capable of offering HIV, syphilis, and hepatitis B services in a single location, so women do not have to visit multiple facilities during pregnancy. To support this integration, the workforce-including clinicians, nurses, midwives, facility managers, and counsellors-will require structured capacity-building focused on the principles of integrated service delivery, diagnostic protocols, counselling, and follow-up of mother–infant pairs. Training programmes must also emphasise stigma-free, confidential care practices across antenatal, maternity, and infectious disease clinics.

Maternal counselling should be expanded to include a focus on HIV, syphilis, and hepatitis B transmission risks, the importance of early testing and treatment adherence, and the benefits of preventing mother-to-child transmission for infant health. Population-level communication campaigns should supplement clinical counselling, helping to raise public awareness and encouraging early attendance at antenatal care. To promote early pregnancy detection, the home-visiting system should be engaged so that community health workers and visiting nurses can identify pregnant women early and link them promptly to screening services.

To ensure uninterrupted prevention of hepatitis B, the country must implement regulatory changes that guarantee consistent procurement of hepatitis B vaccine for pregnant women and hepatitis B immunoglobulin for newborns. Budget allocations should be formalised for these commodities, and buffer stocks established. In facilities with high patient volumes, the feasibility of opt-out screening should be evaluated once decentralised point-of-care testing is in place. This assessment should consider both operational capacity and acceptability among clients and healthcare workers.

Finally, the system should institutionalise multidisciplinary PMTCT care that offers structured postpartum follow-up for mother–infant pairs for at least twelve months. This requires seamless coordination among antenatal services, maternity care, paediatrics, and infectious disease programmes so that each pair remains in care, receives the necessary testing and prophylaxis, and is supported in meeting all clinical and social needs. By investing in workforce capacity, integrated workflows, effective data management, and stable procurement, the system will be well placed to deliver reliable, stigma-free, and patient-centred services that support elimination goals within one year.

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Address for correspondence:

Justyna Kowalska
Infectious Diseases Observational Research Unit,
Medical University of Warsaw, Poland
Email: justyna.kowalska@wum.edu.pl

Table 1. Results and Working Group recommendations of UNICEF, WHO and ESCMID subregional workshop in Kyrgyzstan, 2026

Challenges	Agreed Actions
Screening	
Fragmented laboratory pathways and non-integrated HIV/syphilis/HBV testing (separate laboratory of vertical services). Absence of a unified reporting system, no data exchange among facilities and vertical services. Inconsistent methodologies for calculating indicators from electronic medical records. The lab testing component in electronic medical records is not mandatory, resulting in data loss. Resource constraints (financing for procurement of reagents, trained staff, and blood sample transportation). At the same time, the Government allocates funding for testing across different levels of care, and by coordinating the distribution between vertical services and levels of care, it can use funds more rationally. Absence of a legislative base for the introduction of rapid tests at PHC. Insufficient capacity of healthcare providers to use rapid tests (dual, triple), especially at PHC. Absence of coordination and information sharing between private clinics and labs with the government sector. Lab professionals' scepticism about the specificity and sensitivity of rapid tests compared to traditional analysis methods. Late presentation for ANC among migrants; difficulty with cross-border partner notification.	• Development/update and approval of legislative base for: - Information sharing by private labs and clinics, and ensuring data timeliness, completeness and confidentiality - Introduction of rapid tests for PHC (single, dual and triple) - Coordination mechanisms between vertical structures and establish dashboards to monitor key indicators on screening, treatment, and care - Full utilisation of the e-lab system capacity (mandatory filling in PHC, use by private labs) • Integrate rapid tests onto the existing e-lab platform. • Development of standardised protocols on rapid test use and reporting requirements across facilities. • Transfer part of the Government funds allocated for STI testing to the HIV/AIDS centre to ensure testing of pregnant women for three infections in one laboratory (currently, the STI service performs tests for syphilis in separate labs and the HIV centre for HIV and hepatitis B in another). • Pilot point-of-care testing with rapid tests at PHC for all pregnant women in several districts or regions. Conduct a cost-effectiveness analysis based on the results and present to the MoH with clear recommendations on strengthening the screening system for three infections among pregnant women. • Decentralise point-of-care testing and secure budget allocations for national procurement of rapid tests for the triple screening programme. • Capacity building of healthcare providers on the use of rapid tests, especially at PHC • Targeted outreach for migrants; informational materials and cross-border coordination for partner services.
Care	
• Strong family and religious traditions influence women's freedom, causing stigma and fear of	• Institutionalise multidisciplinary teams and referral algorithms from first ANC through 12 months postpartum (including infant EID and immunisation follow-up).

disclosure to become significant barriers to accessing health services and maintaining treatment adherence. • Gaps in continuity between ANC, maternity, and infectious disease services due to weak coordination and information sharing. • Geographical barriers to accessing healthcare. • Healthcare staff shortage and quick turnover are influencing access and quality of care. • Problems with social and psychological support (lack of psychologists and social workers) lead to problems with timely identification and adherence to treatment and care. Weak coordination between the government sector and NGOs. • Stigma and fear in healthcare settings; occasional refusals of treatment or services	• Build the capacity of healthcare providers and managers on integrated service delivery. • Ensure provision of integrated service delivery at all levels of care (PHC, maternity, etc). Women should receive all services (HIV, syphilis and Hepatitis B) in one facility/place. • Engage NGOs/peers/social workers for adherence support, active tracing, and partner services. • Implementation of access to testing in all medical facilities for all patients. • Allocate state funding for social service workers. • Provide routine trainings and mentoring on updated PMTCT, syphilis and HBV protocols; embed respectful care and confidentiality. • Improve awareness of adolescents through school and university-based education programs. • Utilise communication and behavioural change companies, new technologies, mobile apps, and the internet for information on STIs and reproductive health, as well as online consultation.
Prevention	
• Late identification of infections. • The impossibility of testing in foreign countries for migrant workers. • No free access to hepatitis B vaccination for pregnant women. • Inadequate counselling and public communication; misinformation causing refusals to vaccinate children against hepatitis B. • Refusal to treat hepatitis B with tenofovir. • limited HBIG availability • Low knowledge of healthcare providers.	Strengthen maternal counselling on HIV, syphilis and hepatitis B, and population campaigns on PMTCT and infant benefits. Involve the home visiting system for early identification of pregnant women. Arrange a mobile testing point and ensure access for a wide range of the population, including pregnant women. Introduction of hepatitis B vaccination for pregnant women. Introduce regulatory changes and budget lines to secure reliable procurement of HBV and vaccine and HBIG; create buffer stocks and ensure birth dose in all maternities. Standardise newborn prophylaxis and follow-up; track exposed infants via integrated child health services and electronic registries. Capacity building of healthcare providers on counselling, HIV, syphilis and HBV prevention and treatment. Community education on HIV, STIs, reproductive health and vaccination.