INFECTIOUS DISEASES IN PREGNANCY

SCREENING, MANAGEMENT OF TORCH INFECTIONS, AND EMERGING CHALLENGES IN THE ERA OF COVID-19

PRNworld

INFECTIOUS DISEASES IN PREGNANCY:

Screening, Management of TORCH Infections, and Emerging Challenges in the ERA OF COVID-19

ANCC Accredited NCPD Hours: 2 hrs

Target Audience: RN/WHNP/CNM

NEED ASSESSMENT

Infections that are transmissible during pregnancy are still a major concern in public health, as they can cause very serious conditions not only to the mother but also to the fetus and the newborn. Present-day data show that after and during the COVID-19 pandemic, syphilis and gonorrhoea have dramatically increased in pregnant patients. In a 2023 U.S. study, it was found that pregnancies affected by syphilis and gonorrhea had gone up significantly during the pandemic period.

On the contrary, the statistics of South Brazil indicate that the incidence of maternal syphilis has reached 32.4 cases per 1,000 live births in 2022, a 15.5% increase from the previous year, and that cases of congenital syphilis have increased after the region, previous public health improvements.

Besides the already mentioned STIs, the evolution of the situation is alarming for the screening of the others, such as chlamydia, gonorrhoea, and HIV as well. The Centres for Disease Control and Prevention in the United States have each year recorded over 1.6 million cases of chlamydia infection, more than 600,000 cases of gonorrhoea and over 200,000 cases of primary and secondary syphilis in all age groups in 2023. One of the most important facts is the number of cases of congenital syphilis: there were almost 3,882, including 279 deaths (stillbirths or neonatal) due to syphilis of congenital origin.

Still, from 2022 to 2023, only short-term gonorrhoea and early syphilis stages were able to show some declines. However, syphilis in general (all stages and congenital cases) and late/unknown duration syphilis had risen.

The COVID-19 pandemic was responsible for the disruptions of the routine prenatal care and screening, and as a result, the diagnosis and treatment of sexually transmitted infections in

pregnancy were delayed. In Brazil, the health disturbances during COVID-19 are the cause of a backwards step in the control of maternal syphilis, with less diagnostic capacity and worsened maternal and congenital syphilis outcomes.

U.S. situations are not very different. At the beginning of the pandemic, there was a very significant reduction in the STI screening for chlamydia and gonorrhoea in patients aged 14-49 years by about 59-63% in early April 2020 compared to baseline, followed by increased positivity rates, probably reflecting that cases were missed earlier.

Looking at it from the point of view of an APRN practice, these statistics show that several issues exist:

(1) The implementation of screening guidelines may not be stable during crises

(2) Vulnerable groups (younger women, women with limited prenatal care, women of racial/ethnic minorities) are more negatively impacted. The U.S. data show, for instance, that maternal STI rates are higher in non-Hispanic Black women, women on Medicaid, those who start prenatal care late and those with low educational levels.

On this account, a strong and explicit need exists for new APRN-level research in evaluating the:

Effectiveness and coverage of current STI (HIV, syphilis, chlamydia, gonorrhoea) screening protocols in pregnancy under pandemic constraints.

Management outcomes of TORCH (Toxoplasma, Other [including syphilis], Rubella, Cytomegalovirus, Herpes) infections in pregnancy, particularly in settings where COVID-19 disrupted health systems.

COVID-19's indirect impacts on prenatal care, patient behaviours, access to care, and rates of vertical transmission of treatable infections.

OBJECTIVES

- **Analyse** current epidemiological trends in HIV, syphilis, chlamydia, and gonorrhoea in pregnancy and their implications for maternal–fetal outcomes.
- **Evaluate** the effectiveness of existing prenatal screening guidelines for STIs and TORCH infections in the context of healthcare disruptions such as the COVID-19 pandemic.
- **Synthesise** evidence-based management strategies for TORCH infections, incorporating pharmacologic, non-pharmacologic, and preventive interventions tailored to pregnant populations.
- **Appraise** the impact of COVID-19 on prenatal infectious disease screening and identify strategies APRNs can implement to mitigate care gaps in high-risk populations.

- **Design** an advanced practice nursing plan that integrates STI/TORCH infection screening, culturally sensitive counselling, and interprofessional collaboration to optimise maternal–fetal health outcomes.
- **Critique** ethical, legal, and public health considerations in balancing patient autonomy with mandatory infectious disease screening during pregnancy.

GOAL

This Continuing Education activity aims to improve the capability of Advanced Practice Registered Nurses (APRNs) to evaluate effectively, integrate, and implement evidence-based strategies for the identification and treatment of infectious diseases in pregnancy that have been broadly talked about (HIV, syphilis, chlamydia, gonorrhea, and TORCH infections), along with addressing the newly emerged issues in prenatal care, e.g., COVID-19 impact. Through the development of advanced clinical reasoning, co-operation with other professionals, and engagement of patients, the APRNs will be enabled to create positive maternal and neonatal health outcomes, lower the risks of vertical transmission, and make a significant contribution to public health outcomes.

INTRODUCTION

Pregnancy is a time when a woman is more exposed to infectious diseases, not only due to changes in the immune, cardiovascular, and respiratory systems but also because of the possibility of vertical transmission, which can lead to very serious complications in the perinatal period. Besides that, APRNs are going through a period where they have to face more and more challenges in the process of the screening, diagnosis, preventive strategies, and management, not only for the usual pathogens (e.g., HIV, syphilis, chlamydia, gonorrhoea, and the TORCH group), but also for a wide range of new and unexpected problems such as COVID-19.

Systematic reviews published recently confirm the increasing risks. A meta-analysis published in 2024 can be taken as an example, which shows that the pooled prevalence of respiratory distress syndrome (RDS) in newborns of mothers infected with SARS-CoV-2 is 11.5%, with a risk ratio of about 2.7 times compared to infants born to mothers who were not infected. This also means that neonatal respiratory morbidity is promoted by a combination of direct and indirect routes (e.g., placental inflammation, prematurity, systemic maternal illness) even when COVID-19 is not a major obstetric concern.

At the same time, the first signs of developmental and gestational impacts are still there. A global overview of Long COVID-19

in pregnancy has documented continuing symptoms affecting pregnant persons that could be associated with interruptions in prenatal care, changed health behaviours, or immune modulation during gestation.

Besides that, an observational study of an academic center in Appalachian U.S. (2020-2023) shows that maternal-infant health was still affected after the pandemic, acute phase had passed: rates of gestational hypertension, diabetes, and both small for gestational age (SGA) and large for gestational age (LGA) infants, plus congenital anomalies were going up, compared to baselines before the pandemic.

It is from these changes that one can conclude that even after the worst COVID-19 waves have passed, the downstream ripple effects on prenatal and neonatal health remain.

Moreover, while the classic STIs and TORCH infections are concerned, there are indications that the pandemic has led to service disruptions. Some were reduced routine screening, delayed diagnosis and therapy, and reallocation of public health resources. All these changes could potentially raise the risk of vertical transmission, fetal adversities, and missed prevention chances. For instance, data gathered by the U.S. CDC reveal that the period when COVID-19 lockdowns were at their most intense witnessed a marked fall in STI case reports, which most probably was due to limited screening and access rather than actual reductions in transmission.

Let us consider an example to further explain:

In the case of a pregnant woman in her second trimester, prenatal care is limited during a COVID-19 surge. Therefore, she may not be subjected to routine syphilis or HIV screening; if she gets infected with HIV at that time, antiretroviral therapy (ART) initiation will be delayed, thereby increasing vertical HIV transmission risk. The same applies to the situation where she is suffering from chlamydia or gonorrhea but is not diagnosed; the outcome will be so risky that there is a possibility of premature birth or the infant being born underweight. Moreover, if she contracts COVID-19, it will become a fact that neonatal respiratory distress or prematurity has increased.

These new data illuminate a complex interplay of factors affecting infectious disease risks: those risks are being amplified by pandemic-related healthcare system stress, social determinants of health, and evolving pathogen interactions. For APRNs, this means that a proactive, evidence-based, and flexible approach to screening, treatment, counselling, and interprofessional collaboration is required more than ever. This article is an effort to combine recent evidence, pinpoint gaps, and present program-level strategies to APRNs for this ever-changing terrain to improve maternal-

fetal outcomes.

MATERNAL–FOETAL IMPLICATIONS OF HIV, SYPHILIS, CHLAMYDIA, AND GONORRHOEA IN PREGNANCY: CONCEPTS, OUTCOMES, AND EPIDEMIOLOGICAL TRENDS

HIV IN PREGNANCY

Definition / core concept

HIV infection during pregnancy means that the mother is infected with HIV-1/2 at any time during the pregnancy. The main nurse practitioner issues are to stop the mother from going to the worst stages of the disease, to achieve and keep viral suppression by antiretroviral therapy (ART), and also to stop the transmission of the virus vertically (perinatal and breastfeeding).

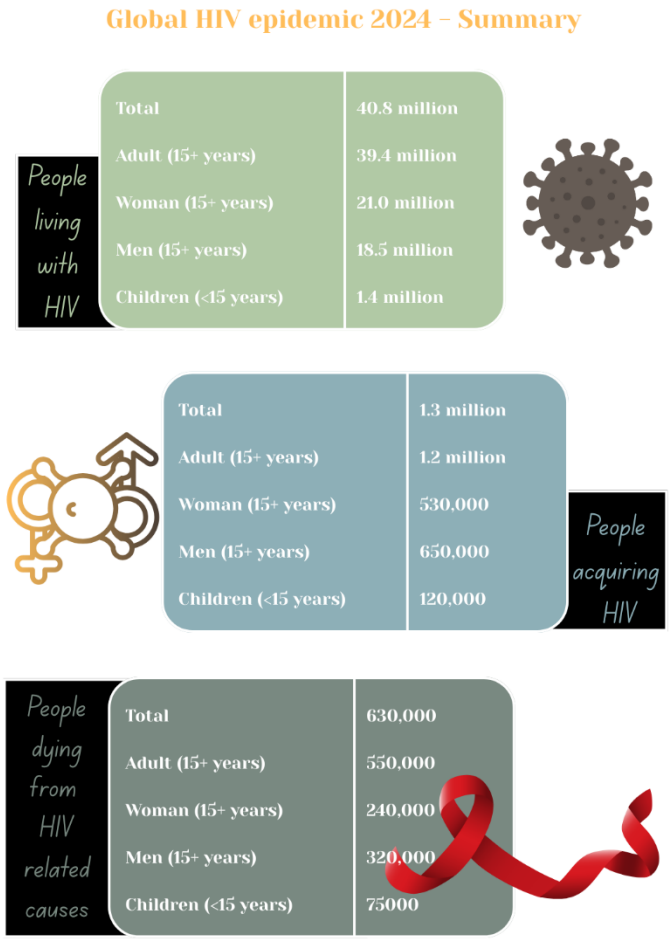
Current concepts relevant to pregnancy

- Universal opt-out prenatal HIV screening is best practice; those with ongoing risk or high-prevalence areas are recommended to have repeat testing in the third trimester.
- A rapid diagnosis and prompt (or optimisation) of ART during pregnancy turns the vertical transmission risk very low; ART adherence and maternal viral load monitoring are core quality metrics.
- Maternal seroconversion during pregnancy (incident infection) is a source of vertical transmission with a higher risk than chronic, suppressed infection because of high maternal viral load during acute infection, so prevention counselling and repeat testing in high-risk windows matter.
- Delivery planning (mode of delivery), intrapartum management (intrapartum zidovudine if indicated), and neonatal post-exposure prophylaxis are individualised based on maternal viral load and ART history.

Epidemiology & statistics

- Vertical transmission rates in high-income settings with comprehensive ART programs have decreased to below ~2%, but those areas with incomplete coverage or where adherence is low still have a higher rate. A recent systematic review quantifies vertical transmission and points out that maternal seroconversion during pregnancy leads to transmission probabilities that are much higher (pooled estimates for seroconverters greatly above background) than the rest.
- Global coverage gaps remain: recent analyses estimate ARV coverage among pregnant people is high in many regions but

not universal, and continued focus on identifying incident infections in pregnancy is required to reach elimination targets.



SYPHILIS IN PREGNANCY (AS WELL AS CONGENITAL SYPHILIS)

Definition / core concept

Syphilis is a disease caused by Treponema pallidum, and if a pregnant woman is sick with it, the baby can get infected through the placenta at any stage of the disease; thus, the baby would be born with syphilis (CS) that can lead to symptoms varying from stillbirth and neonatal death to long-term disability.

Current concepts relevant to pregnancy

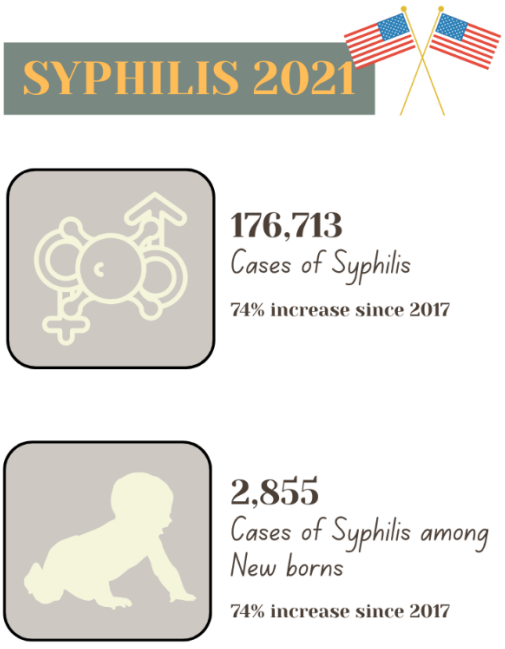
- As the first standard, universal prenatal syphilis screening today is mandatory at the initial prenatal appointment; many professional bodies recommend a second test also in the third trimester and at delivery in areas of rising rates or high local prevalence. Early recognition and delivery of parenteral benzathine penicillin remain the only therapy that has been proven effective to halt the transmission of syphilis from the mother to the fetus.
- Missed or late treatment is the primary cause of congenital syphilis; programmatic failures (late first visit, lack of testing, treatment delays) are responsible for most preventable CS cases. APRNs are crucial in point-of-care rapid testing, facilitating partner notification, ensuring that benzathine penicillin is available, and that treatment is completed.
- Some co-morbid social determinants of health (e.g., limited prenatal clinic access, substance use, housing instability) and health system disruptions (e.g., during COVID-19) have been associated with recent increases in congenital syphilis.

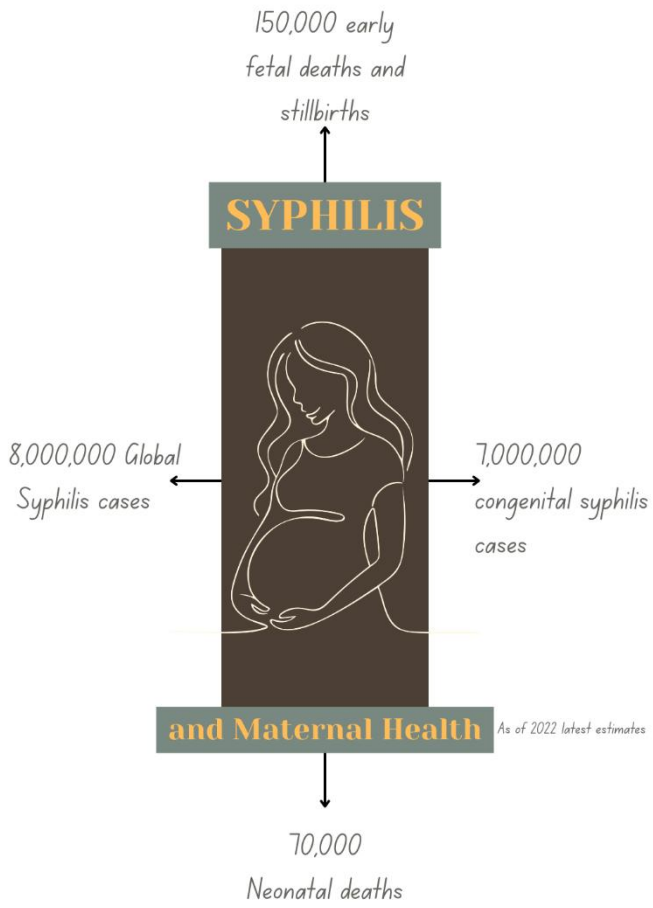
Epidemiology & statistics

- In the U.S., congenital syphilis has increased rapidly over the past few years and reached

the highest levels seen since the 1990s; the CDC reported ~3,882 congenital syphilis cases in 2023 (including hundreds of congenital syphilis–related stillbirths and infant deaths), and public health reports show that the majority of the cases were preventable through prompt screening and treatment. Surveillance data also point to continued increases in maternal syphilis in many regions, resulting in updated screening guidance (e.g., more frequent testing in pregnancy).

- Due to rising rates of CS, public health agencies and professional societies (e.g., ACOG) have issued recommendations for more frequent screening, a suggestion that APRNs be tasked with implementing repeat screening locally and determining the frequency of screening that is suitable for a particular location.





CHLAMYDIA TRACHOMATIS IN PREGNANCY

Definition / core concept

Genital Chlamydia trachomatis infection in pregnancy is mostly asymptomatic, but it has been linked with negative obstetric and neonatal sequelae (preterm rupture of membranes, preterm birth, low birth weight), and the transmission from mother to child has been known to cause neonatal conjunctivitis and pneumonia.

Current concepts relevant to pregnancy

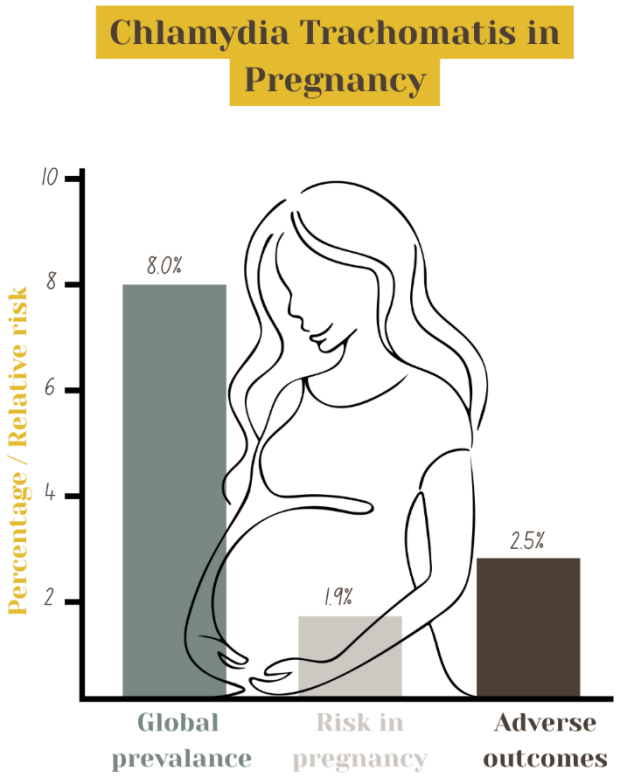
- The vast majority of guidelines in the world

suggest screening pregnant women (under 25) at the first antenatal visit and, in addition to that, screening older persons with risk factors; some programs suggest a repeat test for those who are at risk during pregnancy.

- By means of nucleic acid amplification testing (NAAT) of urine or vaginal specimens, the diagnosis is confirmed. Treatment in pregnancy (azithromycin or amoxicillin if indicated) leads to a decrease in the pathological sequelae of pregnancy. To prevent patient partners of APRNs should be treated or a notification system should be implemented so incoming partners are aware.
- There are ongoing studies about the benefits of universal vs. targeted screening during pregnancy and the timing of repeat testing for the purpose of eliminating adverse outcomes.

Epidemiology & statistics

- A recently held meta-analysis and global reviews approximate the prevalence of C. trachomatis in pregnant women to be a single-digit percentage worldwide, albeit diverse by region; one meta-analysis conducted in 2025 allowed for a global combined prevalence of ~8.4% among pregnant women (quite a lot of heterogeneity between populations). In addition, a new national study reported that the rate of C. trachomatis diagnosed during pregnancy in a particular birth records dataset was approximately 1.9%, reflecting differences in place and surveillance method. The reduction of the risk of preterm birth has been linked to the use of treatment during pregnancy in pooled analyses, although the level of evidence is inconsistent.



NEISSERIA GONORRHOEAE (GONORRHOEA) IN PREGNANCY

Definition / core concept

Gonorrhoea is a sexually transmitted infection caused by Neisseria gonorrhoeae. In pregnancy, the infection can be asymptomatic or symptomatic and is highly linked to preterm

birth, early membrane rupture, and a heightened risk of chorioamnionitis; in addition, the eyes of a neonate may get infected due to direct exposure to ophthalmia neonatorum.

Current concepts relevant to pregnancy

- Nucleic acid amplification test (NAAT) is the main diagnostic method. Although many guidelines recommend screening at the initial prenatal visit for the riskiest group, local prevalence may be used as a basis for deciding on screening categories.
- One of the major problems worldwide that leads to difficulties in the treatment of N. gonorrhoeae is the rising antimicrobial resistance, which is followed by the necessity for APRN prescribers to be up-to-date with the local treatment guidelines and report treatment failures.
- Gonorrhoea in pregnancy, if not treated properly, is a source of undesirable pregnancy outcomes. Hence, the management of the sexual partners and test-of-cure (if necessary) is of great importance.

Epidemiology & statistics

- Different studies illustrate the gonorrhoea disease at global and regional levels. As well as the data from recent national surveillance (for instance, CDC 2023) that show millions of STI cases reported overall and changes in gonorrhoea trends year to year. Observational studies and meta-analyses have identified a strong association between maternal gonorrhoea and the odds of preterm birth and certain hypertensive disorders of pregnancy. Changing incidence of gonorrhea (some recent decreases in certain regions) can be found alongside antimicrobial resistance trends (which continue to worsen), thus corroborating the clinical implication of careful diagnosis and reporting to be followed.

Neisseria gonorrhoeae Prevalance

The worldwide pooled prevalence of gonorrhoea in pregnant women was estimated at 1.85% (95% CI 1.73-1.97%), with the highest rate in the African region (3.53%) (2.84-4.29%) and the lowest rate in the European region (0.52%) (0.27-0.84%). Overall, the prevalence estimates were high among low-income countries (3.03%), pregnant women with HIV (2.81%), and pregnant women <20 years old (8.06%). A significant decreasing trend in prevalence was observed over time (β = -0.0008, 95% CI -0.0012 to -0.0004, p 0.001).

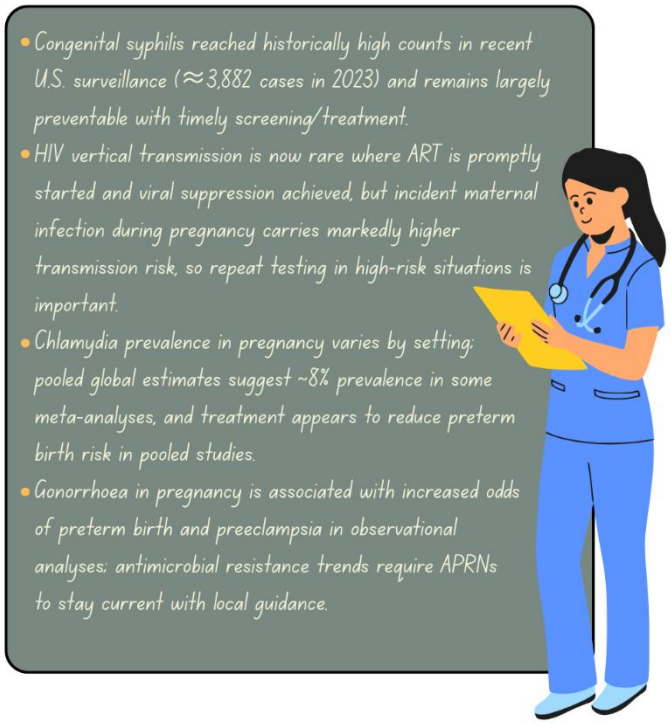
TRANSLATING EVIDENCE TO APRN-LEVEL CLINICAL DECISION MAKING

- Screening gaps represent the main cause of preventable vertical transmission of syphilis, along with unrecognised cases of chlamydia,

gonorrhoea and HIV. First-trimester testing that is done punctually, risk-based repeat testing in the third trimester, and delivery-time testing are very important interventions from a programmatic point of view. (CDC and professional society guidance have been updated in response to surveillance trends.)

- The COVID-19 era disruptions (clinic closures, delayed visits, decreased screening volumes) have led to missed diagnoses and may be partially responsible for the recent rise in congenital syphilis and other adverse perinatal outcomes. The APRNs should be ready to respond to any residual system impacts by integrating mitigation measures (telehealth linkage, community testing, outreach) in their practice.
- The high-risk groups are the mothers who include adolescents, persons with severely restricted access to prenatal care, racial/ethnic minorities, and those with substance use or unstable housing, who bear disproportionate burdens; Thus, the support of targeted APRN interventions and social determinants-informed care is the only way to solve this problem
- How can the treatment be accessed, and can the antibiotics be used most responsibly? for syphilis, timely injection of benzathine penicillin is the only treatment that can successfully prevent the congenital disease; thus, if there are shortages or late treatments, the problem must be made known immediately. The development of resistance to gonorrhoea calls for strict observance of the current treatment guidelines and reporting to the public health authorities if failure in treatment is suspected.

Summary Bulletins



EFFECTIVENESS OF PRENATAL SCREENING GUIDELINES

Current prenatal screening guidelines from leading authorities (CDC, ACOG, WHO) are evidence-based and, when executed as specified, prevent most cases of vertical transmission and adverse neonatal outcomes. However, real-world impact was significantly reduced during the COVID-19 pandemic

because of service disruptions, missed testing windows, and treatment delays. To translate guideline efficacy into consistent population-level benefit, APRNs must lead on operationalisation: standing orders, resilient diagnostic pathways (point-of-care and home collection), clear late-pregnancy syphilis policies, and equity-driven outreach.

CORE UNIVERSAL SCREENING ITEMS (RECOMMENDED FOR EVERY PREGNANCY)

Evidence supports the following universal, opt-out or routine tests at the initial prenatal visit:

- **HIV (opt-out Ag/Ab test):**
  Universal opt-out testing at the first prenatal visit is standard; rapid testing in labour should be performed if maternal status is unknown to allow immediate prophylaxis and neonatal management.
- **Syphilis (treponemal and nontreponemal serology):**
  Universal testing at the first prenatal visit is required by major professional bodies; timing for late-pregnancy rescreening varies and should be specified locally.
- **Hepatitis B (HBsAg):**
  Universal HBsAg testing at the first visit with linkage to perinatal HBV prevention protocols (including newborn immunoprophylaxis) is essential. Test at delivery if prenatal screening is absent.
- **Hepatitis C (HCV Ab → reflex RNA):**
  Screening during each pregnancy is recommended, with reflex RNA testing for antibody-positive results and postpartum linkage for curative therapy.
- **Rubella immunity (IgG):**
  Assessment early in pregnancy is routine; nonimmune individuals should be offered postpartum MMR vaccination.

Condition	Who to screen	Timing	Rescreening
HIV (opt-out)	All pregnancies	First prenatal visit (opt-out screening)	Third trimester if increased risk or high-prevalence setting; rapid test in labour if maternal status unknown
Syphilis	All pregnancies	First prenatal visit	CDC: risk-based at ~28 weeks and at delivery; ACOG: universal at ~28 weeks and at birth — institution should codify one operational standard
Hepatitis B (HBsAg)	All pregnancies	First prenatal visit	Test at delivery if unscreened; manage positives per perinatal HBV prevention protocols (infant immunoprophylaxis/pathway)
Hepatitis C (HCV Ab → reflex RNA)	All pregnancies	First prenatal visit each pregnancy	Reflex RNA testing for antibody-positive results; reassess and retest if ongoing risk
Rubella immunity (IgG)	All pregnancies	First prenatal visit	If nonimmune → postpartum MMR vaccination (MMR contraindicated during pregnancy)

Notes

- *Rapid testing (HIV, syphilis) at labour/triage is critical when prenatal testing is unknown or incomplete to enable immediate prophylaxis/treatment decisions.*
- *Local policy should specify whether late-pregnancy syphilis rescreening follows ACOG universal rescreening or CDC risk-based criteria; embed that choice in EMR order sets and standing orders to ensure consistency.*

TARGETED OR NON-UNIVERSAL SCREENING (INDICATION-BASED)

Routine universal testing is not recommended for every agent in the TORCH group or for all STIs. Testing should be targeted according to age, risk, local prevalence, clinical findings, and ultrasound abnormalities:

- **Chlamydia (CT) & Neisseria gonorrhoeae (NG):**
  NAAT at the first prenatal visit for all patients aged <25 years and for older patients with risk factors. Retesting in the third trimester is indicated for persons with ongoing risk. Test-of-cure and 3-month retesting after treatment are standard pregnancy-specific practices to avoid reinfection and adverse outcomes.
- **Trichomonas:**
  Test symptomatic patients or those at elevated local risk; universal screening is not recommended.
- **HSV (serology):**
  Routine type-specific serology is not recommended; use selectively for atypical lesions or complex partner/clinical scenarios.
- **CMV & Toxoplasma gondii:**
  Universal screening is not advised in most settings; counsel on prevention and test only for exposure, compatible symptoms, or suggestive ultrasound findings.

LATE-PREGNANCY SYPHILIS POLICY: OPERATIONAL CLARITY REQUIRED

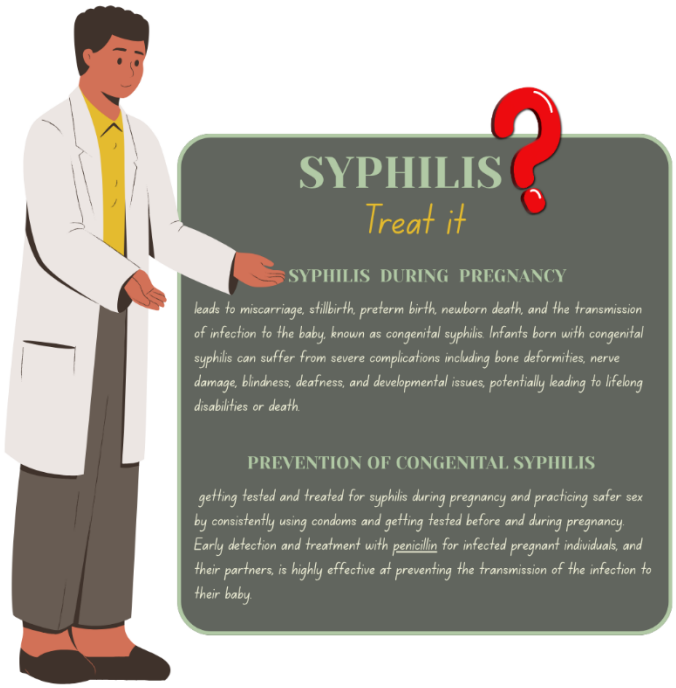
Guideline divergence exists for late-pregnancy syphilis rescreening. ACOG recommends universal rescreening at approximately 28 weeks and at birth in the context of rising congenital syphilis incidence; CDC retains a risk-based approach for late-pregnancy rescreening and at delivery. Because such policy differences materially influence clinic workflows and outcomes, institutions must select and codify a single operational standard (either ACOG universal rescreening or CDC risk-based rescreening) and implement it through standing orders and EMR defaults to avoid inconsistent practice.

WHY ARE GUIDELINES CONCEPTUALLY EFFECTIVE?

The scientific rationale for current screening recommendations is robust: early detection combined with timely, guideline-directed therapy (antenatal ART for HIV, benzathine penicillin for syphilis, NAAT-directed treatment for CT/NG, neonatal HBV prophylaxis) demonstrably reduces vertical transmission and neonatal morbidity. Discrete test timepoints (first visit, targeted third trimester, and delivery) create measurable programmatic benchmarks that support quality improvement.

THE PANDEMIC EFFECT: HOW COVID-19 UNDERMINED IMPLEMENTATION

COVID-19 precipitated rapid declines in routine sexual-health services and antenatal testing volumes because of clinic closures, reduced in-person visits, reallocation of workforce, and patient avoidance of healthcare settings. When services resumed, higher test positivity rates suggested substantial under-ascertainment during periods of low screening, an effect implicated in observed increases in congenital syphilis and other preventable adverse outcomes. These disruptions revealed that guideline content alone is insufficient: resilient diagnostic and treatment pathways are required to maintain prevention during system stress.



KEY LIMITATIONS AND WHY EFFECTIVENESS IS IMPERFECT IN PRACTICE

A. Implementation gaps and uneven coverage

Several documents show that prenatal screening is poorly covered, even with guidance - in many cases, pregnant women do not receive first-trimester testing or the rest of the tests are done in late pregnancy. Differences are seen between regions, clinics, and patient groups (insurance, access). This is the main reason for congenital infections that are the cause of avoidable deaths.

B. Health system disruptions during COVID-19

The COVID-19 pandemic has led to the fall of STI screening, which proceeds rapidly within a short time (clinic closures, deferred visits, and resource reallocation). Several local programs have observed fewer tests but a higher positivity rate after screening was resumed, which is partially underdetection. The consequences of the pandemic for public health surveillance are very cautious when interpreting case counts of the pandemic era because of the reduced testing, which therefore masked the true incidence. These disruptions in the system have led to the inability to detect and treat early during pregnancy (mainly the

increase of congenital syphilis in different places) for some time.

C. Resource & access constraints

Point-of-care tests, laboratory turnaround time, penicillin supply shortages, and workforce limitations in low-resource areas all have an impact on the quickness of action on the guideline recommendations - thus, the vertical transmission of the virus still exists. WHO and other organisations are actively working to increase the availability of point-of-care tests as a solution to this problem.

D. Variation in TORCH approaches & evidence gaps

Certain TORCH agents (e.g., CMV, Toxoplasma) have no agreement on routine universal screening since preventive interventions are less defined and are less cost-effective; thus, effectiveness largely depends on focused, clinician-led testing and counselling. This diversity can bring about the occurrence of a missed diagnosis when the clinicians are hesitant or when the capacity is limited.

E. Antimicrobial resistance & treatment challenges

The growing problem of antimicrobial resistance (particularly for N. gonorrhoeae) threatens the treatment plans, which in turn may negatively impact the results of the screening programs if only a few effective treatment options are left and are delayed. APRNs are obliged to strictly follow the local treatment guidelines that are continuously updated and inform about any failures.

APRN-LEVEL APPRAISAL

Conceptual appraisal

Current prenatal screening and management guidelines promulgated by major authorities (CDC, ACOG, WHO) are grounded in strong clinical evidence: early identification of maternal infection combined with timely, guideline-directed therapy measurably reduces vertical transmission and adverse neonatal outcomes. The science supporting interventions such as antenatal ART for HIV, benzathine penicillin for maternal syphilis, and NAAT-guided treatment for chlamydia/gonorrhoea is robust and reproducible across settings. Guideline structure, specifying discrete test timepoints (first prenatal visit, targeted third-trimester rescreening, and delivery-time testing in high-risk situations), provides clear operational metrics that programs and APRNs can use to standardise care and monitor quality.

Practical appraisal

Despite solid evidence and well-constructed recommendations, real-world effectiveness is only partial because success depends heavily on

systems and context. Key barriers include inconsistent implementation (missed or late prenatal visits, inadequate standing orders), pandemic-related service disruptions (reduced screening volumes and follow-up), inequities in access to testing and timely treatment, intermittent supply-chain problems (notably benzathine penicillin shortages), and the evolving threat of antimicrobial resistance (particularly *N. gonorrhoeae*). These programmatic and structural gaps, rather than deficiencies in the guidelines themselves, explain much of the persistent burden of preventable congenital infection. Consequently, guideline fidelity at the point of care, enabled by pragmatic workflows, point-of-care testing, reliable medication access, active surveillance, and targeted outreach to high-risk populations, is the decisive factor that determines population-level impact.

Implication for APRN practice

For APRNs, the priority is operational translation: adopt guideline content, but pair it with clinic-level systems (standing orders, EMR alerts, POC testing, telehealth linkage, and escalation protocols for shortages or resistance). In short, the guidelines are clinically effective; the challenge and opportunity for APRNs lie in closing implementation gaps so that evidence becomes consistent practice.

APRN ACTION PLAN: STRENGTHENING STI/TORCH SCREENING IN PREGNANCY

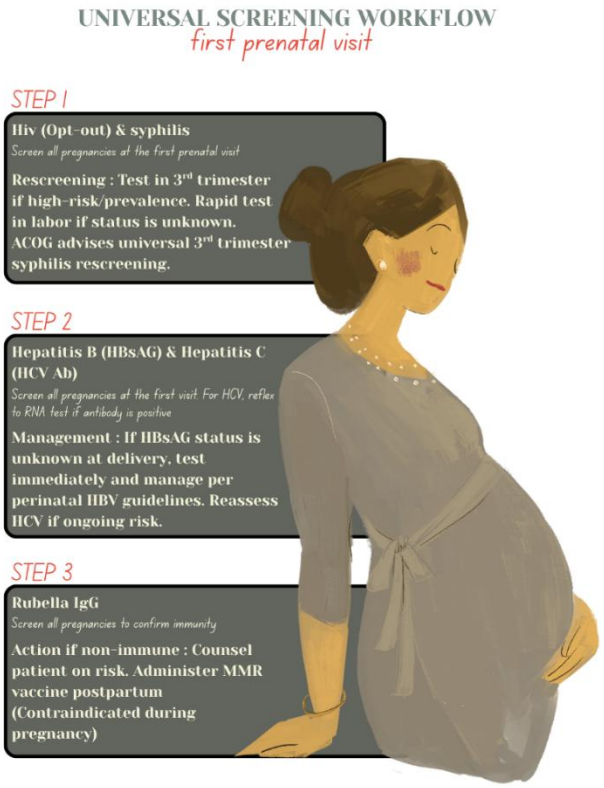
1. **Operationalise the timepoints**:
   Ensure first-visit testing is a clinic KPI and implement reminder/standing orders for third-trimester and delivery-time rescreening in high-prevalence settings. (ACOG/CDC guidance supports universal third-trimester syphilis rescreening where rates are high.)
2. **Use point-of-care testing where available**:
   Rapid tests (syphilis, HIV) at first contact improve same-visit diagnosis and treatment, critical when follow-up is uncertain. WHO recommends expanding accessible point-of-care STI testing.
3. **Integrate STI testing into all pregnancy contacts**:
   Treat any healthcare encounter (urgent care, ED, telehealth intake) as an opportunity to screen and link to treatment, especially in low-access areas. ACOG emphasises opportunistic screening.
4. **Strengthen telehealth + home testing pathways**:
   To mitigate pandemic-like disruptions, develop telehealth counselling with linkage to local labs or validated home testing kits and rapid referral pathways. CDC reports showed reduced testing volumes during

COVID; adaptive models can prevent future gaps.?

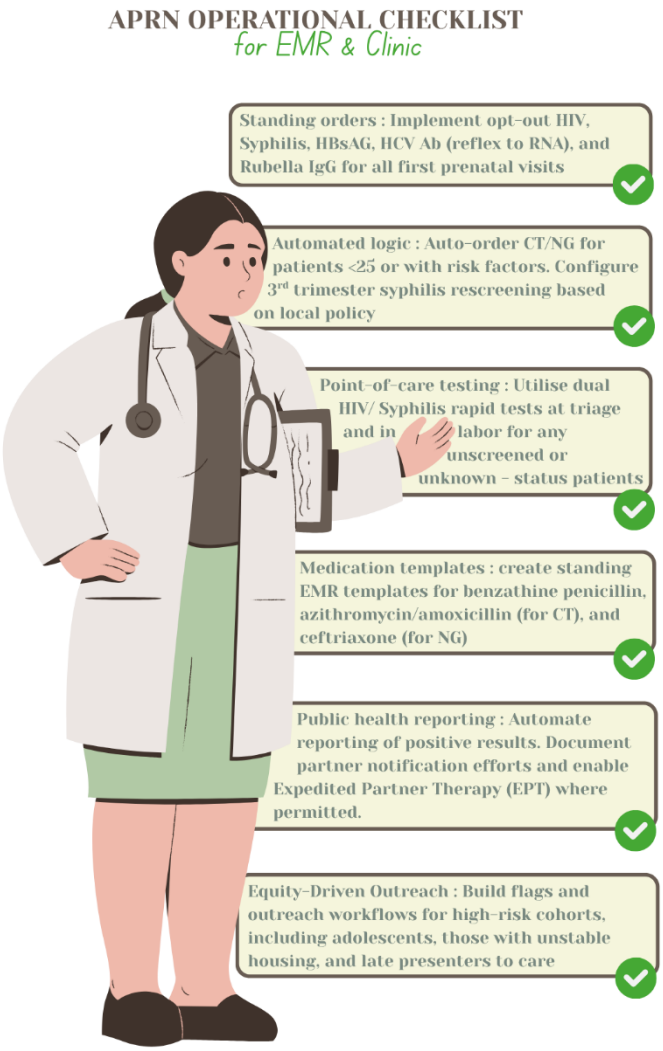
5. **Prioritise benzathine penicillin supply and rapid treatment**:
   for seropositive pregnant people, APRNs should escalate shortages to institutional leadership/public health. Timely penicillin prevents congenital syphilis.
6. **Targeted repeat testing**:
   Implement risk-based repeat NAAT testing for chlamydia/gonorrhoea in those with ongoing risk (young age, new/multiple partners) and consider local prevalence when deciding on universal vs targeted approaches.
7. **Surveillance & reporting**:
   Report treatment failures (e.g., possible gonorrhoea resistance) and congenital infections promptly to public health to enable rapid response.
8. **Address social determinants**:
   Build outreach for adolescents, marginalised groups, and those with unstable housing; these groups had disproportionate burdens and were more affected by COVID-era disruptions.
9. **Education & standing orders**:
   Use standing orders for STI screening at intake and mid/late pregnancy, and train APRNs in updated algorithms so treatment is not delayed.

QUALITY INDICATORS TO MONITOR

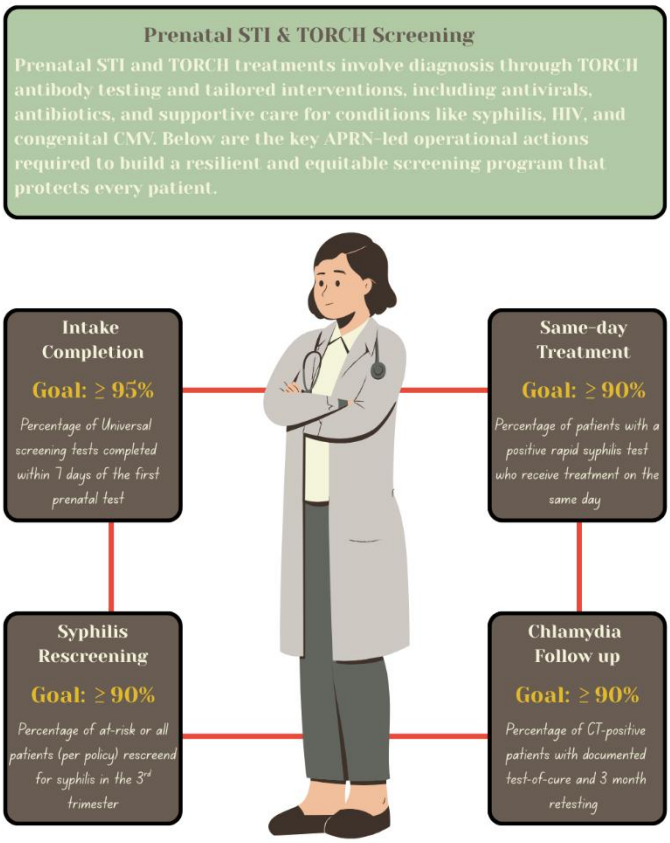
- Intake completion rate for universal tests within 7 days of initial prenatal contact (target ≥95%).
- Third-trimester and delivery syphilis rescreen completion per institutional policy (target ≥90%).
- Same-day treatment rate for positive rapid syphilis tests (target ≥90%).
- Proportion of CT-positive pregnancies with documented test-of-cure at ~4 weeks and retest at 3 months (target ≥90%).
- HCV reflex RNA completion for antibody-positive patients (target ≥95%).
- Median time from positive result to treatment initiation (track and reduce).



Universal first-visit screening for HIV, syphilis, HBsAg, HCV, and rubella immunity constitutes the evidence-based foundation for perinatal infection prevention. COVID-19 exposed implementation fragility: the clinical science is strong, but impact depends on resilient workflows, rapid diagnostics, clear late-pregnancy syphilis policy, and equity-focused outreach.



APRNs are uniquely positioned to bridge the gap between guideline content and consistent practice through standing orders, EMR integration, programmatic leadership, and community linkage.



EVIDENCE-BASED MANAGEMENT STRATEGIES FOR TORCH INFECTIONS — APRN SYNTHESIS

TORCH infections can vary in severity but still pose serious risks to the foetus and the newborn. The treatment of such infections, however, must be comprehensive and thus involve three parallel tracks. Firstly, measures aimed at prevention of maternal infection should be taken. These include vaccination, counselling, hygiene, and public health initiatives. Secondly, both the diagnosis and staging of maternal and foetal infection should

be carried out promptly. For the diagnostic process, techniques such as serology, PCR, ultrasound, and amniocentesis can be used. Thirdly, if it is found that a fetal disease is present, then treatment or at least alleviation of the disease should be done by using the already established pharmacologic regimens, if the latter are effective, plus the necessary supportive and surveillance measures. The realisation of this requires screening during early pregnancy, specialist referral (MFM, ID, neonatology) on time, and clearly defined EMR workflows for ensuring timely intervention.

TOXOPLASMA GONDII (TOXOPLASMOSIS)

Clinical rationale & testing

If first-time maternal infection occurs while the woman is pregnant, a transplacental transfer of the parasite will lead to infection of the unborn child with potentially serious sequelae (intracranial calcifications, hydrocephalus, chorioretinitis, neurodevelopmental impairment). To estimate when the infection occurred, maternal IgM and IgG with avidity testing are helpful. In general, amniotic fluid PCR (usually ≥18–21 weeks of gestation) is a non-invasive test used for confirmation of fetal infection if there is a suspicion. To visualise the progression of fetal abnormality and decide the requirement of invasive testing as well as the involvement of a specialist, one has to do serial, targeted obstetric ultrasound (CDC).

Pharmacologic management

In case of maternal infection without confirmed fetal involvement (early gestation), spiramycin should be given immediately after maternal seroconversion to lower the chance of fetal transmission. Spiramycin is generally used just for blocking transmission while additional diagnostic evaluation is carried out.

If the infection in the fetus is confirmed or in the case of maternal infection in later gestation, Use a combination of drugs (pyrimethamine + sulfadiazine + folinic acid) to treat under the supervision of a specialist. This combination therapy is aimed at treating fetal infection and at reducing long-term sequelae; it is started after the first trimester with close hematologic monitoring due to bone-marrow suppression risks. The effectiveness of the treatment when it is initiated without delay and managed properly has been supported by recent systematic reviews (CDC).

Non-pharmacologic / preventive strategies

Prevention of the first infection is very effective. Educate patients (and partners) about the specific behaviours to be avoided: cook meat thoroughly, do not consume unpasteurized milk, wash your hands after you have handled raw meat or soil, wear gloves when you are gardening, and do not go near cat

litter. If it is possible, do preconception serologic screening that detects those who are not immune and therefore can be given the right advice to reduce the risk during pregnancy (Frontiers review).

Monitoring & follow-up

- Serial targeted obstetric ultrasound to assess for brain and growth abnormalities.
- When ultrasound or serology indicates possible fetal infection (based on gestational age), amniocentesis with PCR is used for fetal diagnosis.
- If maternal infection in pregnancy is documented or suspected, then newborn evaluation at birth; plan for long-term audiologic, ophthalmologic, and neurodevelopmental follow-up for infected infants (CDC).

APRN practical actions

Screening:

Conduct first-visit serology in patient/population scenarios where local prevalence or individual risk suggests testing. Document in the chart the counselling and risk-reduction instruction given.

Early action:

If maternal seroconversion is assumed, spiramycin should be given without delay while a confirmatory test, fetal evaluation, and MFM/Infectious Disease consultation are being organised.

Specialist coordination:

When fetal infection is confirmed, work together with MFM and ID to commence pyrimethamine-based therapy; make sure baseline and serial hematologic monitoring are in place, and there is documentation of it.

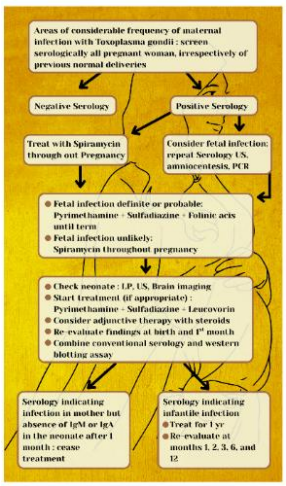
Perinatal planning:

The neonatal team should be informed about the maternal and fetal statuses before delivery so that the appropriate newborn testing and early intervention programs, if necessary, can be carried out.

Documentation & reporting:

Record the counselling, test dates/results, treatment start times, and referrals in the EMR. Add patient education materials and think about incorporating automated alerts/standing orders for decreasing the likelihood of missed windows (CDC).

Management of toxoplasmosis acquired during pregnancy



CYTOMEGALOVIRUS (CMV)

Clinical rationale & testing

A primary CMV infection in the mother during pregnancy is the most dangerous source of the symptomatic congenital infection and the development of secondary diseases, like hearing loss and neurodevelopmental impairment. Universal routine antenatal CMV screening is generally not recommended in many places due to an unclear benefit of interventions during pregnancy; however, targeted testing is required in cases of a compatible maternal illness, a known exposure (for example, a young child with confirmed CMV) or a suggestive fetal ultrasound finding (ventriculomegaly, intracranial calcifications, growth restriction). Usually, diagnostic work-up is made up of maternal CMV IgM and IgG together with IgG avidity to time infection, fetal confirmation by CMV PCR in the amniotic fluid (usually available after ~21 weeks of gestation) in a case of primary maternal infection suspicion. (See PMC reviews/guidance.)

Pharmacologic management

Antenatal:

At present, there is no FDA-approved and widely accepted antiviral agent with a clear routine effectiveness in preventing fetal CMV. The results of the clinical trials on CMV hyperimmune globulin (HIG) are conflicting; some hospitals and new studies report the limited application of high-dose valaciclovir in primary maternal CMV, but this route is still only at an experimental stage and not a part of standard care. Determination regarding the use of antiviral and immunoglobulin therapy before delivery has to be made alongside the support of Maternal-Fetal Medicine (MFM) and Infectious Disease experts by taking into consideration the current evidence, clinical trials, and institutional guidelines.

Neonatal:

In the case of symptomatic congenital CMV, a

long-term antiviral therapy with ganciclovir or valganciclovir (neonatal dosage and monitoring as per NICU/infectious-disease protocols) is effective in improving hearing and neurodevelopmental outcomes, and is a part of the established neonatal care when it is so indicated. APRNs who are in charge of the perinatal care must first ensure the prompt neonatal diagnosis and then the specialist referral if maternal infection is the cause or if it has been confirmed. (PMC/peer reviews)

Non-pharmacologic / preventive strategies

Primary prevention mainly relies on behaviour changes that should be adopted by seronegative pregnant persons: these include thoroughly washing hands after contact with young children, saliva or urine, not sharing utensils or food with young children, and avoiding getting in contact with bodily fluids in childcare settings. It is very important to counsel before pregnancy childcare workers and parents of young children as this is the main way to reduce the acquisition risk during pregnancy. These low-cost measures have a significant impact on maternal seroconversion risk.

Monitoring & fetal assessment

- Perform a targeted serial obstetric ultrasound to assess fetal development as well as to identify any intracranial abnormalities (ventriculomegaly, calcifications), hepatosplenomegaly, or signs of hydrops.
- If the timing indicates possible fetal infection and ultrasound findings or maternal serology suggest risk, allow for amniocentesis for CMV PCR after the gestational age threshold (commonly ≥21 weeks).
- Set up neonatal CMV PCR (saliva/urine) at birth, baseline audiologic assessment, and early developmental surveillance for infants born to mothers with confirmed or suspected maternal CMV infection. Early diagnosis allows for the timely start of antiviral therapy for symptomatic neonates. (PMC)

APRN practical actions

Counselling & prevention:

Add the CMV prevention standard counselling as a part of the first-visit education for the seronegative pregnant patients or those with young children; record the counselling in the chart.

Targeted testing:

Request for maternal CMV IgM/IgG with avidity when exposure, clinical history, or ultrasound findings are worrying; do not allow free universal screening without consideration of institutional policy.

Specialist linkage:

In case of primary maternal infection or

maternal positive testing, get MFM and Infectious Disease consultation to look over the diagnostic possibilities (IgG avidity, timing), talk about amniocentesis, and, if applicable, consider the investigational antenatal therapies.

Perinatal planning:

Just before delivery, inform the neonatology team if maternal CMV is suspected/confirmed so that neonatal PCR and audiology can be done without delay; be sure that hearing and developmental surveillance follow-up pathways are arranged.

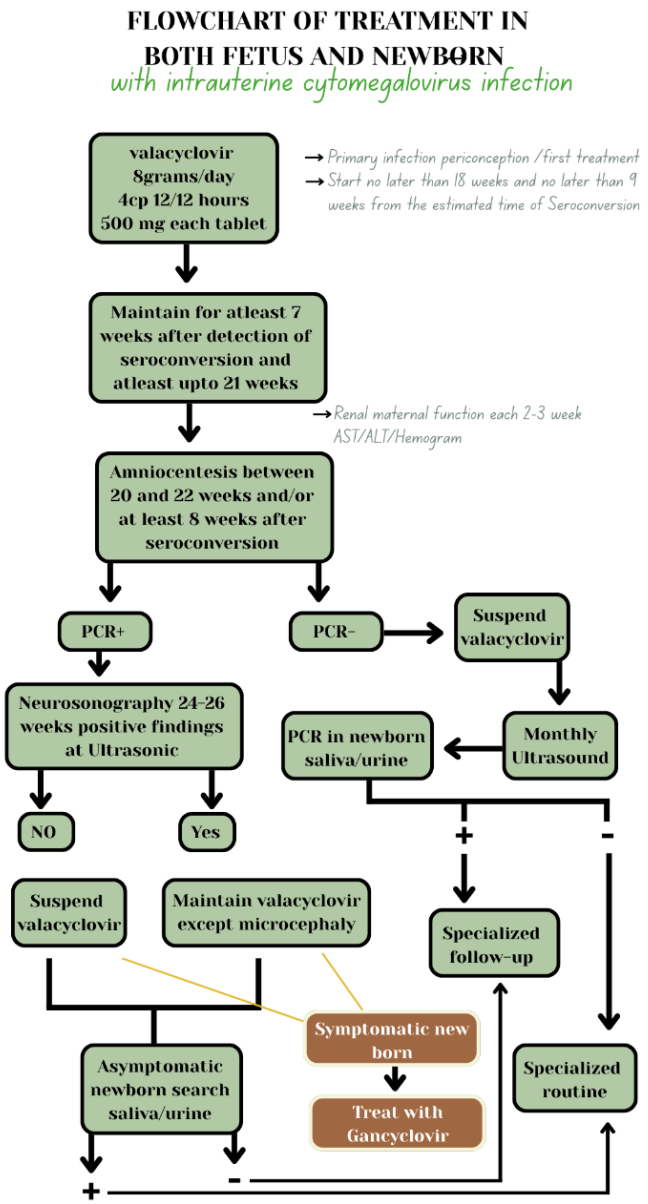
Informed discussions:

When antenatal interventions (e.g., valaciclovir or HIG) are being talked over, do it in such a way that the main thing comes out; that is, the uncertainty of the evidence is there and the option of attending clinical trials or getting a specialist centre referral if it is the case.

Documentation & EMR:

Develop EMR templates/smart-phrases for CMV counselling, orders (IgM/IgG/avidity), indication-based amniocentesis prompts, and neonatal follow-up checklists so that there is a minimal number of missed actions.

Flowchart of treatment in both fetus and newborn with intrauterine cytomegalovirus infection



RUBELLA (GERMAN MEASLES)

Clinical rationale & testing

First, rubella infection in a pregnant mother, especially in the early stages of pregnancy, leads to a great chance of congenital rubella syndrome (CRS), where the unique fetal subsequent injuries encompass cardiac defects, cataracts, microcephaly, and sensorineural hearing loss. At present, universal antenatal rubella IgG screening at the first prenatal visit is the standard of care to detect nonimmune women. A suspected case of acute maternal rubella infection must be referred without delay to Maternal-Fetal Medicine (MFM) and report the case to public authorities for further management and contact tracing (ACOG).

Pharmacologic management

Currently, there is no antiviral treatment that can avert fetal sequelae from a primary maternal rubella infection. Thus, the mode of management is supportive, and counselling takes the lead. For early first-trimester primary infection, counselling has to talk about the prognosis and options, which also being inclusive of the debate about the continuation of pregnancy or termination according to the local law and patient values. The care that continues is more about the close fetal surveillance and the planning of the multidisciplinary team (ACOG).

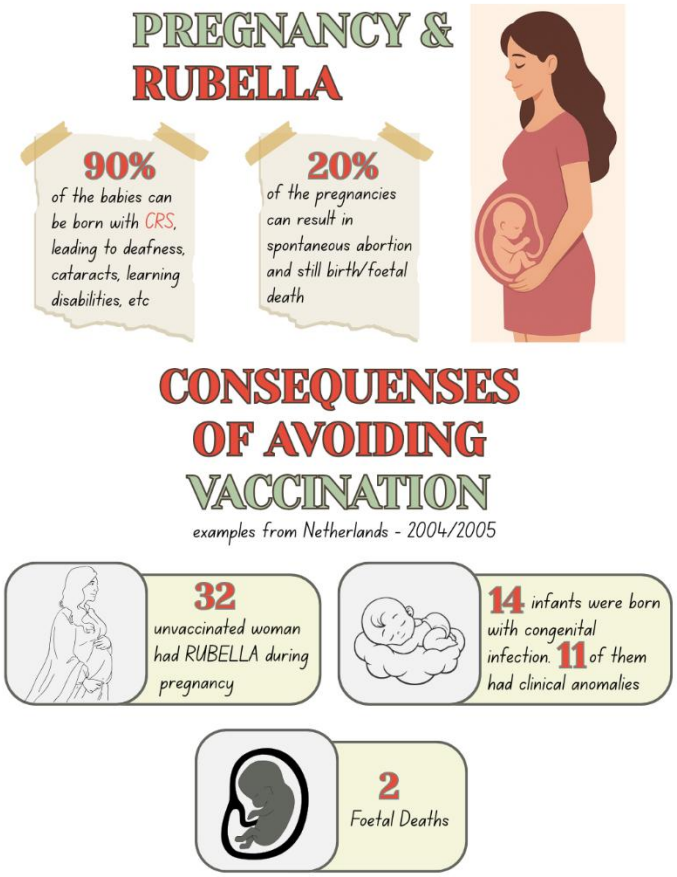
Non-pharmacologic / preventive strategies

Certainly, prevention is the basis of the CRS prevention. MMR vaccination before conception for vulnerable individuals is the major preventive method. Since the MMR vaccine is contraindicated during pregnancy; thus, any woman who is not immune and is found during pregnant should be advised to have the MMR vaccine after delivery. Public-health immunisation initiatives, preconception screening, and catch-up vaccination in women of childbearing age are pivotal population-level steps towards the eradication of CRS (ACOG).

Monitoring & fetal assessment

In case of suspicion or confirmation of maternal rubella infection:

- Commence serial targeted fetal ultrasound to screen for cardiac anomalies, intrauterine growth restriction, ocular abnormalities, and CNS findings.
- Recruit the expertise of different branches (MFM, paediatric cardiology, neonatology, genetics, and public health) early to organise the surveillance, delivery, and neonatal care.
- Based on MFM advice, perform the diagnostic testing (maternal serology trends, PCR where available) and confirm the counselling and decision points in the healthcare paper (ACOG).



APRN practical actions

Screening:

At the first prenatal visit, rubella IgG status should be ascertained, and the documentation of immunity should occur in the chart.

Preconception/postpartum vaccination:

If a patient is nonimmune, we recommend that she have a postpartum MMR vaccination, and safe contraception be used until the vaccine is given (following local timing guidance).

Acute infection response:

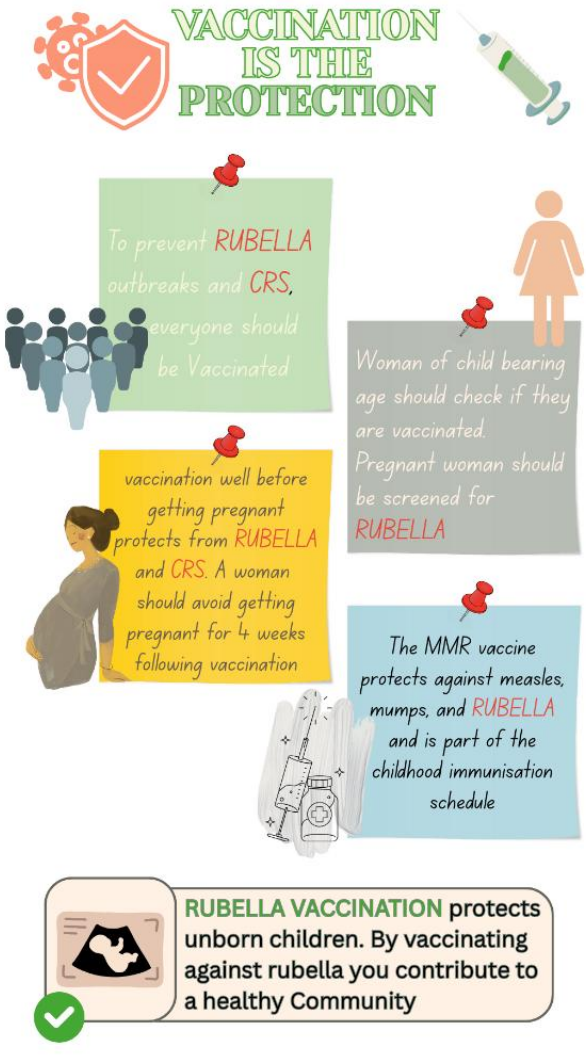
If maternal rubella is suspected/confirmed, then the MFM and public health must be informed immediately. Empathetic counselling concerning fetal risks and potential options should be given, and enhanced fetal surveillance begun.

Documentation & coordination:

Write down in the EMR the counselling, testing dates/ results, referrals, and public-health notifications; convey maternal status to the delivery and neonatal teams so that appropriate newborn evaluation can be carried out.

Programmatic action:

Encourage preconception rubella immunity checks in primary care and family-planning settings and assist catch-up immunisation programs for women of reproductive age (ACOG).



HERPES SIMPLEX VIRUS (HSV)

Clinical rationale & testing

Neonatal herpes simplex virus (HSV) infection results in severe complications and death. The most significant transmission risk is with primary maternal genital HSV infection acquired near term. However, recurrent maternal infection reduces the risk of neonatal disease considerably, although active management is still necessary if lesions or prodromes are present at delivery. Routine antenatal screening by type-specific HSV serology is not recommended, while diagnostic evaluation depends on lesion PCR or culture in patients with lesions and on clinical history for management guidance (ACOG).

Pharmacologic management

Suppressive therapy:

The patient with recurrent genital HSV of pregnancy should be given suppressive antiviral prophylaxis (acyclovir 400 mg PO TID or valacyclovir 500 mg PO BID—per local formulary) therapy initiated at ~36 weeks' gestation to lessen the frequency of lesions at birth and the potential for cesarean due to active lesions.

Acute/severe disease:

If genital primary herpes develops near delivery or if maternal HSV is disseminated/severe, systemic antiviral therapy (intravenous acyclovir) should be started immediately, together with obstetric planning; delivery timing should be based on maternal disease conditions and neonatal risk.

Neonatal management:

Neonates with signs of infection or those suspected of exposure should be given the empiric acyclovir immediately following the protocols of neonatal infectious disease while waiting for the diagnostic workup (ACOG).

Non-pharmacologic / preventive strategies

Mode of delivery:

The cesarean section should be performed on women with active genital lesions or prodromal symptoms at the time of labour so that the neonate is not exposed to the virus.

Behavioural counselling:

Pregnant women, along with their partners, should abstain from sexual contact with partners who have lesions at the end of pregnancy; healthcare providers should also include prodromal symptom recognition and immediate reporting to the birthing team, among the topics discussed (ACOG).

Monitoring & peripartum actions

Triage/labour:

At the time of incision and on admission for labour, look for genital lesions; ensure very good documentation of results in the form of the chart. Besides lesions and prodromes being present, the plan of action, therefore, should be

cesarean delivery as long as no other obstetric conditions interfere with it.

Neonatal follow-up:

The provision of neonatal assessment and initiation of therapy should be made in the case of primary maternal infection near delivery or in situations with a high risk of exposure; thus, the maternal condition should be clearly communicated to the neonatal team before delivery takes place.

Documentation:

Suppressive therapy initiation date, lesion examinations, counselling, and delivery planning should be documented in the EMR (ACOG).

APRN practical actions

Case discussion:

When a patient's history of recurrent genital herpes indicates, commencement of suppressive acyclovir/valacyclovir therapy at 36 weeks should be suggested and documented.

- Triage and labour admission genital inspection and documentation of the exam should be done; presence of lesions or prodrome, caesarean planning implementation and informing of the staff, i.e., anesthesiology and neonatology, are conducted.
- Maternal antiviral therapy should be initiated or increased without any delay in the case of a primary infection or severe HSV, and inpatient management should be coordinated.
- Neonates who are at risk should first be given empiric acyclovir, followed by the making of sure that the neonatal staff are prepared for the evaluation and testing (surface swabs, CSF PCR as indicated).
- To minimise missed actions of documentation of lesion examination, ordering of suppressive therapy, counselling language and notification of the neonatal workflow, install EMR smart-phrases/templates.

Genital Herpes	Acyclovir	Valacyclovir	Famciclovir
First clinical episode	400mg 3 times daily for 7-10 days	1g twice daily for 7-10 days	250mg 3 times daily for 7-10 days
	200mg 5 times daily for 7-10 days		
Recurrent infection	400mg 3 times daily for 5 days	500mg twice daily for 2 days	125mg twice daily for 5 days
	800mg twice daily for 5 days	1g once daily for 5 days	1g twice daily for 1 day
	800mg 3 times daily for 2 days		500mg once followed by, 250mg twice daily for 2days
Suppressive Therapy	400mg twice daily	500mg - 1g once daily	250mg twice daily

SYPHILIS (TORCH "OTHER")

Clinical rationale & testing

Infection by Treponema pallidum during pregnancy can lead to transmission through the placenta at any phase and is the main source of

stillbirth, neonatal death, and infant long-term morbidity, all of which are preventable. Universal routine syphilis serology at the first prenatal visit (treponemal + nontreponemal testing per local algorithm) is compulsory. Further assessment (RPR/VDRL titres, treponemal confirmatory testing) determines staging and urgency of treatment. A rapid point-of-care test can be utilised if a laboratory is not easily accessible or if follow-up is uncertain.

Pharmacologic management

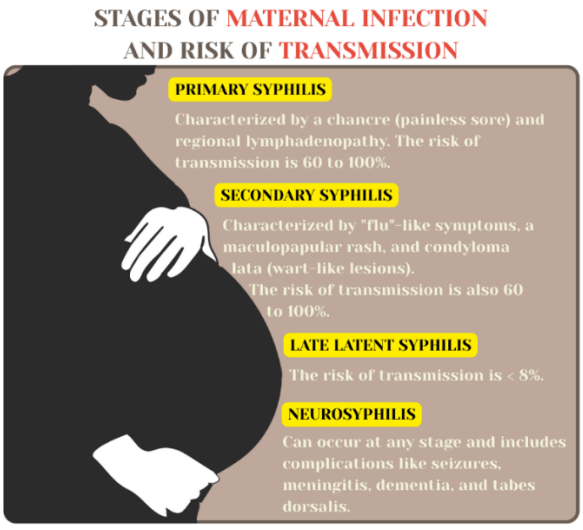
A single therapy using benzathine penicillin G has always been and still is the only treatment that can effectively prevent the transmission of congenital syphilis. The dose depends on the stage of the disease (2.4 MU IM ×1 early syphilis; 2.4 MU IM weekly ×3 for late latent/unknown duration, etc.). For the pregnant person who has been confirmed as being allergic to penicillin, the administered treatment of penicillin desensitisation, along with the correct benzathine penicillin therapy, is the suggested method. Thus, no alternative can provide the same level of safety for the fetus. (CDC)

Non-pharmacologic / preventive strategies

- Immediate detection and treatment of the infection in the mother.
- It is important to inform the partner and get him treated to prevent reinfection.
- Reporting to public health and contact tracing per local regulations.
- Point-of-care testing and same-visit treatment, when practicable, to prevent delay in treatment.

Monitoring & follow-up

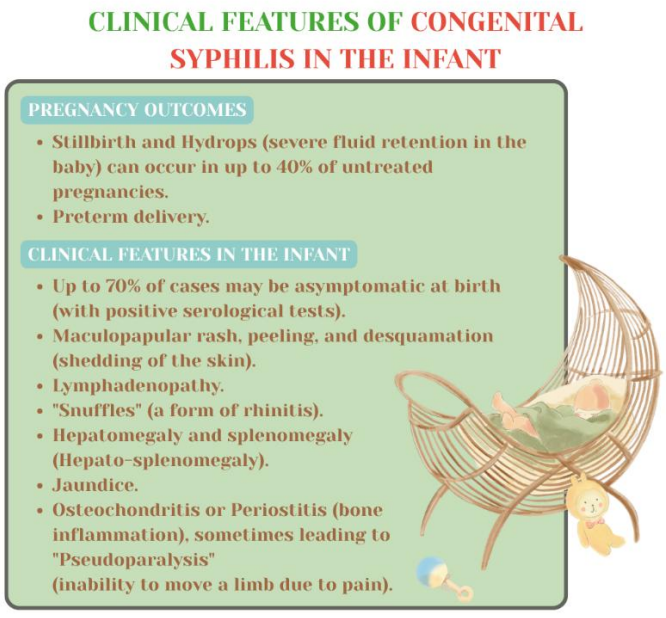
- Serial nontreponemal titres (e.g., 1, 3, 6, 12 months as clinically indicated) to document therapeutic response and to detect reinfection.
- In case of maternal treatment that is late/partial or staging that is uncertain, neonatal evaluation at birth (infectious disease/paediatrics), comprising newborn serology, CSF exam when indicated, and clinical observation, is planned.
- For medical-legal and public-health purposes, documenting lot numbers, treatment dates, and counselling in the maternal chart is essential.



APRN practical actions

- Universal syphilis screening at the first prenatal visit should be confirmed, and EMR standing orders for third-trimester/delivery retesting per institutional policy (ACOG universal vs CDC risk-based) should be configured.
- On reactive serology, treatment with benzathine penicillin per staging should be initiated immediately; in case of penicillin allergy, desensitisation consults rather than alternative regimens should be started.
- Immediately notify the public health, carry out partner management, and organise obstetric and neonatal planning without delay.
- If loss to follow-up is likely, POC testing and same-visit treatment protocols should be utilised.

Scenario (CDC) risk category AAP	Clinical history & examination	Evaluation	Treatment
Scenario 1, category: Confirmed proven or highly probable congenital syphilis	Abnormal physical exam OR RPR titer > 4-fold maternal titer	CSF analysis (cell count, protein, VDRL), CBC, long-bone radiographs Other*	Intravenous penicillin G x 10 days (regardless of evaluation results)
Scenario 2 category: Possible congenital syphilis	Normal physical exam AND RPR titer< 4-fold maternal tier AND maternal treatment none/unknown/in-adequate or initiated <30days before delivery	CSF analysis (cell count, protein, VDRL), CBC, long-bone radiographs	Penicillin G x 10 (if evaluation is abnormal, uninterpretable, incomplete or follow-up uncertain OR Intramuscular Benzathine) Penicillin x 1 (if evaluation and follow-up certain)
Scenario 3 category: Less likely congenital syphilis	Normal physical exam AND RPR titer< 4-fold maternal titer AND maternal treatment: adequate and initiated >30 days before delivery and no concern for reinfection	None	Intramuscular Benzathine Penicillin x 1 (if follow-up uncertain) OR No treatment with follow-up titers (follow-up certain)
Scenario 4 category: Unlikely congenital syphilis	Normal physical exam AND RPR titer< 4-fold maternal titer AND maternal treatment adequate before pregnancy	None	No treatment with follow-up RPR titers (If infant RPR positive) Or Intramuscular Benzathine pencillin x 1 (if follow-up uncertain)



PARVOVIRUS B19

Clinical rationale & testing

Infection of the mother with parvovirus B19 may lead to fetal red-cell aplasia, severe fetal anaemia, hydrops fetalis, and, in rare cases, fetal loss, particularly when maternal primary infection occurs in the first half of pregnancy. Diagnosis is based on maternal serology (IgM/IgG), and when fetal distress is suspected, targeted fetal ultrasound (hydrops, ascites, cardiomegaly) and middle cerebral artery (MCA) Doppler assessment for fetal anaemia are done. PCR testing of amniotic fluid

may be a helpful diagnostic method in certain cases.

Management (clinical & interventional)

Surveillance:

The base for early recognition of fetal anaemia is cautious ultrasound monitoring with repeated MCA Doppler evaluation.

Anaemia to the point of intervention and fetal hydrops:

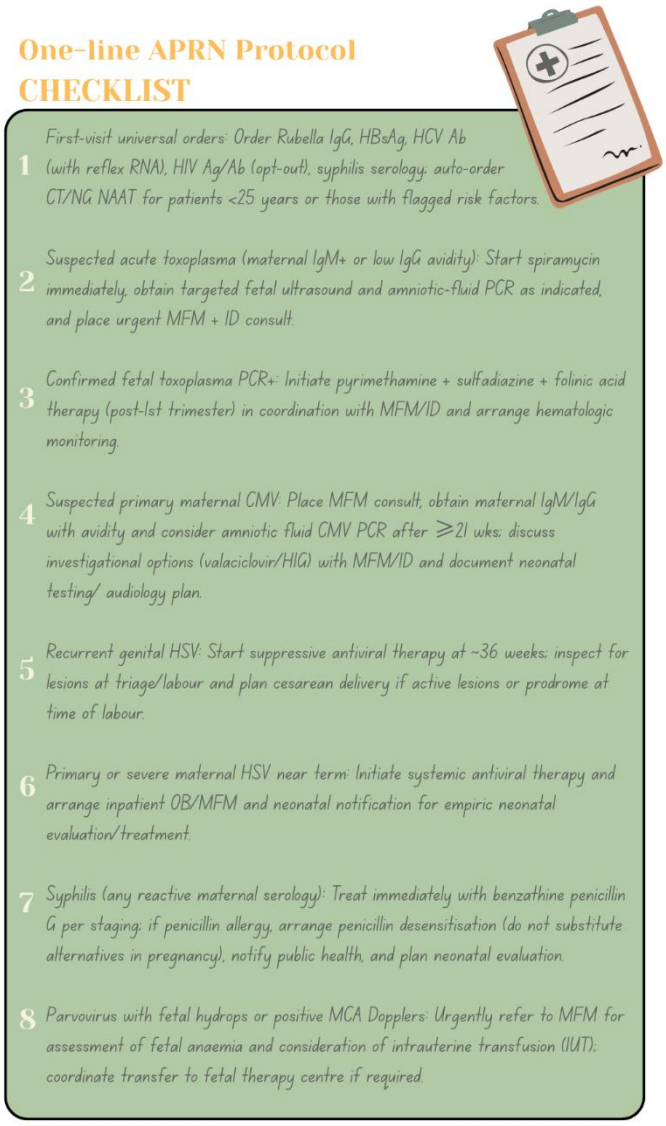
The performance of intrauterine transfusion (IUT) through cordocentesis is a procedure that saves the lives of severely anaemic fetuses with hydrops, and it should only be done at highly competent MFM centres. The results are good when referrals are made in time and skills are available.

Supportive care:

The management of the severely affected foetuses may be done by monitoring at intervals and serial checks, which might be sufficient; the plan is to be made in consultation with MFM.

Non-pharmacologic / preventive strategies

- Seronegative pregnant women who work with young children (daycare, schools) should be occupationally counselled: hand washing should be stressed and exposure during outbreaks avoided if at all possible.
- After a known exposure, a rapid serologic test should be carried out to establish immune status and whether intensified fetal monitoring is necessary.



APRN practical actions

- If maternal illness is compatible with the report of exposure, maternal parvovirus IgM/IgG should be ordered, and a targeted obstetric ultrasound (including MCA Doppler) arranged immediately.
- If fetal anaemia/hydrops is suspected, the MFM should be referred for cordocentesis and IUT consideration without delay; if necessary, coordinate transfer to a fetal therapy centre for the performance of the

procedure.

- Provide risk mitigation counselling concerning the occupational hazard to the patients and keep a record of the exposure counselling and follow-up plans in the chart.
- If maternal IgM is positive or ultrasound abnormalities are detected, EMR-facilitated follow-up ultrasound intervals and specialist referral can be implemented.

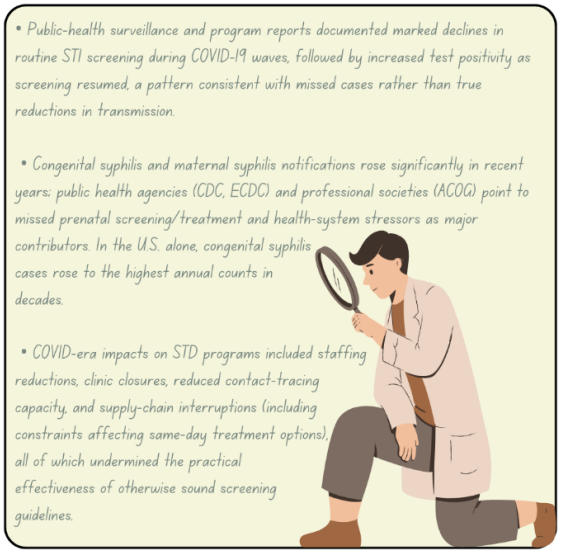
APPRAISAL COVID-19 IMPACT ON PRENATAL INFECTIOUS-DISEASE SCREENING

The pandemic of COVID-19 resulted in significant disruptions that could be quantified in the areas of sexual and antenatal health services (a decrease in screening volumes, the diversion of staff in STI programs, and delayed diagnosis/treatment). The shutdowns of these services have led to under-ascertainment of infections during crucial prenatal periods and are, therefore, co-actors in the recent upsurge of congenital infections such as congenital syphilis. To regain the public health benefits achieved before the pandemic, a system redesign is necessary to ensure the resilience of the screening against future service interruptions.

COVID-19 Impact on Prenatal Infectious-Disease Screening

The outbreak of coronavirus led to widespread disruptions across the sexual and reproductive health services, which in turn significantly affected routine screening, the staff of STI programs had to be redeployed, diagnosis and treatment were delayed, etc. These failures of the system resulted in under-ascertainment of infections in the most critical prenatal windows and, therefore, have been an essential factor in the increase of congenital infections like congenital syphilis. The restoration and even improvement of public health achievements made before the pandemic require a purposeful redesign of the system that will ensure that screening circuits are recession-proof: automated standing orders, point-of-care diagnostics, telehealth-enabled specimen workflows, medication access that is prioritised, and outreach that is targeted for high-risk populations.

EVIDENCE & KEY DATA



MECHANISMS EXPLAINING THE CARE GAPS

1. **Reduced access / delayed care:** fewer in-person prenatal visits and lower uptake of routine screening.
2. **Workforce & public-health diversion:** STD program staff and disease-investigation resources were redeployed to the COVID response, reducing partner services and follow-up capacity.
3. **Supply & logistics problems:** constrained lab capacity, longer turnaround times, and in some regions, limited access to benzathine penicillin or POC test kits.
4. **Equity amplification:** populations already at higher risk (adolescents, uninsured, unstable housing, marginalised racial/ethnic groups) experienced disproportionate service disruption.

APRN STRATEGIES TO LESSEN CARE GAPS

Here are theme-based, high-impact, and easily implementable strategies.

A. Make screening resilient: standing orders + EMR automation

Universal standing orders at intake: By default, auto-order HIV (opt-out), syphilis serology, HBsAg, HCV Ab (reflex RNA), rubella IgG, and CT/NG NAAT by age/risk on any prenatal intake (in-clinic, telehealth triage, or ED).

Reasoning: Reduce missed windows and cut down heavily on clinician memory reliance.

Synthetic late-pregnancy syphilis logic: Turn one policy (ACOG universal third-trimester + at-birth rescreening or CDC risk-based rescreening) into an EMR default/order set for assured compliance. By doing so, the practice variability that led to missed rescreens is eliminated.

B. Use rapid diagnostics and point-of-care access

Bring in POC dual HIV/syphilis testing at triage labs, community clinics, same-visit diagnosis is followed by immediate treatment, thus, loss to follow-up is minimised (WHO & program guidance). Advise POC usage in high-turnover clinics (ED, triage) and community outreach sites first.

Develop a 'rapid-test → immediate-treat' protocol: In case of POC syphilis positive, make sure benzathine penicillin is given before discharge if pregnancy status/gestation requires, document consent and public health is informed as per local rules. (In the event of a penicillin shortage, please raise the issue with leadership and public health.)

C. Expand access pathways (telehealth + home/community testing)

Telehealth + home specimen flows: Allow tele-visit counselling with direct ship-out NAAT kits or coordinate community-lab appointments; have EMR flows for triggering courier pickup or local lab referral. This saves screening when in-person visits are restricted.

Normalise maternal screening, facilitate easy booking, provide assistance for remote appointments: Combine the access points of maternal care and screening; utilising WIC visits, family planning clinics, school-based clinics, and mobile maternal health units to get to the women most vulnerable - those who do not book their prenatal appointments traditionally. (Programmatic mitigation that was successfully utilised during pandemic surges.)

D. Prioritise high-risk populations with proactive outreach

Registry & recall for at-risk patients: Develop a simple EMR registry targeted at late presenters, the uninsured, adolescents, and patients with a prior STI history; automate reminders (phone/text) and send community health workers for targeted outreach. Research shows that the targeted outreach helps in cutting down missed windows as well as reinfection.

Mobile clinics & drop-in POC sessions: Arrange POC clinic hours during the evenings/weekends and mobile testing vans for the neighbourhoods with limited access. Deploy data (zip code, missed-visit rates) to choose the locations of services.

E. Ensure treatment readiness & public-health linkage

Secure benzathine penicillin for pregnant patients: Make it a rule in the clinic that reactive syphilis in pregnant patients will be the recipient of the priority doses; develop desensitization workflows for allergic patients. Stock and escalation steps are recorded in the EMR.

Public-health reporting & partner services automation: Create a logic for order sets that automatically produce reportable disease notifications and prompts EPT or partner referral counselling. Linkage to DIS (disease-investigation specialists) is made faster as far as it is possible.

F. Quality metrics, monitoring & continuous improvement

Track 3 KPIs in real time:

(a) % of new prenatal patients who have been universally screened and the procedure has been completed within 7 days;

(b) % of 3rd-trimester syphilis rescreen done as per policy;

(c) median time from positive result to treat - ment initiation. Publish monthly dashboards and act on trends.

Rapid cycle QI sprints: If a KPI falls (e.g.,

screening <90%), initiate a 2-week rapid review procedure: re-check standing orders, lab turnaround, outreach logs, and POC availability, implement fixes and measure again.

G. Communication & patient-centred counselling

Normalise screening in every contact: Employ standardised scripting (smart-phrase) for telehealth and triage: "We test all pregnant patients for infections that can affect your baby; these are quick tests and we can treat safely in pregnancy." Reassurance lessens refusal and stigma.

Address social determinants: Link screening with actual supports, transport vouchers, same-day pharmacy pickup, housing or substance-use services, because these upstream barriers are the roots of missed follow-up.

During the COVID-19 pandemic, a hidden weakness in prenatal screening infrastructures was brought to light: although there was solid clinical evidence for the prevention of vertical transmission, taking this evidence all the way to population health gains depends on the resilience of the program. Systems-level interventions, standardised standing orders, rapid point-of-care diagnostics (including dual HIV/syphilis tests), telehealth-enabled specimen pathways and home testing, prioritised access to essential medications (e.g., benzathine penicillin for syphilis), and focused outreach to high-risk groups are the means by which guideline efficacy is translated into continuous, measurable outcomes. APRNs have the special role of being able to take up the challenge of clinic and system operational transformation as their own, thus being the ones who accomplish EMR integration, quality metrics, and community linkages to create a safe environment for patients who are pregnant amidst the stress of the health system (CDC; ACOG).

ADVANCED PRACTICE NURSING PLAN — INTEGRATING STI / TORCH SCREENING, CULTURALLY SENSITIVE COUNSELLING, AND INTERPROFESSIONAL COLLABORATION

PURPOSE:

Provide an APRN-led, operational plan that integrates evidence-based screening for STIs and TORCH agents into routine prenatal care, embeds culturally sensitive patient counselling, and formalises interprofessional workflows to optimise maternal–fetal outcomes. This plan is written for APRNs to implement directly.

Goals

- Ensure timely, universal screening for high-impact prenatal infections.

- Reduce preventable vertical transmission through same-visit diagnosis and treatment.
- Deliver culturally safe counselling that increases acceptance and adherence.
- Create durable, interprofessional pathways for complex cases (MFM, ID, neonatology, public health).
- Measure and continuously improve performance using specific KPIs.

Guiding principles

- **Evidence → Action:**
  Translate guideline recommendations into standing orders and EMR automation.
- **Equity by design:**
  Proactively identify and support high-risk and marginalised patients.
- **Team leadership:**
  APRNs coordinate diagnostics, treatment, referrals, and documentation.
- **Resilience:**
  Build redundant access (POC testing, telehealth/home collection, mobile clinics) so screening survives system stress.
- **Measurement:**
  Tie every workflow to one or more KPI for accountability.

Core components

A. Standardised screening bundle (standing orders — first visit)

Auto-order at first prenatal contact (in-clinic, telehealth triage, ED):

- HIV Ag/Ab (opt-out)
- Syphilis serology (treponemal + nontrepo nemal reflex)
- HBsAg (HBV)
- HCV Ab (reflex to RNA)
- Rubella IgG (immunity)
- CT/NG NAAT auto-triggered for age <25 or flagged risk factors

Embed standing orders into EMR order-set named: **"Prenatal STI & TORCH — APRN Standing Orders (First Visit)."**

B. Risk-based and late-pregnancy logic

- Codify one institutional late-pregnancy syphilis policy (ACOG universal rescreen at ~28 wks & birth **or** CDC risk-based rescreening); implement as EMR default.
- Auto-trigger CT/NG retest in the third trimester if ongoing risk or earlier treatment.

C. Rapid diagnostics & point-of-care

- POC dual HIV/syphilis in triage, labour, and community clinics.
- Protocol: **POC positive → same-visit treatment/order med template → public-health report**.

D. TORCH testing algorithm (targeted)

- Order maternal IgM/IgG ± avidity and fetal PCR (amniotic fluid when indicated)

for Toxoplasma, CMV, parvovirus, and HSV per exposure/ultrasound triggers.

- Build MFM/ID consult trigger rules for any confirmed or probable fetal infection.

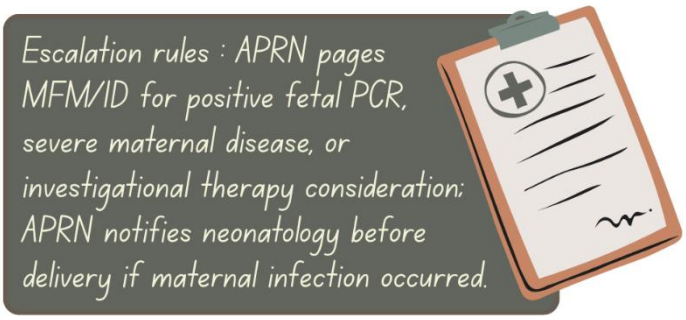
Culturally sensitive counselling

Counseling principles

- Use opt-out framing to normalise testing.
- Use plain language, interpreter services, and translated materials.
- Screen for SDoH (transport, childcare, work) and offer supports.
- Avoid blame; acknowledge stigma and confidentiality concerns.
- Include partner/household counselling options where appropriate.

Interprofessional roles & workflows

Team	APRN responsibilities
APRN (lead)	Activate standing orders, deliver counselling, initiate treatment, coordinate referrals, document, and track KPIs.
MFM	Fetal diagnostic plan, invasive testing, and antenatal therapies for fetal infection.
Infectious Disease	Complex maternal treatment regimens, antimicrobial stewardship.
Neonatology	Newborn evaluation, neonatal therapy planning, and early audiology/ophthalmology referral.
Pharmacy	Ensure medication availability (benzathine penicillin prioritisation), dosing templates, and desensitisation workflows.
Lab	Priority processing, reflex algorithms, and PCR capacity.
Public Health / DIS	Case reporting, partner services, and community control.
Social Work / CHW	Address SDoH, navigation, and outreach to high-risk patients.
IT/EMR	Build order-sets, BPAs, registries, and dashboards.



Treatment & referral trigger matrix

- **Syphilis reactive:**
  Benzathine penicillin NOW; desensitise if allergic; report to public health.
- **HIV reactive:**
  Notify APRN/ID; order viral load STAT; initiate perinatal ART pathway.
- **CT/NG positive:**
  Start pregnancy-safe regimen; schedule test-of-cure (~4 weeks) and 3-month retest.
- **Toxoplasma IgM+/low avidity:**
  Start spiramycin pending fetal PCR/ultrasound; urgent MFM/ID consult.
- **Fetal toxoplasma PCR+:**
  Pyrimethamine + sulfadiazine + folinic acid (post-1st trimester) with hematologic monitoring.
- **CMV primary suspected:**
  MFM consult; consider amniotic fluid PCR after ≥21 wks; neonatal PCR at birth and audiology follow-up.
- **HSV recurrent:**
  Suppressive antivirals from 36 wks; cesarean for active lesions at labor.

- **Parvovirus with hydrops / abnormal MCA Doppler:**

  Urgent MFM referral for possible IUT.

The role of an Advanced Practice Registered Nurse (APRN) is crucial in the area of women, healthcare, especially in the prenatal field. This plan serves as an outline for an APRN to utilise a thorough, scientifically researched measure to implement STI and TORCH (Toxoplasmosis, Other [syphilis, hepatitis B, parvovirus, varicella, HIV], Rubella, Cytomegalovirus, and Herpes Simplex Virus) infection screening as part of routine prenatal care. The idea is led by three core components: sturdy screening procedures, culturally appropriate counselling, and well-planned networking with other professionals. The model is designed to maximise maternal and neonatal outcomes by dealing with health inequalities, empowering patient involvement, and guaranteeing a comprehensive, patient-centred approach.

CULTURALLY SENSITIVE COUNSELLING

- **Establish a Foundation of Trust:**

  Through a build-up of rapport and trust, every conversation with a patient should commence. In order to know the patient, cultural beliefs, values, and health literacy, use open-ended questions and active listening.

  Respect and acknowledge that there may be cultural differences, especially with sensitive topics such as sexual health, pregnancy, and healthcare decision-making. Do not use assumptions and words that may come across as judgmental.

- **Patient-Centred Communication:**

  Talk about the health of the patient and the baby. You should always screen by "why" explaining the only way, which is early detection and treatment, that is the basis for the prevention of health complications in both mother and fetus.

  Medical terminology should be simplified, and visual aids should be used to facilitate the understanding of medical concepts. For instance, to show the transmission of infection to the fetus, you can use a diagram.

- **Address Stigma and Bias:**

  Staff and colleagues should be trained on how they can help in the process of destigmatising conversations about STIs. Producing the idea of a safe and non-judgmental environment will enable patients to reveal their secrets without any fear.

  It is necessary to point out that the feeling of fear and shame may be experienced by patients discovering themselves positive through a test. Get ready to provide immediate psychological support and a clear, gentle schedule for follow-up and treatment.

- **Incorporate Patient Support Systems:** You can figure out the patient, support system, such as a partner, family member, or friend and then get them involved. With the patient, permission, these people can be the main supporters in care and follow the treatment plan.

EVALUATION AND QUALITY IMPROVEMENT

- **Quantitative Metrics:** Collect important data points to monitor, for example, the percentages of patients who were screened for all recommended STIs and TORCH infections, the screening timeliness, and the rate of positive results, followed by appropriate treatment.
- **Qualitative Feedback:** Make use of patient surveys and focus groups to collect information on patient experiences with counselling and care. This will facilitate the assessment of culturally sensitive communication and trust-building efforts.
- **Regular Audits:** Carry out periodic chart audits to ensure that the staff is following the protocols set and also to uncover areas for improvement.
- **Team Debriefing:** After a difficult case, hold a debriefing session with the interprofessional team to pinpoint the things that were done well, the things that could have been better and also to adjust protocols accordingly.

Through the use of these methods, the APRN can not only enhance the maternal and fetal clinical outcomes but also be a leader in the implementation of a comprehensive, caring, and just healthcare model that is adaptable to the distinct needs of every patient.

BALANCING PATIENT AUTONOMY AND MANDATORY PRENATAL INFECTIOUS-DISEASE SCREENING: AN APRN CRITIQUE

Prenatal infectious-disease screening (HIV, syphilis, HBV, HCV, etc.) advances clear public-health and individual benefits: early detection, effective treatment, and prevention of vertical transmission. However, mandating or compelling screening raises ethical tensions with patient autonomy, informed consent, confidentiality, and justice. APRNs must navigate these tensions carefully, promoting prevention while respecting rights, by using transparent consent processes, culturally sensitive counselling, predictable policies, and legally informed reporting workflows that minimise coercion and stigma.

1. Ethical foundations — competing

principles

- **Beneficence & nonmaleficence:**
  Screening and timely treatment reduce harm to fetus and mother (benefit), and prevent avoidable neonatal morbidity (nonmaleficence).
- **Autonomy:**
  Respecting a pregnant person's right to make informed decisions about testing and treatment (including refusal) is ethically central.
- **Justice:**
  Screening policies must be equitable, avoiding disproportionate coercion of marginalised groups and addressing social determinants that impede access to care.
- **Public-health stewardship (communitarian ethics):**
  The state has an interest in preventing communicable disease spread and protecting vulnerable populations (newborns). This can justify certain mandatory reporting or, in rare cases, mandatory testing policies when the public health benefit is compelling and proportionate.

Tension arises because beneficence and public-health stewardship can appear to conflict with autonomy and justice when institutions adopt mandatory testing or use coercive enforcement.

2. Legal & regulatory context

- **Reporting vs mandatory testing:**
  Mostjurisdictions require *reporting* certain infectious diseases to public health (e.g., syphilis, HIV in some areas). Reporting obligations generally do **not** eliminate the need for informed consent, but they do create limits on confidentiality and on the clinician's discretion to keep results private.
- **Mandatory screening laws vary:**
  A few jurisdictions have policies that require prenatal testing for selected infections (or require that testing be offered with opt-out default). Other jurisdictions emphasise opt-out screening but stop short of compulsory testing.
- **Minors & capacity:**
  Legal rules about minors' ability to consent to STI testing/treatment differ by jurisdiction and may permit adolescents to be tested/treated confidentially.
- **Public-health orders/emergency powers:**
  In declared public-health emergencies, authorities may have expanded powers; APRNs should be aware of state statutes that could alter obligations temporarily.
- **Practical caveat:**
  Always consult local public-health statutes, institutional policy, and legal counsel for precise obligations and permissible actions in your jurisdiction.

3. Ethics critique — common arguments and counterarguments

A. "Mandatory testing protects newborns and the public."

- **Pro:**
  Early treatment (e.g., benzathine penicillin for syphilis; ART for HIV) prevents morbidity and mortality; public-health reporting enables partner treatment and outbreak control.
- **Con:**
  Mandatory testing can undermine trust, deter prenatal care seeking among vulnerable groups (immigrants, marginalised communities), and may be perceived as coercive or punitive, paradoxically reducing overall public-health benefit.

B. "Opt-out testing is a pragmatic compromise."

- **Pro:**
  Opt-out (routine offer unless declined) retains autonomy while normalising testing and improving uptake; many programs have increased screening rates with opt-out models.
- **Con:**
  If poorly implemented, opt-out may become de facto coercion; patients who decline may not feel able to do so. Robust consent dialogue is still essential.

C. "Confidentiality must be absolute."

- **Pro:**
  Strong confidentiality protects patients from stigma, discrimination, and unintended harms (e.g., intimate partner violence).
- **Con:**
  For notifiable diseases, public-health reporting is legally required; clinicians must disclose limited data to public-health authorities. APRNs should explain these limits to confidentiality during counselling.

D. "Mandatory partner notification and EPT protect public health."

- **Pro:**
  Partner treatment reduces reinfection and onward transmission.
- **Con:**
  Partner notification can endanger patients (domestic violence) or breach privacy; it must be offered with safety planning and alternatives (anonymous notification via public health).

4. Practical, ethically informed policy principles for APRN leadership

1. **Default to "offer + opt-out" with robust informed consent rather than coercion.**
   - Make testing routine, but ensure patients can decline without penalty. Use clear, respectful language when offering tests.

2. **Disclose limits of confidentiality up front.**
   - Inform patients which results are reportable and what data will be shared with public health (and why), and document that explanation.
3. **Minimise coercion; maximise support.**
   - If a patient declines testing, explore reasons nonjudgmentally (fear, access, partner violence) and offer alternatives (POC, deferred testing, counselling). Coercive tactics generally backfire.
4. **Equity and non-discrimination:**
   - Ensure policies do not disproportionately target or sanction marginalised groups. Use data to monitor for disparities in offer, uptake, and outcomes.
5. **Safety-first partner services:**
   - For partner notification, screen for intimate partner violence and offer anonymous/public-health-led notification when safety concerns exist.
6. **Create transparent institutional policy and pathways:**
   - Codify whether the institution follows opt-out or mandatory requirements and operationalise via order-sets, BPAs, and scripted counselling.
7. **Use the least restrictive, proportionate measures to achieve public-health goals.**
   - Restrict coercive measures to rare circumstances where demonstrable public-health threats exist and less intrusive measures have failed.

5. APRN practice recommendations — scripts, documentation, and workflows

A. Offer / consent script (opt-out model)

"Routine prenatal care includes a few blood and urine tests that help us protect your health and your baby's health, for example, tests for HIV, syphilis, hepatitis B, and some STIs. These are quick and safe. We will run these tests today unless you prefer not to. If a test is positive, we will explain the next steps and start treatment that is safe in pregnancy. Do you have any questions, or would you prefer not to have any of these tests?"

Key elements: **neutral phrasing, normalising language, offer to answer questions, clear statement that the patient may decline**.

B. If the patient declines, respectful documentation and next steps

- **Document**:
  "Patient declined [specific test] after counselling: purpose, benefits, risks, and reporting obligations."
- **Offer**:
  alternative timing, POC test, or referral to community lab; provide written

information.

- **Assess**:
  safety risks (partner violence), barriers (transportation, immigration concerns), and offer CHW/social-work support.

C. Disclosure re: reportable conditions

"Some infections are reportable to the public-health department by law (for example, syphilis). Reporting helps public health identify and treat contacts to prevent the spread. Only limited information is shared, and we will support you through that process."

THE APRN, UNIQUE ROLE IN NAVIGATING THE CONFLICT

With their in-depth training in ethics, patient-centric care, and interprofessional collaboration, APRNs know very well how to be on the other side of this ethical and legal maze. Patient Education as a Core Intervention: Patient education is the main instrument of the APRN. Patient empowerment, rather than just announcing a test as compulsory, could have been the approach the APRN took in the discussion. This includes:

1. **Shared Decision-Making:**
   The APRN, as a facilitator, helps the parent to ask more questions rather than just saying "yes or no". He/she introduces the issues such as a positive result, risks, the child, and parent, early treatment, possible benefits, and the support systems that are accessible.
2. **Addressing Concerns and Stigma:**
   It is the APRN who finds out that testing refusal could be caused by fear, stigma, or distrust towards the healthcare system. It is very important to hear the concerns in question in an open and non-judgmental way. The APRN can then become the source of help and support for that person by linking him/her to the social worker or peer counsellor to deal with the guideline issue.
3. **Clarifying "Mandatory" vs. "Routine":**
   The APRN is the one who can let the patient know about the difference between the provider being required by the state to offer a test and the patient being forced to take it. This honesty fosters trust and respects the patient, informed decision-making ability.
4. **Interprofessional Collaboration:**
   The APRN alone doesn't need to find a solution to the problem. Good teamwork with other healthcare professionals is vital.
5. **Infectious Disease Specialists:**
   The APRN, in case of doubts or complicated scenarios, can seek the help of infectious disease specialists. They can then explain in more detail the pros and cons of testing and treatment to the patient.
6. **Social Workers:**

Social workers play a vital role in identifying and addressing the social determinants of health that influence patient decisions. They may also provide support through linking patients to services such as housing, food, transportation, and legal aid, which in turn help to decrease the non-medical barriers to care.

7. **Legal Counsel and Ethics Committees:** When a serious ethical dilemma occurs, the APRN may ask for help from the hospital, legal counsel or members of the ethics committee. They will review the case and ensure that the patient, rights, along with the healthcare provider, legal obligations, are not being violated.
8. **Advocacy and Policy Reform:** APRNs are at the forefront both in the hospitals and the policy arena. They can use their knowledge to:
   - Promote Full Practice Authority: APRNs can increase access to quality maternity care in vulnerable areas by exercising their full scope. Thus, the prevalence of infectious diseases resulting in preventable maternal and infant deaths can be reduced in such areas.
   - Voice Support for Public Health Policies: Working closely with professional organisations and public health departments, APRNs can help create policies. These policies can promote the respect of individual liberties while also ensuring public health safety. This can range from funding for care models that are culturally competent and support services that make testing and treatment easier to overcome any barriers.

To sum it up, the balance between patient autonomy and mandatory prenatal infectious disease screening is a complex ethical challenge. APRNs are not expected to enforce their personal views; instead, they are posed as a guide and supporter, ensuring that the patient gets informed, has access to resources, and receives the necessary support to make a truly informed choice. By making patient education the priority, nurturing interprofessional teamwork, and participating in systems-level advocacy, the APRN can not only be the holder of ethical principles, respect for patient autonomy but also be the agent who achieves maximum public health outcomes for mothers and infants.

CONCLUSION

One of the most satisfying and highest impact goals of the prenatal care program is the prevention of maternal–fetal transmission of infectious diseases. Such a thing is proved in many clinical trials: the earliest stage of identification through the well-timed screening

and quick, correct treatment according to the guidelines (ART for HIV, benzathine penicillin for syphilis, NAAT-guided therapy for CT/NG, neonatal antivirals for symptomatic CMV, etc.) is the major cause of a substantial reduction in neonatal morbidity and mortality. The five classic TORCH infection agents continue to be a heavy reliance on cautious and specialised care, while all the routine and universal items (HIV, syphilis, HBsAg, HCV, rubella immunity) constitute the backbone of the prevention programs that are effective in the fight against infections.

The COVID-19 pandemic has revealed the weak points in screening systems that can be affected by service interruptions, supply chain limitations, and staff diversion, as these factors have not only resulted in many missed opportunities to detect and treat infections but have also contributed to the resurgence of infections that are congenital and easily preventable. To implement this practically with the population becoming the major beneficiaries of the clinical science, the population will require less of new recommendations and more of operational resilience such as standing orders and EMR automation, point-of-care and rapid diagnostics, telehealth and home-collection pathways, medication prioritization (notably penicillin for pregnant persons), targeted outreach to high-risk groups, and robust interprofessional workflows that include public-health integration.

APRNs certainly have the potential to accomplish this translation and become the front-runners in this matter. By transforming the evidence into operations through the use of standing orders and order-sets, delivering culturally sensitive counselling, orchestrating MFM/ID/neonatology and public-health linkages, and being the holders of the quality metrics, the APRNs can be the ones who will extend the implementation further into the community, which in turn will lead to an increase in the health outcomes mentioned. Ethical conduct requires that patient autonomy and confidentiality be safeguarded at all times, and along with this, reporting obligations and the use of the least-restrictive, safety-centred methods for partner notification and population health should be explained transparently.

Without continuous measurement and equity monitoring (intake completion, late-pregnancy rescreen rates, time-to-treatment, CT test-of-cure rates, and disparity reduction targets), the programs are unlikely to have lasting effects. To sum up: enough evidence has been put forward to support the implementation of vertical transmission prevention methods; the challenge that remains is turning these recommendations into resilient and equitable systems of care, an operational task that

APRNs uniquely can lead.

REFERENCES

- American College of Obstetricians and Gynecologists. (2024, April 4). *Practice advisory: Screening for syphilis in pregnancy*. ACOG. https://www.acog.org
- Centers for Disease Control and Prevention. (2024). *Sexually transmitted infections surveillance 2023*. U.S. Department of Health and Human Services. https://www.cdc.gov/std/statistics
- Centers for Disease Control and Prevention. (2021). *Sexually transmitted infections treatment guidelines: Congenital syphilis*. https://www.cdc.gov/std/treatment-guidelines/congenital-syphilis.htm
- Papp, J. R., et al. (2024). *CDC laboratory recommendations for syphilis testing in the United States, 2024* (MMWR Recommendations and Reports). Centers for Disease Control and Prevention. https://www.cdc.gov/mmwr
- World Health Organization. (2023). *Point-of-care diagnostics and antenatal testing recommendations for sexually transmitted infections*. WHO. https://www.who.int
- Pan American Health Organization / World Health Organization. (2024). *Technical note: Guidance for elimination of syphilis and congenital syphilis*. PAHO/WHO. https://iris.paho.org
- Kimberlin, D. W., et al. (2015). Valganciclovir for symptomatic congenital cytomegalovirus disease. *The New England Journal of Medicine, 372*(10), 933–943. https://doi.org/10.1056/NEJMoa1404599
- Paquet, C., & Yudin, M. (2013). Toxoplasmosis in pregnancy: Prevention, screening, and treatment. *Journal of Obstetrics and Gynaecology Canada, 35*(1), 78–79. https://doi.org/10.1016/S1701-2163(15)31053-7
- Tong, H., Heuer, A., & Walker, N. (2023). The impact of antibiotic treatment for syphilis, chlamydia, and gonorrhoea during pregnancy on birth outcomes: A systematic review and meta-analysis. *Journal of Global Health, 13*, Article 04058. https://doi.org/10.7189/JOGH.13.04058
- Kimberlin, D. W., & Whitley, R. J. (2015). Antiviral therapy for congenital CMV: Long-term outcomes and recommendations. *Clinical Infectious Diseases*, 60(Suppl 1), S170–S176. https://doi.org/10.1093/cid/civ015 (review of neonatal valganciclovir data)
- Centers for Disease Control and Prevention. (2023). *Recommendations for hepatitis C testing — including screening in*

pregnancy. MMWR. https://www.cdc.gov/hepatitis

- U.S. Preventive Services Task Force. (2020). *Screening for hepatitis C virus infection in adolescents and adults: Recommendation statement*. *JAMA*, 323(10), 970–975. https://www.uspreventiveservicestaskforce.org
- Centers for Disease Control and Prevention. (2024). *Prenatal syphilis screening laws & reporting* (web document). https://www.cdc.gov/syphilis
- Fang, J., et al. (2022). Congenital syphilis: Epidemiology, prevention, and clinical management. *Infectious Diseases Clinics of North America / PMC review*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9879571/
- Wright, S. S., Kreisel, K. M., Hitt, J., Pagaoa, M., Weinstock, H., & Thorpe, P. (2021). Impact of the COVID-19 pandemic on Centers for Disease Control-funded sexually transmitted disease programs. *Sexually Transmitted Diseases*. https://pubmed.ncbi.nlm.nih.gov/34654769/
- Zhang, Y., et al. (2022). Barriers and facilitators to HIV and syphilis rapid diagnostic testing at antenatal clinics in low- and middle-income countries: A systematic review. *BMJ Global Health, 7*, e009408. https://gh.bmj.com
- Vallely, L. M., et al. (2021). Adverse pregnancy and neonatal outcomes associated with STIs in pregnancy: Systematic review. *PLOS/PMC review*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7892372/
- Ahmadi, A., et al. (2018). Association of Chlamydia trachomatis infections with preterm delivery: A systematic review and meta-analysis. *BMC Pregnancy and Childbirth, 18*, Article 186. https://doi.org/10.1186/s12884-018-1868-0
- Montoya, J. G., & Remington, J. S. (2015). Management of toxoplasmosis in pregnancy: Evidence and practice. *American Journal of Obstetrics & Gynecology* (review/discussion). https://pubmed.ncbi.nlm.nih.gov
- Kimberlin, D. W., et al. (2015). (Neonatal CMV antiviral trial — see NEJM trial and follow-up analyses for long-term hearing/neurodevelopmental outcomes). *NEJM & subsequent follow-ups*. https://www.nejm.org
- World Health Organization. (2024). *Guidance on maintaining essential health services — sexual and reproductive health during*

COVID-19. WHO. https://www.who.int/publications

- Centers for Disease Control and Prevention. (2020–2022). *Impact of COVID-19 on STI testing and services — data brief and practice notes*. CDC. https://www.cdc.gov/sti-statistics/about/impact-of-covid-19.html
- American College of Obstetricians and Gynaecologists. (2023). *Committee opinion/practice bulletin: Herpes simplex virus in pregnancy and management of neonates*. ACOG. https://www.acog.org
- Centres for Disease Control and Prevention. (2024). *Perinatal HIV prevention: Recommendations for use of antiretroviral drugs in pregnant persons living with HIV*. https://clinicalinfo.hiv.gov/en/guidelines/perinatal
- Pan American Health Organisation / PAHO. (2024). *Elimination of mother-to-child transmission of HIV and syphilis: Regional strategy documents and country examples*. PAHO. https://www.paho.org
- Habiba, M., et al. (2020). Ethical considerations relevant to infections in pregnancy: Balancing autonomy, public health duties, and mandatory testing. *Bioethics / PMC review*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7354768/
- Clement, A. C., et al. (2022). Disparities in state-mandated third-trimester testing for syphilis: Implementation gaps and program lessons. *BMC Public Health / PMC*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9081215/
- *Infectious Diseases in Pregnancy: Screening, Management of TORCH Infections, and Emerging Challenges in the Era of COVID-19* (unpublished CE manuscript). (2025).