PAHO

India-UN Development Partnership Fund

United Nations Office for South-South Cooperation

CARICOM

Elimination Initiative 3

Ensuring a Generation Free of Diseases

EMTCT Plus Webinar Series

PART 2

"Review of syphilis in pregnancy and the determination of the possible outcomes"

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Public Health Specialist

Thursday 18th June 2026

10:30 AM – 12.00 PM ET

Outline

- Review the diagnosis of syphilis in pregnant women
- Interpret maternal syphilis test results
- Review the management of syphilis in the pregnant woman
- Review the diagnosis of congenital syphilis
- Identify infants who meet criteria for being classified as syphilis-exposed
- Determine appropriate evaluation and treatment regimens for exposed and infected infants
- Guiding principles for EMTCT plus

Epidemiology of Syphilis in Pregnant Women

- Syphilis is a major public health problem
- An estimated 8 million new cases of syphilis in adults aged 15-49 and 700,000 cases of congenital syphilis in 2022. Note, to date, over 20 countries have been validated for the elimination of MTCT of syphilis
- Most infections occur in the developing world, including Latin America, sub-Saharan Africa, and Southeast Asia
- Untreated syphilis in pregnancy is associated with spontaneous abortion, stillbirth, perinatal death, premature delivery, low birth weight, or congenital syphilis

Syphilis: Causative Organism & Transmission

Organism:

Treponema pallidum (spirochete bacterium)

Mode of Transmission:

- Sexual contact; Penetrates intact mucous membranes/dermal abrasions
- Vertical transmission (MTCT)
- Blood transfusion (rare)

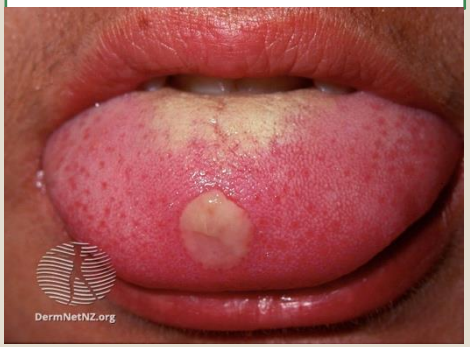
Visible on darkfield microscopy of serum from a syphilitic lesion

Stages of syphilis - Primary

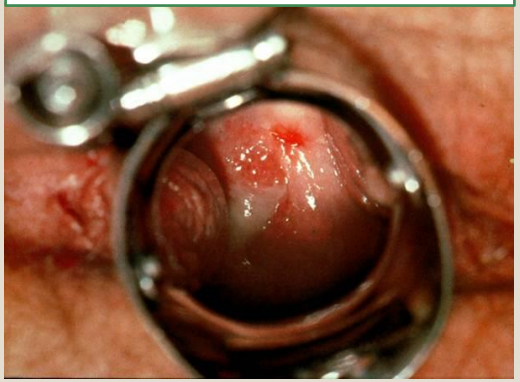
Stage of syphilis	Clinical features
Primary	• painless chancre; indurated with a punched-out base and rolled edges • occurs at the **site** of transmission • after an incubation period of 9-90 days (average 21 days) • highly infectious • unnoticed in 15 -30% • resolves in 1-5 weeks

Syphilis: Clinical Features
Primary Stage – Painless chancre

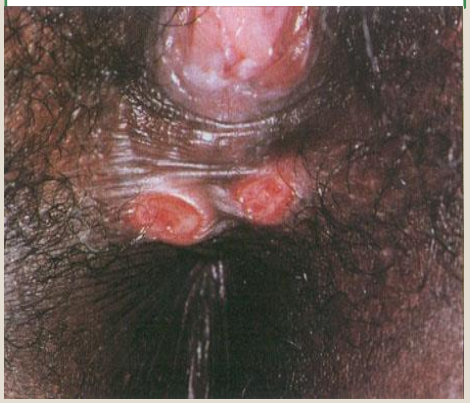
Mouth



Cervix



Female genitalia



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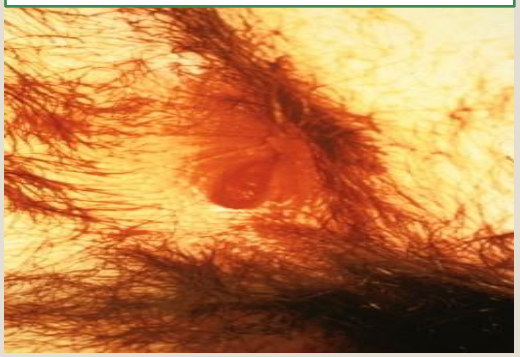

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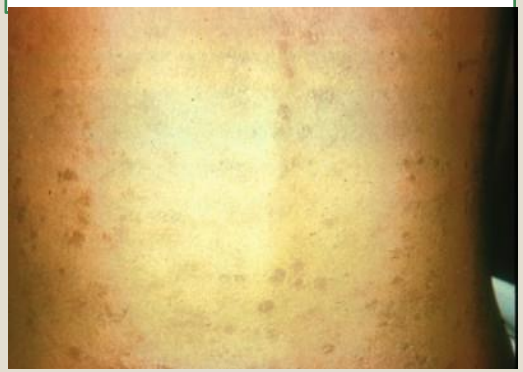
Stages of syphilis - Secondary

Stage of syphilis	Clinical features
Secondary	• Involves skin and mucous membranes: diffuse rash, condyloma lata, other lesions • Renal: glomerulonephritis, nephrotic syndrome • Liver: hepatitis • Central nervous system: headache, meningism, cranial neuropathy, iritis, uveitis, optic neuritis even papilledema • Constitutional symptoms: fever, malaise, generalized lymphadenopathy, arthralgias, weight loss, alopecia, others • Occurs 6 weeks to 6 months after infection; 2 - 8 weeks after chancre
Latent	None. Early within 2 years, Late if over 2 years

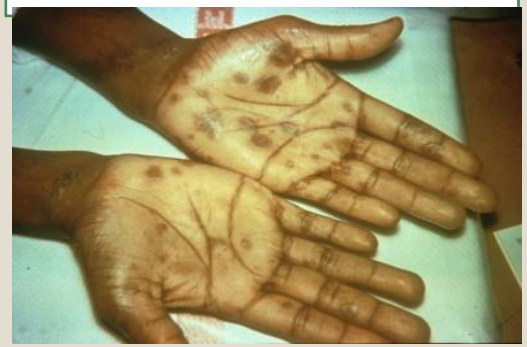
Syphilis: Clinical Features
Secondary Stage

Rash



Hair loss

Palmar rash



Perineum

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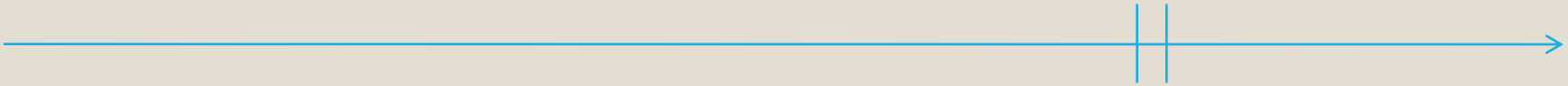
Stages of Syphilis

Stage	Clinical manifestations
Tertiary Syphilis (Late)	Gummatous disease – gummas on internal and external organs Cardiovascular disease – aortitis, aortic aneurysms, aortic regurgitation and narrowing of coronary artery openings
Neurosyphilis (Early or Late)	Seizures, ataxia, aphasia, paresis, hyperreflexia, personality changes, cognitive disturbance, visual changes due to optic neuritis or papilledema, hearing loss (CN) neuropathy, loss of bowel or bladder function, others

Infectivity of Syphilis

1° > 2° > Early Latent > Late Latent & 3°



Primary Ulcer

Rash on palms & soles

Asymptomatic, <2yr

Asymptomatic, >2 yr

Gumma, Neurosyphilis, Cardiovascular syphilis

Mother To Child Transmission (MTCT) of Syphilis

- MTCT occurs at any stage of maternal infection
- MTCT risk is higher in women who present later in pregnancy
- MTCT highest if mother has infectious syphilis (primary, secondary or early latent)
- MTCT can be prevented…PMTCT of syphilis to eliminate congenital syphilis

Syphilis Outcome in Pregnancy

Prenatal:

- Untreated P&SS: ~ 100% premature delivery or perinatal death
- Untreated Early Latent: ~ 40% premature delivery or perinatal death. 10% show signs of congenital infection:
  - Large pale placenta
  - Macerated foetus

Syphilis Outcome in Pregnancy

Postnatal:

- Stillborn
- Premature delivery
- Born diseased (rare and poor prognosis)
- Born with Latent CS: develops signs 3-4 months
- Born with Latent CS: develops signs >2 yrs
- Born with Latent CS: remains latent but with decreased life expectancy

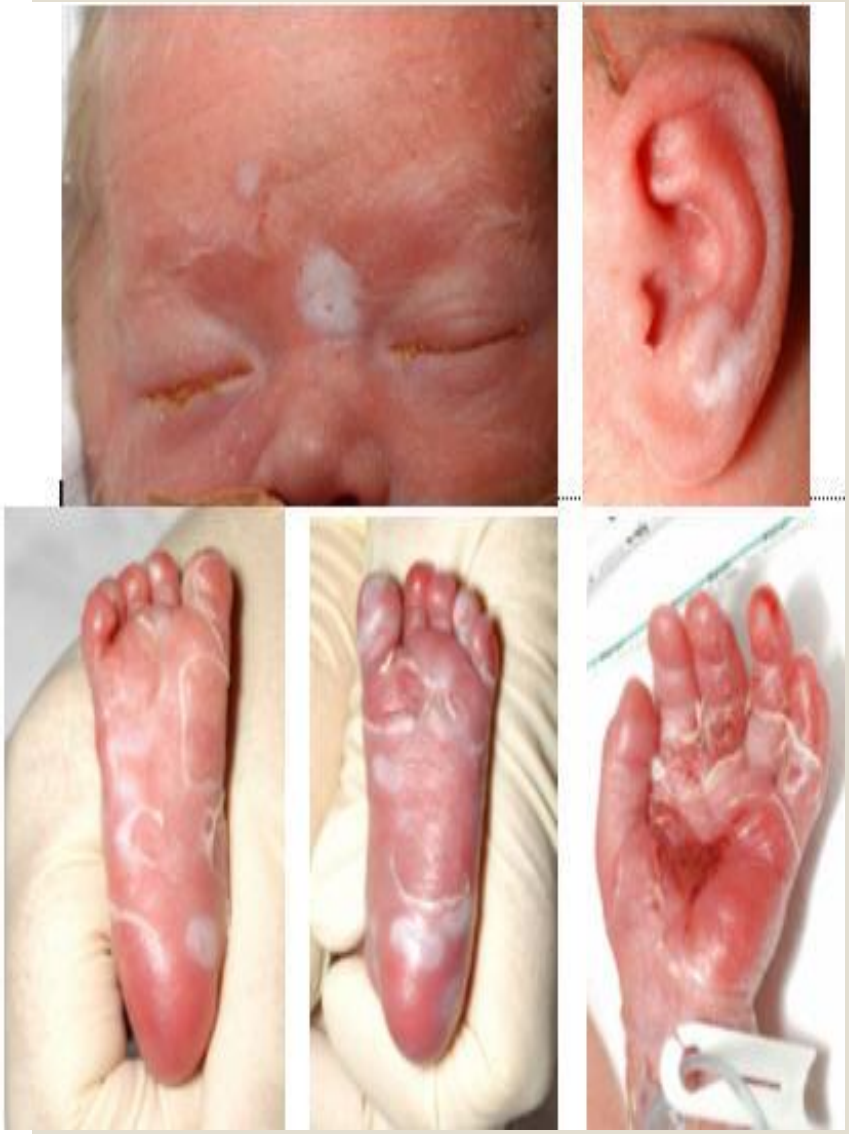
Congenital Syphilis

Two stages:

1. EARLY CONGENITAL SYPHILIS: Within 2 years of birth

2. LATE CONGENITAL SYPHILIS : After 2 years of birth

Early Congenital Syphilis



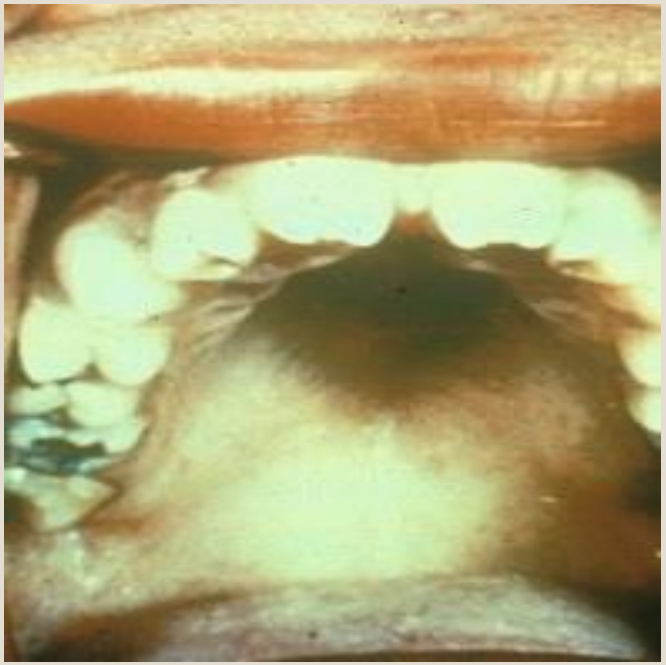
- Bony lesions 97%
- Skin and mucosal rashes 30-60%
- Generalized lymphadenopathy 30-50%
- Hepatosplenomegaly
- Central nervous system 50%
- Respiratory signs: snuffles, Pneumonitis alba

Latent congenital syphilis

- At birth, 50 – 90 % of infants born with syphilis are asymptomatic
- Signs may take months to develop
- Symptoms may be vague or mimic other diseases posing a challenge in diagnosis
- If untreated the sequalae may take years to develop

Late Congenital Syphilis

- Interstitial keratitis
- Mulberry (first) molars
- Hutchinson's pegged incisors (upper)
- Sabre tibia
- Clutton's joints
- Taboparesis
- Eight nerve deafness
- Gumma, frontal bossing, stigmata



Required indicators for WHO validation of EMTCT of syphilis

- Impact indicator
- Case rate of congenital syphilis ≤ 50 cases per

  100 000 live births
- Process indicators
- ANC coverage (at least one visit) of ≥ 95%
- Coverage of syphilis testing of pregnant women of ≥ 95%
- Treatment of syphilis-seropositive pregnant women of ≥ 95%

Diagnosis of syphilis

No single currently available laboratory test can provide a definitive diagnosis

1. Classically, the diagnosis of syphilis is based on a combination of **clinical history, symptom presentation (if any) and discovered by careful examination**
2. **Serologic test results, including non-treponemal and treponemal tests**
3. Direct detection methods (Primary/Secondary syphilis)
   - Darkfield microscopy
   - Polymerase chain reaction (PCR)
   - Direct fluorescent antibody test for *T. pallidum* (DFA-TP)
   - Tissue staining
     - Silver
     - Immunohistochemistry

Some serologic tests for syphilis (STS)

Treponemal test Specific serologic test for syphilis	**Abbreviation STS**	**Non Treponemal test Non-specific serologic test for syphilis**	**Abbreviation STS**
Treponemal pallidum Particle Agglutination	TP-PA	Venereal Disease Research Laboratory	VDRL
Fluorescent Treponemal Antibody Absorption	FTA- ABS	Toluidine Red Unheated Serum Test	TRUST
Treponemal pallidum Haem Agglutination	TPHA	Rapid Plasma Reagin	RPR
Enzyme Immunoassay	EIA		
Treponemal point of care kits e.g. SD Bioline syphilis 2.0	Trep POC	Treponemal/non treponemal point of care kits	Trep/Non Trep POC test

Stage and test results

Stage of syphilis	Treponemal test result	Non Treponemal test result
Primary (sore)	Reactive (78 -86 %)	Reactive (76-84%), > R1:8
Secondary (rash)	Reactive (100%)	Reactive (100%), > R1:8
Early Latent (Non primary/non-secondary)	Reactive (97 - 100%)	Reactive (95 - 100%), > R1:8

Guide to the interpretation of serologic tests for syphilis

Treponemal	Non Treponemal	Interpretation
Reactive	Reactive	Syphilis treated or untreated. If titres R 1:16 or more, likely infectious syphilis
Reactive	Non Reactive	Treated syphilis or late latent syphilis but may be primary or very early latent syphilis
Non Reactive	Reactive	Biological false positive

Principles to remember

Compare titres for the same type of serologic test e.g., do not compare TRUST or RPR with VDRL results

New infection or reinfection if a fourfold increase in the same test

Ensure quality assurance is in place at testing sites

A **good history, examination, and documentation are** needed to guide diagnosis and management

Treatment of Infectious Syphilis in pregnancy

Syphilis: Benzathine penicillin G 2.4 MU IM stat

Erythromycin 500 mg PO qid x 15 days *

**** This has not been proven to be effective so only if truly allergic to penicillin and no safe desensitization service available***

Treatment of Late Syphilis in pregnancy

Syphilis: Benzathine penicillin G 2.4 MU IM weekly X 3

(Daily Crystalline penicillin if neuro or cardiovascular syphilis)

Follow-up for the pregnant woman with syphilis

Repeat test monthly and at delivery

Expect a fourfold decrease in titre after

3 months - 1° and 2° syphilis

6 months – early latent syphilis

Management of Syphilis-Exposed Infants

Step 1: Identify Syphilis-Exposed Infant

- Infant born to mother with reactive syphilis tests during pregnancy or at delivery

Step 2: Clinical and Laboratory Evaluation

- Perform clinical examination, non-treponemal serologic tests (e.g., RPR/VDRL), CSF analysis, CBC, and long bone X-rays as indicated

Step 3: Risk Stratification:

- Assess maternal treatment adequacy, infant clinical signs, and laboratory findings

Step 4: Treatment Decision

- If mother adequately treated and asymptomatic Infant ➡ Close follow-up and serologic monitoring
- If mother inadequately treated and/or symptomatic Infant➡ Initiate full course of aqueous crystalline penicillin or procaine penicillin

Step 5: Follow-Up Monitoring:

- Regular serologic titers and clinical evaluation to ensure treatment success and detect late manifestations.

Treatment of Congenital Syphilis

In infants with confirmed congenital syphilis or infants who are clinically normal, but mother with syphilis and was not treated, inadequately treated (including treated within 30 days of delivery) or treated with non-penicillin regimen

Dosages:

- Aqueous benzyl penicillin (Cryspen) 100,000-150,000 U/kg/day intravenously for 10-15 days
- Procaine penicillin 50,000 U/kg/day single dose intramuscularly for 10-15 days

Conditional recommendation, very low quality evidence

Treatment cont'd

Closely monitor the infants who are clinically normal and the mother had syphilis and was adequately treated with no signs of re-infection

- Treatment: benzathine penicillin G

  50,000 U/kg/day single dose intramuscularly

Follow up testing for all infants born to mothers with syphilis positive test - every 3 months for a 12-18 months

Conditional recommendation, very low quality evidence

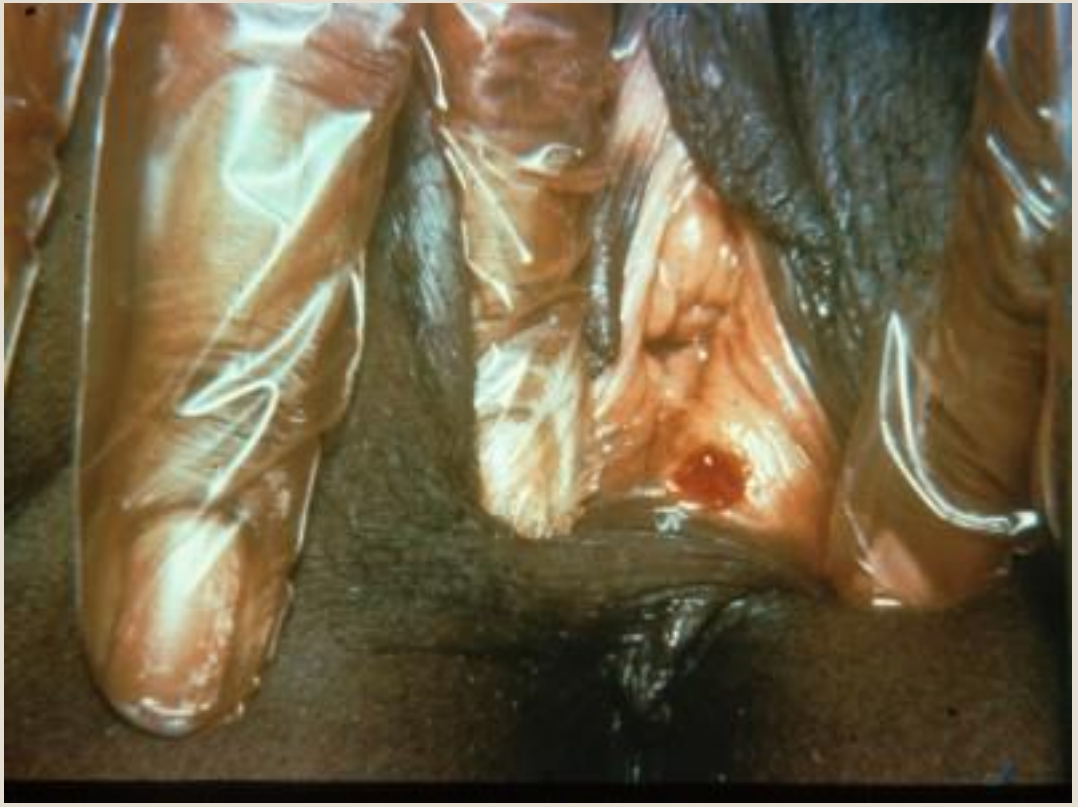
Time to stand & stretch before we go through some cases

Case study #1

Can you state the:

- Sign
- Stage
- Incubation period (range)
- Serological test(s) to be done for this stage of syphilis
  - Type of STS and likely result
- Treatment for her
- Treatment for partner(s)

Case study #1



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Case study #1

Can you state the:

- Sign
- Stage
- Incubation period (range)
- Serological test(s) to be done for this stage of syphilis
  - Type of STS and likely result
- Treatment for her
- Treatment for partner(s)

Case study #1

- Sign – chancre on inner aspect of L labia
- Stage – primary syphilis
- Incubation period (range) - 9 – 90 dys
- Serological test(s) to be done for this stage of syphilis TRUST/RPR/VDRL & TPPA/TPHA/SD Bioline syphilis
  - Type of STS & likely result:

  Trep – R, Non Trep - R>1:8
- Her Treatment- BPG 2.4 MU IM stat
- His/Their treatment - BPG 2.4 MU IM stat even if STS is non reactive (epidemiologic treatment)

What about her baby if…?

- She was treated within 4 weeks of delivery?
- CS exam & investigations and treat IV PNC even if NTT is NR or lower than fold of mother's and follow up exam and test
- She was treated more than 4 weeks before delivery?
- No reinfection before or at delivery? – BPG
- If not sure of return visit give BPG stat and/or repeat testing at visits for routine vaccination
- She presented like this at delivery?
- CS exam & investigations and treat IV PNC even if NTT is NR or lower than fold of mother's and follow up exam and test

Case study #2

Can you state the:

- Sign
- Stage
- Incubation period (range)
- Serological test(s) to be done for this stage of syphilis
  - Type of STS and likely result
- Treatment for her
- Treatment for partner(s)

Case study #2

25 yr old TJ presented to the prenatal clinic. History includes 2 male sex contacts in the last 3 months with condom use most of the times. Her HIV & syphilis tests noted in her file 3 years ago were negative.

On examination, the only abnormal finding is a moderate, frothy discharge. Today her treponemal POC test is reactive

Case study #2

Can you state the:

- Sign
- Stage
- Incubation period (range)
- Serological test(s) to be done for this stage of syphilis
  - Type of STS and likely result
- Treatment for her
- Treatment for partner(s)

Case study #2

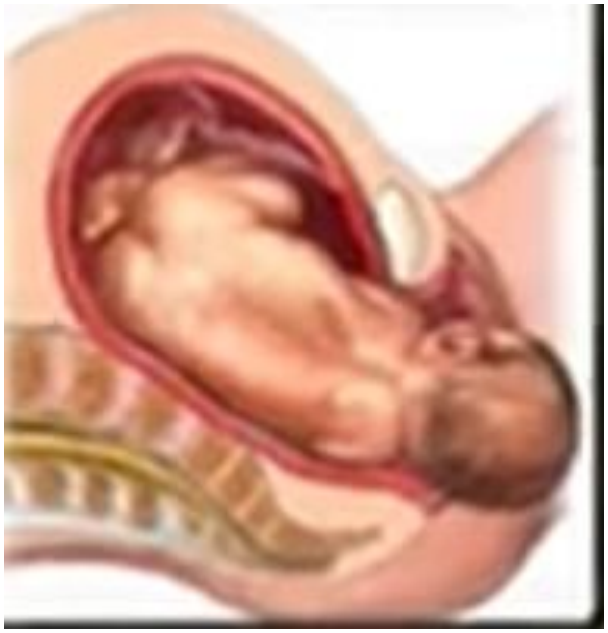
Can you state the:

- Sign – none for syphilis
- Stage - late latent
- "Incubation period" (range) >2 yrs
- Serological test(s) to be done for this stage of syphilis Trep – R, Non trep – < R 1:8
- Treatment for her BPG 2.4 MU IM weekly x3
- Treatment for partner(s)
- If no signs and nonreactive – none
- If no signs and reactive BPG 2.4 MU IM weekly x3

Case study #3

Can you state the:

- Sign
- Stage
- Incubation period (range)
- Serological test(s) to be done for this stage of syphilis
  - Type of STS and likely result
- Treatment for her
- Treatment for partner(s)



Case study #3

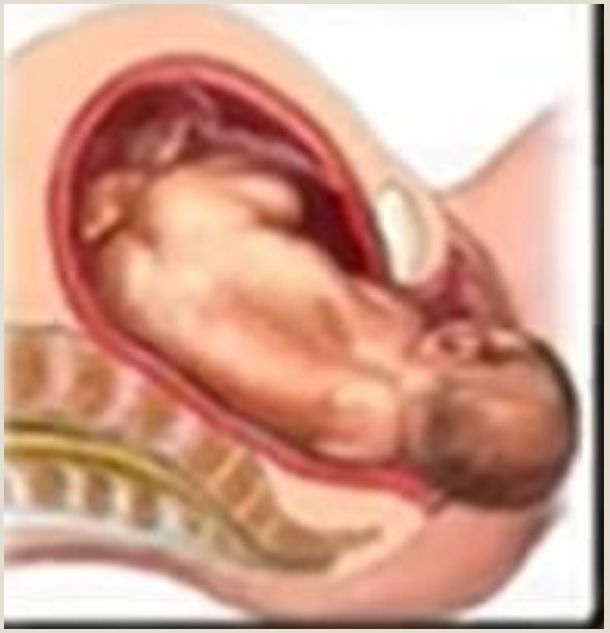
30-year-old pregnant DS attending her 1st prenatal visit at 36 wks (36/40) for her 3rd pregnancy. Her file indicated a history of syphilis and treatment summarized in the table below:

Nth Pregnancy/GA of Rx	STS results		Treatment	Diagnosis	Post Rx **same** Non trep STS
	Trep	Non Trep			
1st 22/40 (2017)	R	R 1:4	BPG 2.4 MU IM wkly X3	Late latent syphilis	R 1:1 at PNC visit
2nd 30/40 (2022)	R	R 1:2	BPG 2.4 MU IM stat	syphilis	No result seen
3rd 36/40 (2024)	R	R1:2	?	?	?

Case study #3

Can you state the:

- Sign
- Stage
- Incubation period (range)
- Serological test(s) to be done for this stage of syphilis
  - Type of STS and likely result
- Treatment for her
- Treatment for partner(s)



Case study #3

Sign – None??
Stage – Not infected, serofast (Adequately treated in 1st & 2nd pregnancies)
Incubation period (range) - N/A
Serological test(s) to be done for this stage of syphilis
    Type of STS and likely result – Non trep – R-WR – < R1:8
Treatment for her (Empiric) - BPG 2.4 MU IM stat
Treatment for partner(s)
If no signs and nonreactive – none
If no signs and reactive BPG 2.4 MU IM weekly x3

The Serofast woman

- The serofast patient is one with ***documented*** evidence of ***adequate treatment*** *but with* ***a persistent*** **low titre**
- **She should receive a stat treatment of Benzathine Penicillin G (BPG) with each new pregnancy***
- Do follow-up tests monthly; treat only if a fourfold increase in titre

* **As per PAHO/MOHW EMTCT protocol**

Prevention of Congenital Syphilis

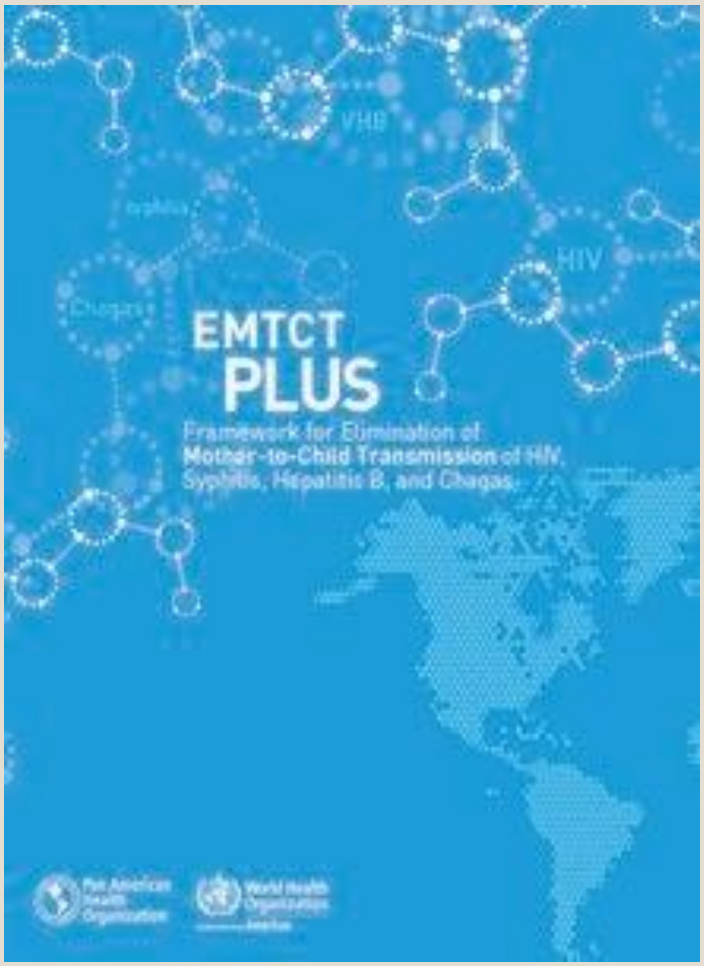
1. The greatest RISK FACTOR for congenital syphilis is lack of proper prenatal care…..

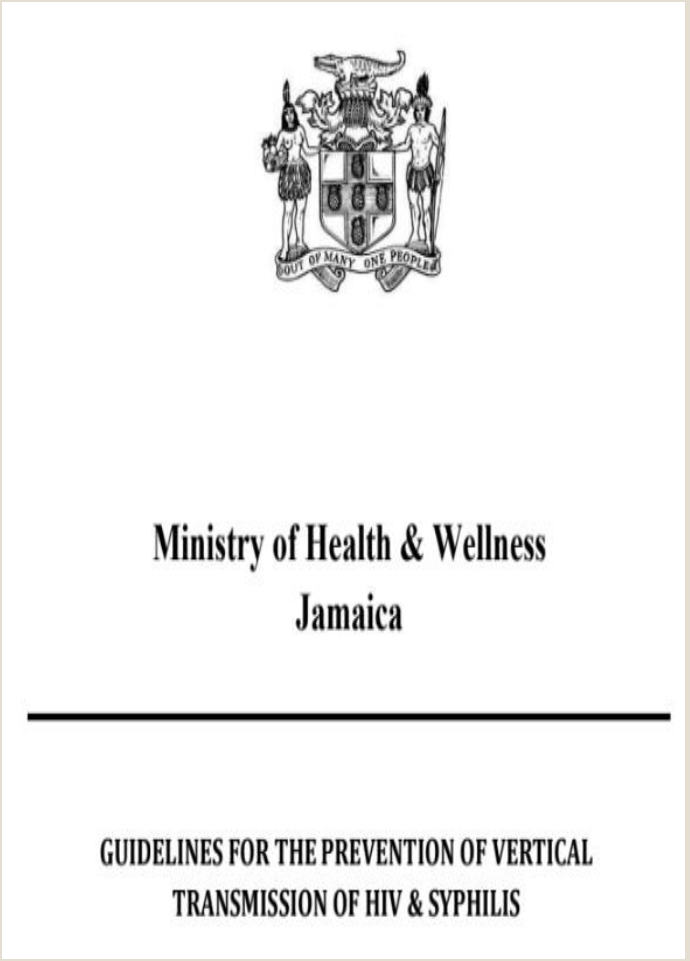
Let's talk some more about that….

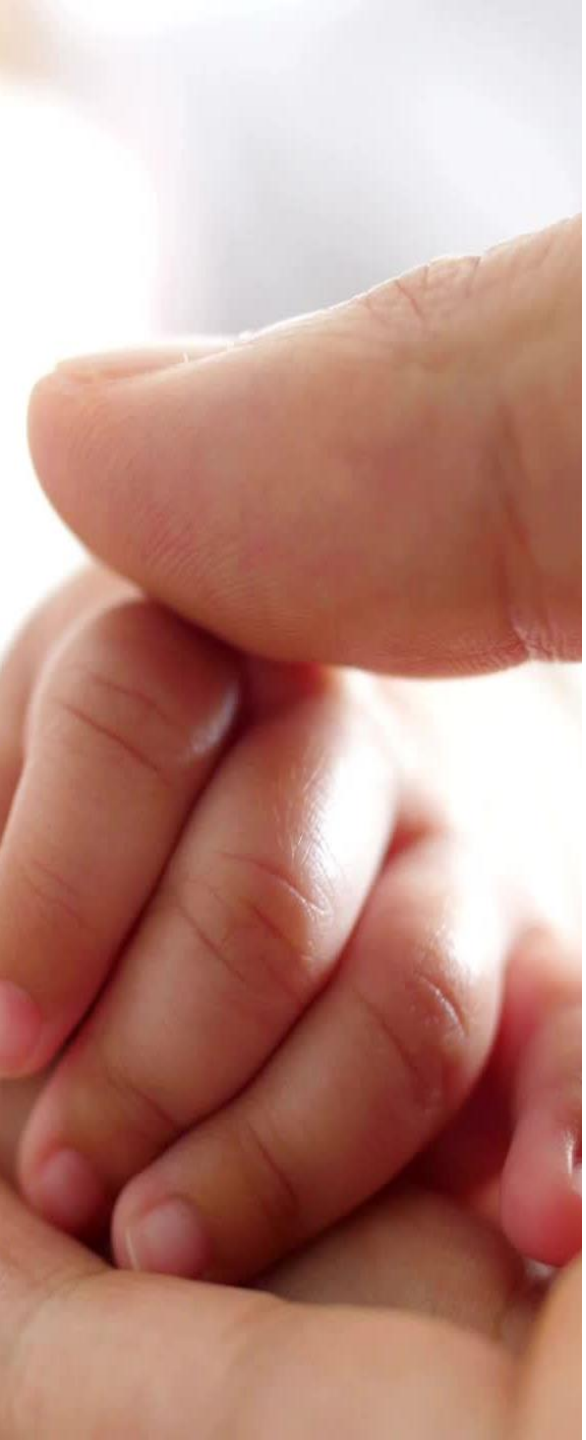
Elimination of MTCT of Syphilis

- Comprehensive family planning services
- Early and complete antenatal care
- Completeness of case reporting and follow up care
- Complete care before, during and after delivery
    - All mothers should have ***at least*** 2 STS
    - No mother should be discharged from hospital until her SEROLOGIC STATUS (and her baby's blood, NOT CORD BLOOD) is known …. Even after miscarriage or stillbirth
    - Documentation and report of HIV AND **syphilis**
    - …..

Know your PMTCT guideline







Congenital Syphilis Surveillance

Notify – all infants born to STS reactive mothers

Surveillance cases:

All infants

- Born to untreated or inadequately treated mothers
- Born to mothers who were treated with BPG < 30 days before delivery
- Born to mothers who were treated with Erythromycin
- Asymptomatic infant, but with titre at least **four** times that of the mother (same STS)
- Symptomatic infant

All of these will be deemed a case when reviewed for EMTCT certification

Required indicators for WHO validation of EMTCT of syphilis

- Impact indicator
- Case rate of congenital syphilis ≤ 50 cases per

  100 000 live births
- Process indicators
- ANC coverage (at least one visit) of ≥ 95%
- Coverage of syphilis testing of pregnant women of ≥ 95%
- Treatment of syphilis-seropositive pregnant women of ≥ 95%

Key Steps in the Management of Syphilis

- Maximize case detection by screening when indicated
- Maintain high index of suspicion for all anogenital lesions, generalized rash or high risk sexual activity
- Remember co infection with other STI
- Conduct partner referral services
- Provide appropriate treatment to index and contacts
- Follow up treated patients to ensure adequate response
- Encourage behaviours which prevent reinfection

Key Points

- Syphilis in pregnancy is preventable and treatable
- Penicillin remains the gold standard for both mother and infant
- Early detection and treatment prevent congenital syphilis
- No vaccine exists; prevention relies on screening and treatment
- Offer compassionate, confidential, comprehensive care to mother, partner(s) and infant

Press Along! *Press Along!*

- To eliminate implies finding the hard to find
- Eliminate the disease not the persons or the programme!

References

WHO. The elimination of congenital syphilis: Rationale and strategy for action. 2007, 2016 http://www.who.int/reproductive-health/publications/congenital_syphilis/strategy_congenitalsyphilis.pdf. Accessed Jan 2008, 2026

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Aiken CG. The causes of perinatal mortality in Bulawayo, Zimbabwe. *Central African Journal of Medicine* 1992; 38: 263-281

- MOHW CI Field Guide, STI and PMTCT guidelines
- " Guidance on Syphilis Testing in Latin America and the Caribbean: Improving Uptake, Interpretation and Quality of Testing in Different Clinical Settings" *Washington DC: PAHO 2015*
- Personal slide sets on syphilis using some from various sources including; CDC online public presentation : *Syphilis, Dr Russell Waddell: Syphilis presentation and treatment; Audio-Digest Foundation and American Family Physician: Diagnosis and Management of Syphilis*
- AI assistance with slide organization

Thanks for your attention!

¿ Hay preguntas?