Syphilis screen and treat for pregnant women

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Training course in sexually transmitted infections, HIV/AIDS 2018

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Syphilis screening in pregnant women

- The WHO STI guideline recommends screening all pregnant women for syphilis during the first antenatal visit.

Strong recommendation, moderate quality evidence

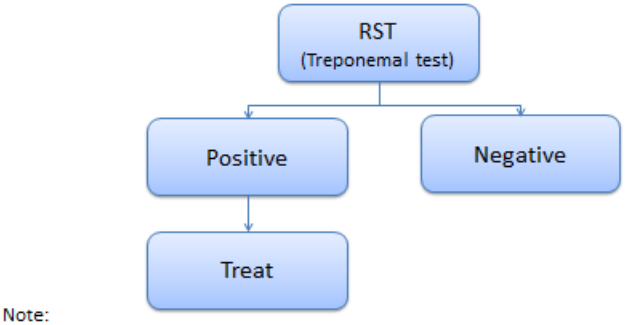
Remarks: This recommendation applies to all settings including settings with high or low prevalence of syphilis.

Low screening coverage

- In settings with low screening coverage and treatment of pregnant women for syphilis, high loss to follow-up of pregnant women, or limited laboratory capacity, the WHO STI guideline suggests on-site tests rather than off-site laboratory-based screen and treat strategies

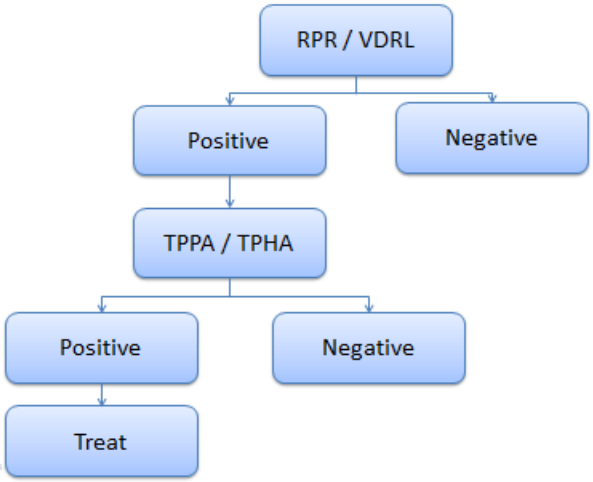
Conditional recommendation, low quality evidence

On-site laboratory testing – rapid syphilis test



Note:
1. RST does not distinguish between previously adequately treated and untreated syphilis
2. Sensitivity of RST is reduced with whole blood.
3. In pregnant women, subsequent testing will likely be still seropositive, therefore, previously RST positive women could be treated without re-testing if risk of re-infection is considered high. Alternatively perform quantitative RPR testing.

Off-site laboratory based screening (RPR-TPHA)

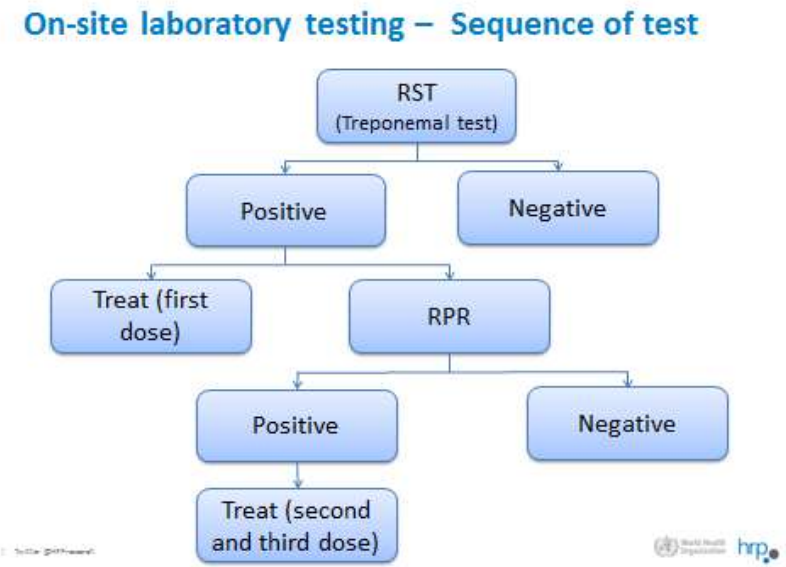


High prevalence of syphilis (≥ 5%)

- In settings with a high prevalence of syphilis (5% or greater), the WHO STI guideline suggests an on-site rapid treponemal syphilis test and if positive, provide a first dose of treatment and a rapid plasma reagin (RPR) test and then if positive, treat according to duration of syphilis.

- The WHO STI guideline suggests this sequence of tests rather than a single on-site rapid syphilis treponemal test or on-site rapid plasma reagin (RPR) test strategies

Conditional recommendation, low quality evidence

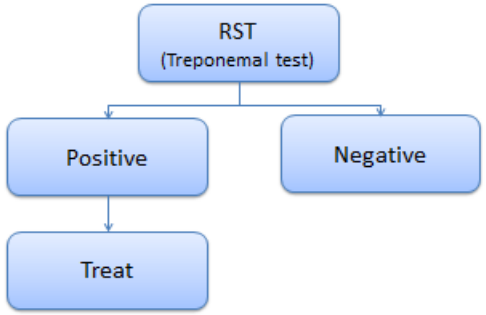


Low prevalence of syphilis (<5%)

- In settings with a low prevalence of syphilis (below 5%), the WHO STI guideline suggests a single on-site rapid syphilis treponemal test be used to screen pregnant women rather than on-site rapid plasma reagin (RPR) test strategies.

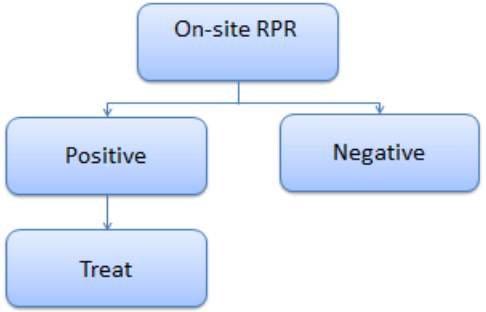
Conditional recommendation, low quality evidence

On-site laboratory testing – rapid syphilis test



Note:
1. RST does not distinguish between previously adequately treated and untreated syphilis
2. Sensitivity of RST is reduced with whole blood.
3. In pregnant women, subsequent testing will likely be still seropositive, therefore, previously RST positive women could be treated without re-testing if risk of re-infection is considered high. Alternatively perform quantitative RPR testing.

On-site laboratory testing – RPR syphilis test



Best evidence from comparative studies of pregnant women

Outcomes
congenital syphilis, stillbirths, neonatal deaths, low birth weight

- Randomised controlled trials: compare test strategy to another test strategy, treat and measure outcomes
- Non-randomised trials: compare test strategy to another test strategy, treat and measure outcomes
- Test accuracy studies: compare test strategy to another test strategy for sensitivity and specificity (TP, FP, TN, FN)
  - RST : 83% Sen, 96% Spec
  - RPR: 75% Sen, 97% Spec
- Modelling studies with comparison of test strategies, treatment and outcomes

feasibility

equity

acceptability

resources


International Journal of Gynecology and Obstetrics

COST-EFFECTIVENESS

The cost-effectiveness of 10 antenatal syphilis screening and treatment approaches in Peru, Tanzania, and Zambia

Outcome tables: Modelling 1000 pregnant women: Prevalence 1.25% (12.5/1000)

Based on field data	RST	Sensitivity	77 (70 to 83)	Specificity	100	Based on review	Sensitivity	83 (58 to 98)	Specificity	96 (89 to 100)[1]
	RPR	Sensitivity	56 (42 to 69)	Specificity	99 (97-99)		Sensitivity	75 (54 to 88)[2]	Specificity	97 (96 to 99)

	Mass treatment	On-site RPR then RST then treat	On-site RPR then treat	RST then treat	RST treat then RPR then treat	Consequences
Screened	-	91%	91%	96%	96%	-
Treated	85%	77%	77%	89%	89%	-
# true cases treated	11.1 (8.0 to 22.9)	3.8 over (1.6 to 7.3)	4.9 (2.0 to 9.4)	8.2 (5.8 to 16.5)	8.2 (5.8 to 16.5)	Per 1000 women treated: 5 births with congenital syphilis; 250 gastro-intestinal side effects; 70 central nervous system side effects
Missed cases (12.5)	1.4 (0.4 to 4.2)	8.7 over (6.9 to 20.4)	7.6 (6.1 to 18.9)	4.3 (3.1 to 10.0)	4.3 (3.1 to 10.0)	Per 1000 women missed: 160 births with congenital syphilis; 210 stillbirths; 90 neonatal deaths, 60 premature births; syphilis transmission
Over-treated	841.7 (705 to 900)	0	9.8 (2.0 to 15.6)	0.8 under (0.7 to 0.9)	0 under	Per 1000 women over-treated: 250 gastro-intestinal side effects; 70 central nervous system side effects; 2/1 000 000 risk of penicillin allergy; unnecessary medication, facility, personnel use; unnecessary stigma

Outcome tables: Modelling 1000 pregnant women: Prevalence 5.14% (51.4/1000)

Based on field data	RST	Sensitivity	71 (55 to 83)	Specificity	93 (91 to 95)	Based on review	Sensitivity	83 (58 to 98)	Specificity	96 (89 to 100)[1]
	RPR	Sensitivity	46 (29 to 63)	Specificity	97 (95 to 98)		Sensitivity	75 (54 to 88)[1]	Specificity	97 (96 to 99)

	Mass treatment	On-site RPR then RST then treat	On-site RPR then treat	RST then treat	RST treat then RPR then treat	Consequences
Screened	-	18%	18%	86%	86%	-
Treated	83%	74%	74%	94%	94%	-
# treated	48.2 (8.9 to 130)	2.0 (0.3 to 15.3)	2.9 (0.4 to 23.0)	29.3 (5.5 to 74.9)	29.3 (5.5 to 74.9)	Per 1000 women treated: 5 births with congenital syphilis; 250 gastro-intestinal side effects; 70 central nervous system side effects
Missed cases	3.1 (0.4 to 13.4)	49.3 (8.5 to 13)	48.5 (8.2 to 129)	22.1 (3.8 to 74.1)	22.1 (3.8 to 74.1)	Per 1000 women missed: 160 births with congenital syphilis; 210 stillbirths; 90 neonatal deaths, 60 premature births; syphilis transmission
Over-treated	760.5 (579 to 857)	0.3 (0.1 to 1.3)	3.9 (1.0 to 18.7)	50.7 (31.6 to 67.0)	1.2 (0.7 to 1.6)	Per 1000 women over-treated: 250 gastro-intestinal side effects; 70 central nervous system side effects; 2/1 000 000 risk of penicillin allergy; unnecessary medication, facility, personnel use; unnecessary stigma

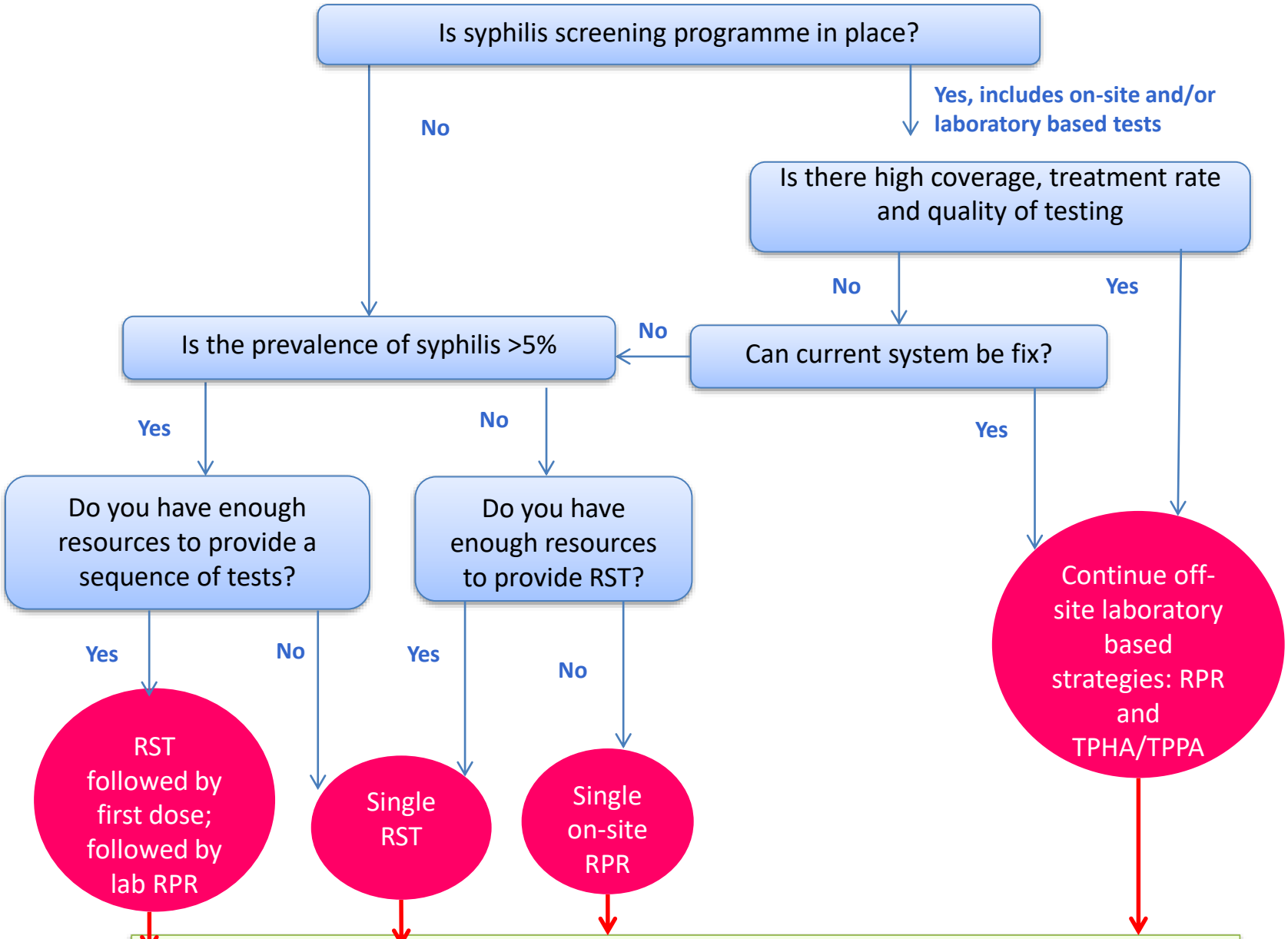
Outcome tables: Modelling 1000 pregnant women: Prevalence 9.04% (90.4/1000)

Based on field data	RST	Sensitivity	71 (55 to 83)	Specificity	93 (91 to 95)	Based on review	Sensitivity	83 (58 to 98)	Specificity	96 (89 to 100)[1]
	RPR	Sensitivity	46 (29 to 63)	Specificity	97 (95 to 98)		Sensitivity	75 (54 to 88)[1]	Specificity	97 (96 to 99)

	Mass treatment	On-site RPR then RST then treat	On-site RPR then treat	RST then treat	RST treat then RPR then treat	Consequences
Screened	-	80%	80%	97%	97%	-
Treated	75%	57%	57%	77%	77%	-
# treated	70.0 (19.8 to 193)	12.4 (0.7 to 29.9)	17.6 (1.0 to 44.1)	48.0 (13.5 to 126)	48.0 (13.5 to 126)	Per 1000 women treated: 5 births with congenital syphilis; 250 gastro-intestinal side effects; 70 central nervous system side effects
Missed cases	20.5 (4.6 to 66.3)	78.1 (24.5 to 228)	72.9 (22.7 to 218.8)	42.5 (11.6 to 134)	42.5 (11.6 to 134)	Per 1000 women missed: 160 births with congenital syphilis; 210 stillbirths; 90 neonatal deaths, 60 premature births; syphilis transmission
Over-treated	683.0 (499-768)	0.8 (0.1 to 1.4)	12.7 (1.2 to 19.7)	45.2 (28.1 to 59.2)	1.1 (0.6 to 1.4)	Per 1000 women over-treated: 250 gastro-intestinal side effects; 70 central nervous system side effects; 2/1 000 000 risk of penicillin allergy; unnecessary medication, facility, personnel use; unnecessary stigma

Summary of evidence

- RST versus RPR : greater number of pregnant women treated
- Overtreatment
  - Low prevalence setting : no difference between RST and RPR
  - High prevalence setting: higher overtreatment with RST
- Missed treatment
  - Low prevalence setting: RST=RPR
  - High prevalence setting: higher missed treatment with RPR
- Cost effective: RST
- Acceptability and feasibility of RST
- Sequence of test may be unaffordable


Is syphilis screening programme in place?
No
Yes, includes on-site and/or laboratory based tests
Is there high coverage, treatment rate and quality of testing
No
Yes
Is the prevalence of syphilis >5%
No
Can current system be fix?
Yes
No
Yes
Do you have enough resources to provide a sequence of tests?
Do you have enough resources to provide RST?
Continue off-site laboratory based strategies: RPR and TPHA/TPPA
Yes
No
Yes
No
RST followed by first dose; followed by lab RPR
Single RST
Single on-site RPR
TREAT BASE ON THE STAGE OF SYPHILIS
Primary – Banzathine PCN Single Dose
Late syphilis – Benzathine PCN 2.4 M units x 3 consecutive week (for those provided first dose – administer second and third dose)

Research gaps

- Treatment
  - New treatment option –oral and short course that cross the placental and blood-brain barrier
  - Appropriate dosage of ceftriaxone
  - Ceftriaxone use in infants
- Screen and treat for pregnant women
  - Real test accuracy of sequential test
    - Cohort of women to determine feasibility of sequential test
  - Combined treponemal and non-treponemal test
  - Dual HIV and syphilis screening test and treat