Feasibility of Rapid Syphilis Test in Antenatal Screening Programs: Prevalence of syphilis among pregnant women in rural Mongolia

Training Course in Reproductive Health Research
WHO Geneva, 2008
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Mongolia Overview

- Landlocked between Russia and China
- Population - 2.6 million
- Density - 1.7 person/km²
Prevalence of STDs in Mongolia

- Trichomoniasis: 11.7% (2006) vs. 12.7% (2007)
- Gonococcal infection: 17.6% (2006) vs. 17.4% (2007)
- Syphilis: 20.3% (2006) vs. 16.7% (2007)
Project Context

- Syphilis: A common infectious disease in developing countries

- Untreated syphilis in pregnancy leading to adverse outcomes for both mother and infant:
  - Miscarriage, pre-term delivery, stillbirth, congenital syphilis

- The screening and treatment of syphilis in pregnant women is the standard measure for preventing congenital syphilis but is not fully operational in Mongolia.

- Limited testing laboratories
- People live far from the service
- A shortage of syphilis tests
- Lack of knowledge and late ANC
Global Burden of Congenital Syphilis

- **Americas Region**
  - Seroprevalence: 3.9%
  - Annual no. of cases: 459,108

- **Africa Region**
  - Seroprevalence: 1.98%
  - Annual no. of cases: 705,725

- **Eastern Mediterranean Region**
  - Seroprevalence: 1.11%
  - Annual no. of cases: 172,154

- **Europe Region**
  - Seroprevalence rate: 1.5%
  - Annual no. of cases: 118,335

- **South-East Asia Region**
  - Seroprevalence: 1.48%
  - Annual no. of cases: 446,909

**Total global number of cases of congenital syphilis:**
- Method 1 (728,547);
- Method 2 (1,323,889);
- Method 3 (1,527,565)
Congenital Syphilis

- Pregnant women with syphilis delivered babies with congenital syphilis.

- Out of a sample of 5 babies, born from 5 women, 4 had hepatomegaly and 1 showed osteochondritis. All 5 had + FTA-ABS-19-sIgM*

*Zhou et al, STD, 2007
Why Conduct Rapid Syphilis Tests

- Minimal training required
- Limited equipment and electricity requirements
- Transportation & storage at temperatures below 30°C
- Can be used with whole blood, serum or plasma
- Results available within 15 min
- Patient gets results & treatment in the same day
- Simple to perform
Immunochromatographic test image
Objectives

Reduce the prevalence of syphilis, especially congenital syphilis

Intensify control activities against syphilis

Evaluate the feasibility of using rapid syphilis test for antenatal screening among pregnant rural women of Mongolia

Increase number of pregnant women tested for syphilis

Identify the prevalence of maternal syphilis in the aimags that have been documented as aimags with highest syphilis cases in general population

Reduction of syphilis in rural Mongolia
### Project Methodology

<table>
<thead>
<tr>
<th>Determine Intervention type</th>
<th>Selection of Provinces</th>
<th>Determine Sample size</th>
<th>Conduct Study</th>
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<tbody>
<tr>
<td>• Prospective, interventional multi-center.</td>
<td>• Rural provinces selected on the high prevalence of syphilis in general population.</td>
<td>• Previous study-2.2%&lt;br&gt;• Acceptable difference-5/1000 (±0.5%)&lt;br&gt;• Assumed rate-22/1000 (2.2%)&lt;br&gt;• Computed sample size-3307 pregnant women (CI 95%)</td>
<td>• Study duration 10-11 months&lt;br&gt;• Results reporting and publishing: 3 months</td>
</tr>
</tbody>
</table>
Prevalence of syphilis in general population / 10000 (2007)

- Dornod: pop-73475; p.s-17.8
- Khetii: pop-70871; p.s-17.1
- Bayanhongor: pop-83653; p.s-21.8
- Govi-Sumber: pop-12709; p.s-24.3
## Description of Intervention

<table>
<thead>
<tr>
<th>ANC service providers</th>
<th>Aimag Central Clinics</th>
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<tr>
<td>Syphilis screening test</td>
<td>Rapid Syphilis Test</td>
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<tr>
<td>Place of performance</td>
<td>Aimag Central Clinics</td>
</tr>
<tr>
<td>Staff</td>
<td>Trained physicians/nurses</td>
</tr>
<tr>
<td>Gestational period of testing</td>
<td>Irrespective</td>
</tr>
<tr>
<td>Treatment indication</td>
<td>Treat all test positive cases</td>
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<tr>
<td>Partner treatment</td>
<td>Treat all partners of positive mothers</td>
</tr>
<tr>
<td>Management at delivery</td>
<td>Repeat testing at delivery regardless of test</td>
</tr>
<tr>
<td></td>
<td>Test all babies delivered by test positive mothers</td>
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<td>Free treatment for positive mothers and infants</td>
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Proposed training for nurse clinicians

Design training program and identify target nurse clinicians

- Execute coordinated systematic training program
- Syphilis knowledge
- Counseling techniques
- Patient management
- Record keeping
- Quality control
- Train the trainer techniques
Testing procedure

- Antenatal women educated about syphilis:
  - Risk factors for syphilis transmission
  - Effects of untreated syphilis on mother and a baby
  - Possibility of false positive results
  - Importance of partner treatment and effects of untreated partner on mother and baby
  - Risk reduction method such as condom use

- Finger prick blood collected.

- Test results returned to women with counseling.
Treatment and Follow up

- **Positive test result**
  - Immediate treatment
  - Antenatal women given partner notification card
  - Re-test at delivery, if positive treat both

- **Negative test result**
  - Counseling on prevention until delivery
Expected outcome

- Feasibility (validity, cost effectiveness, acceptance and compliance) of rapid test that can be replicated to the remaining rural parts of Mongolia

- Reliable data on prevalence of syphilis in rural pregnant women and newborns

- Improve knowledge in rural pregnant women
Disseminating results

- Act as input for formulation of national policy on systematic screening of syphilis in relation to antenatal women as well as the general population.

- Plan to publish in internationally recognized journals and disseminate information using national media.
Thank you for your attention