Regional Strategy on Eradication of Yaws (2006-2010)
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1. **Background**

Yaws is caused by the spiral-shaped bacterium (spirochete) *Treponema pertenue*. It is a contagious, non-venereal and debilitating disease of humans, primarily affecting the skin and bones. The disease can occur in all age-groups, but occurs mainly in children below 15 years. The disease occurs predominantly in poor, rural and marginalized populations in parts of Africa, Asia and South America and in prevailing conditions of overcrowding, poor water supply and lack of sanitation and hygiene. Thus, it is a poverty-related disease of disadvantaged people living in remote areas. This is perhaps why the saying goes that “Yaws begins where the road ends”.

The persistence of yaws even in this 21st Century is unacceptable in view of the availability of a simple, safe and cost-effective intervention – a single intra-muscular injection of long-acting Benzathine penicillin. Furthermore, the disease is simple to diagnose and treat, even in resource-poor settings. Thus yaws is amenable to eradication if sufficient efforts are directed towards active case detection, treatment, surveillance, and community awareness. The eradication goal can be achieved within a definite time-frame through political commitment, allocation of required resources and strong partnerships. Eradication of yaws will lead to significant economic benefits to the affected communities apart from mitigating the suffering of the affected persons. In late stages, yaws can cause disfiguring and crippling disabilities and deformities. Thus there are weighty social, economic, humanitarian and ethical considerations to intensify efforts towards yaws eradication.

2. **Disease distribution and progress in elimination/eradication**

In 1950s, yaws was endemic in some 50 countries of the world, mainly in Asia, Africa and South America. With the advent and availability of long-acting penicillin which could fully cure the disease, most of these countries embarked upon yaws control campaigns with active case detection and treatment with a single intra-muscular injection of Benzathine penicillin. These campaigns continued until 1970 and resulted in a dramatic reduction...
of yaws prevalence globally. However, such intensified efforts were unfortunately abandoned after 1970 and led to yaws remaining endemic in some countries of the world.

In the South-East Asia (SEA) Region yaws remains a public health problem in three countries – India, Indonesia and Timor-Leste, which together account for about 5000 new annual cases. Thus, only a few active foci of infection remain in the Region. The three endemic countries have national programmes for yaws. However, the programmes need strengthening, particularly in Indonesia and Timor-Leste.

In India, yaws was previously reported from 49 districts of 10 states and among predominantly tribal populations. The yaws control programme was first launched in India in the 1950s and was upgraded to a Yaws Eradication Programme in 1997. Following concerted and intensive efforts the annual reported cases of yaws steadily declined in India with no cases reported since 2004. Thus India has reached the stage of an absence of new infectious cases and is aiming at eradication of yaws by 2008.

In Indonesia, yaws has been reported from 14 of the 33 provinces over the last five years. With about 3500 cases reported in 2004 and 2560 provisionally reported in 2005, Indonesia has the highest burden of yaws in the Region. There has been a slow-down in the implementation of the programme in the last few years due to mainly resource constraints. Efforts have to be directed towards policy support and greater attention paid to the strengthening of the programme and intensification of efforts.

In Timor-Leste, yaws is endemic in at least six of the 13 districts, though reliable data is not available. An integrated approach is planned, combining elimination of lymphatic filariasis, control of soil transmitted helminths, elimination of leprosy and eradication of yaws. Such a programme synergy is a novel approach that will yield results if supported adequately.

3. **Clinical presentation and treatment**

The early ulcerative skin lesions teaming with spirochetes are transmitted via direct skin-to-skin contact or through breaks in the skin from trauma, bites or excoriations. An injured spot on the leg is the most common site of entry.
The first symptom appears three or four weeks after acquiring the spirochete. A papule is formed at the area of entry of the spirochete. The papule grows gradually and develops a punched-out centre covered with a yellow crust (ulcer). Lymph nodes in the area may become swollen and tender. This first papule may take three to six months to heal. Secondary soft, gummy (nodular) lesions/growths then appear on the face, arms, legs and buttocks. These growths may also occur on the soles of the feet, forcing the patient to walk in an odd and characteristic fashion balancing on the sides of the feet, the so-called “crab-yaws” (hyper-keratosis).

The gummy growth gradually involves and disrupts the bones of the face, the jaw and the lower leg. Ulcers around the nose and on the face may be very mutilating and disabling and lead to prolonged morbidity and loss of productivity.

Yaws remains limited to the skin in the majority of patients, but early bone and joint involvement can also occur. Although most yaws lesions disappear spontaneously, secondary bacterial infections and scarring are common complications. After 5-10 years, 10% of untreated patients develop destructive lesions involving the bones, cartilage, skin and soft tissues leading to severe disabilities and consequent social stigma.

The diagnosis is primarily based on clinical findings. The ‘case definition’ of yaws is as follows:

A case of yaws is one who lives in an endemic area and presents with one or more of the following signs:

- ulcer with scab,
- papillomas,
- palmar/plantar hyperkeratosis (thickening)

All cases matching the above definition should promptly be treated along with all his/her close contacts.

Wherever possible, a sub-sample of cases may be subjected to serological test, i.e. RPR/VDRL or TPHA, in order to validate the above case definition. However, VDRL/TPH cannot distinguish yaws from other treponema.
Yaws can be cured with a single intramuscular injection of long-acting penicillin. The drug of choice for treatment is long-acting Benzathine Penicillin.

Dose for adults: 1.2 million units.

Dose for children: 600 000 units.

(In case of an extremely rare episode of penicillin sensitivity adults can be given tetracycline 500 mg four times a day for 14 days and children can be administered erythromycin 250 mg twice a day for 14 days.)

4. **Factors favouring yaws eradication**

Yaws is considered easily amenable to eradication because:

- It occurs only in humans; there is no animal reservoir.
- Only a few localized foci of infection remain in the region.
- Availability of a potent and cost-effective cure with a single injection of long-acting penicillin – Benzathine penicillin.
- The disease can be diagnosed clinically with minimum training of health staff.
- There is historical evidence that systematic coverage of the population to detect and treat cases in the past can lead to good results in reducing the prevalence, to the extent of disappearance of new cases, in most endemic areas.

Since yaws remains a focalized problem affecting parts of only three countries in the SEA Region, and cost-effective tools are available to detect and cure the disease, its eradication has been declared a regional priority and an achievable goal.

5. **The goal and objectives**

The goal is the eradication of yaws in the Region by 2012. Eradication is defined as the absence of new cases. Thereafter, certification is to be done after three years.
The objectives are as follows:

(1) Detect and treat all yaws cases and their contacts.

(2) Interrupt transmission

(3) To prevent disability and thereby minimize the suffering and economic impact on the vulnerable and marginalized populations affected.

6. **Key elements of the strategy**

The key elements of the strategy to eradicate yaws include the following:

(1) Active case-finding and treatment of cases and their close contacts through outreach service. A single intra-muscular injection of long-acting penicillin is enough to cure the disease.

(2) Mobilization of community support through Information, Education and Communication (IEC) campaigns that highlight the fact that yaws is curable with a single injection.

(3) Capacity building of health staff to be able to clinically recognize yaws and have the knowledge and skills to treat it.

(4) Surveillance and operational research in order to “catch” cases during inter-search periods and gather data that will enable effective programme planning and implementation.

(5) Monitoring and evaluation to enable tracking of progress pertaining to disease incidence and impact of interventions over time.

To facilitate implementation of the strategy, the following enabling factors are needed:

- Strong political commitment and mobilization of adequate resources.
- Vigorous and sustained implementation of strategies.
- Focus on results through close monitoring and evaluation.
- Public/private partnership and involvement of other sectors such as education, environment and forests, local government.
7. Implementation steps

7.1 Identify yaws-affected districts

All past endemic areas should be subjected to comprehensive case detection activity to identify unreported or backlog cases, if any. Effective surveillance should be established in villages/areas which reported new cases during the last three years. Sero-survey results of children less than 15 years old, wherever available, may also be considered in identifying affected areas. An endemicity map showing affected districts should then be prepared.

7.2 Mobilize political commitment at various levels and mobilize/ensure resources

The success of any public health programme, particularly programmes aimed at elimination or eradication depends on high political commitment and adequate resources. Unfortunately, yaws has not received sufficient priority or policy support. Hence, strong policy and administrative support and professional commitment from health staff will have to be ensured till the goal is achieved. A periodic advocacy meeting with the policy-makers and stakeholders focussing on the availability of cost-effective interventions and stressing the fact that the disease is eradicable with some efforts and resources is essential.

7.3 Build partnership and intersectoral collaboration

There are very few NGOs or members of the private sector that are supporting the yaws eradication programme. National governments and the World Health Organization (WHO) should identify partners from other relevant sectors and advocate for support and involvement of partners so that the goal of eradication can be achieved.

7.4 Build capacity (training and logistics)

Considering that yaws is localized and the number of annual new cases is comparatively small, the best approach will be to use existing health
infrastructure and identify staff in the general health system at all levels, including village health workers/community volunteers, and train them to work primarily for the yaws programme. They should be responsible for planning, supervision and monitoring of the yaws programme activities, including active case detection, prompt treatment of cases and contacts, ensuring timely supply of drugs and equipment and mobilization of resources from the Central and local governments.

Medical officers and, health workers should be imparted training to detect cases and provide treatment to them and their contacts. They should also maintain appropriate clinical and treatment records. Training material for each category of health personnel has to be developed.

7.5 Mobilize community (advocacy and IEC activities)

The successful implementation of the programme will be dependent on community involvement and support. This should be mobilized through advocacy with local community leaders and IEC initiators targeting key groups such as the media as well as the general public.

All areas identified as yaws-endemic should be targeted for community awareness to promote self-reporting and availing of free treatment at all health facilities.

Community awareness should be linked to training of staff and availability of services.

Use of case recognition cards, posters/billboards in local languages and messages conveyed by word-of-mouth means and traditional methods such as folk songs should be prepared and used.

The involvement of influential persons such as local community leaders, religious leaders, teachers, healers and health workers, grassroot-level workers of other departments including education, forests and revenue would help in case-finding, self-reporting and seeking treatment.
7.6 Plan and carry out active case-finding and treatment campaigns ("search and treat" missions) at least once annually

Case-finding campaigns conducted through house-to-house searches by various teams should be initiated every six months during the same months. Diagnosis will be based on clinical finding using the case definition as defined under “diagnosis and treatment”.

In India, in high endemic states yaws surveillance mobile teams are supporting the national programme manager in planning, training and monitoring implementation of programme activities at the provincial and district levels. Similar teams may be established in other countries.

Provision and extensive use of coloured pictorial recognition cards is a very useful tool for use by all those involved in case detection. Wherever possible, searches could be repeated once in six months. One search could be timed immediately after the rainy season. At least 80% of the enumerated population or 80% of all households should be examined.

7.7 Treatment of cases and contacts

The injection Benzathine penicillin (long-acting) is the drug of choice. A single, intramuscular dose of 1.2 million units is adequate for both cases and contacts. Children below 10 years of age should receive half the dose. Separate sterile syringes and needles for each injection such as disposables/auto-destruct syringes have to be used.

In case of penicillin-sensitive persons, the following drugs are recommended:

Erythromycin 500 mg four times daily for 14 days, or tetracycline 500 mg four times daily for 14 days. Children should receive erythromycin.

The cases have to be treated on detection by health worker/supervisor at the nearest health facility or, if feasible, at the community level. Though anaphylaxis to penicillin has been reported to be extremely rare in the communities where yaws is prevalent, the programme should be prepared to deal with such a reaction. All household contacts and other contacts such as schoolmates, playmates and neighbours also have to be treated.
7.8 Provide supportive supervision and monitor activities

An effective monitoring and supervision mechanism should be established to support the peripheral workers and review their activities. The supervision should be supportive and should include on-the-job training.

The establishment of a high-level National Task Force (NTF) would be very useful for advocacy, resource mobilization, undertaking periodic reviews and for monitoring the progress in implementation and to advise on annual plans of action. The NTF should meet at least once a year to give directions to the national programme.

A simplified information system integrated with the general health service should be developed and followed. Prompt action on feedback from higher levels has to be ensured.

7.9 Carry out surveillance and operational research

Yaws should be included in the integrated disease surveillance programme in the affected countries. Operational research should be considered an essential requirement for monitoring the progress as well as improving the programme efficiency related to activities such as case-finding, treatment, disability prevention/care etc.

7.10 Organize external appraisals and validation missions followed by certification

Once a country attains the zero new case level, a mechanism to validate the zero case status should be undertaken annually through expert appraisals for three years. If this status is maintained for three years, the country should consider certification of eradication with technical assistance from WHO. An external team should carry out independent evaluation through field visits and record reviews in order to validate the progress, and certification should follow.

For purposes of certification, a study on sero-positive cases among children would be a requirement. Sero-survey in children less than five years old is recommended to demonstrate evidence of non-transmission. However, results of the sero-survey should be carefully interpreted in view of the concomitant presence of congenital syphilis.
Indicators and targets

The indicators for monitoring progress would include:

- Proportion of villages in endemic districts which undertook case-finding activities;
- Number of new cases detected;
- Proportion of new cases treated among those detected, and
- Proportion of contacts treated.

8. Budget requirement: 2006-2010

A sum of US$ 3.58 million is the estimated requirement for achieving yaws eradication in SEA Region, with the following break-up:

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<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Indonesia</th>
<th>Timor-Leste</th>
<th>India</th>
<th>Regional</th>
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<tbody>
<tr>
<td>1.</td>
<td>Operational costs for implementation of activities</td>
<td>12 provinces = 800 000</td>
<td>13 districts = 100 000</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2.</td>
<td>Drug costs – for treatment of 4000 annual new cases and their contacts @ approx 10 contacts per index case</td>
<td>1 000 000</td>
<td>20 000</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>3.</td>
<td>Capacity building and training of health staff in the endemic areas</td>
<td>500 000</td>
<td>30 000</td>
<td>50 000 STP - 18 mm = 200 000</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Advocacy &amp; IEC activities targeting key groups and communities in the affected areas</td>
<td>600 000</td>
<td>30 000</td>
<td>80 000</td>
<td>50 000</td>
</tr>
<tr>
<td>5.</td>
<td>Operational research</td>
<td>50 000</td>
<td>10 000</td>
<td>30 000</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2 950 000</td>
<td>190 000</td>
<td>160 000</td>
<td>250 000</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>3 585 000</td>
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(All figures in US$)