Report of a global meeting on yaws eradication surveillance, monitoring and evaluation

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World Health Organization

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Abbreviations

DPP	dual path platform (treponemal and non-treponemal) test
IDM	Innovative and Intensified Disease Management
IU	implementation unit
MDA	mass drug administration
NTD	neglected tropical disease
PCR	polymerase chain reaction
RPR	rapid plasma reagin test
RDT	rapid diagnostic test
TCT	total community treatment
TPHA	*Treponema pallidum* haemagglutination assay
TPPA	*Treponema pallidum* particle agglutination assay
TTT	total targeted treatment
WHO	World Health Organization

Executive summary

Background

Yaws is a neglected tropical disease (NTD) that affects predominantly children aged under 15 years (peaking at 6–10 years). The disease occurs in remote communities in the African, South-East Asia and Western Pacific regions of the World Health Organization (WHO). There are no recent data from the WHO Region of the Americas, and plans are under way to assess the situation in order to verify interruption of yaws transmission or otherwise.

Yaws is transmitted from person to person. The WHO strategy to eradicate the disease (also known as the Morges Strategy) recommends mass treatment with a single dose of azithromycin to populations living in communities where the disease is endemic. The number of rounds required to interrupt transmission is not yet determined. Rapid syphilis tests (RDT [rapid diagnostic tests] and DPP [dual path platform (treponemal and non-treponemal) tests]) can be used to test symptomatic as well as asymptomatic individuals in order to confirm a clinical diagnosis and the status of yaws endemicity. Polymerase chain reaction (PCR) technology is also available to definitively confirm yaws in swabs taken from lesions and to determine any mutations that confer resistance to azithromycin.

WHO has produced two key documents to guide the eradication of yaws: (i) guidance for programme managers; and (ii) guidelines for the verification of interruption of transmission and certification of countries. WHO and EMS, a pharmaceutical company in Brazil, have signed an agreement to collaborate in the eradication of yaws. EMS has pledged to donate 150 million tablets of azithromycin for the next 5 years, starting 2018.

A two-day meeting was held at WHO headquarters in Geneva, Switzerland focused on surveillance, surveys, and monitoring and evaluation in the context of yaws eradication. The meeting also drew on the vast experiences of WHO's eradication and elimination programmes (dracunculiasis, human African trypanosomiasis, lymphatic filariasis, and trachoma).

Objectives and expected outputs of the meeting

1. To develop protocols for surveys and mapping:
    - confirming the presence of the disease in countries not currently reporting cases;
    - determining the extent of the disease and guiding mass drug administration (MDA) in countries currently reporting cases (or where mapping still confirms cases); and
    - verifying the interruption of transmission.
2. To review recording and reporting forms for routine surveillance.

3. To plan the implementation of mass treatment in endemic countries.

Meeting procedures

The meeting was attended by national yaws programme officers from selected endemic countries, experts on yaws and WHO staff. Annex 1 contains the meeting agenda and Annex 2 lists the participants. The meeting was conducted in English, with presentations and discussions as follows:

- Country experiences in the implementation of the Morges Strategy
- Experiences of other WHO programmes on eradication (dracunculiasis and poliomyelitis) and elimination as a public health problem (human African trypanosomiasis, lymphatic filariasis and trachoma)
- Research findings on yaws epidemiology, mapping and survey methodologies
- Tools and procedures for yaws surveillance in the context of eradication.

Total community treatment issues

The participants discussed the minimum number of rounds of total community treatment (TCT) needed to interrupt transmission. It was noted that the experience of Papua New Guinea in implementing the Morges Strategy seemed to suggest that one round of TCT followed by 6-monthly resurveys and total targeted treatment (TTT) was insufficient to interrupt transmission on Lihir Island,[1] partly due to cases occurring among people who were not treated during TCT. Migration between Lihir Island and elsewhere in Papua New Guinea may also have contributed to ongoing transmission. As a result, the number of rounds of TCT required to interrupt transmission remains a key research question. Robust and responsive ongoing surveillance may also be instrumental in interrupting transmission. As per the TCT reports from Papua New Guinea, the rate of treatment coverage of 84% was less than the minimum threshold of 90% as recommended in the Morges Strategy.

Another pilot study in Ghana suggested that one round of TCT in a sub-district with a population of 16 287 and treatment coverage of 89% had a significant impact on transmission after 12 months, but resurveys or active surveillance were not implemented as was done in Papua New Guinea.

[1] Mitjà O, Godornes C, Houinei W, Kapa A, Paru R, Abel H, et al. Re-emergence of yaws after single mass azithromycin treatment followed by targeted treatment: a longitudinal study. Lancet. 2018;391:1599–1607. doi:10.1016/S0140-6736(18)30204-6.

Implementation units, endemicity mapping and criteria for initiating TCT

The Morges Strategy recommends initial TCT of an endemic community with at least one confirmed case of yaws to ensure a minimum treatment coverage of 90%, followed by resurveys and implementation of either TCT or TTT. This recommendation is based on assumptions derived from historical evidence that high coverage of mass treatment with injectable long-acting penicillin during 1950–1960 reduced the prevalence of yaws in some areas from 30% to < 0.05%, and that high treatment coverages everywhere with persistent resurveys would achieve eradication.

The Morges Strategy focuses on the community as one implementation unit (IU). However, this approach can be expensive as all communities have to be surveyed and mapped for TCT and follow-up TTTs and/or TCTs applied to the endemic units. This issue was discussed and the following recommendation was proposed:

- To minimize the cost of and improve the benefits of covering more than one endemic community with TCT, the IU can be redefined as a geographical area with a population ranging between 20 000 and 50 000.

The minimum threshold for the number of confirmed cases that would trigger TCT or TTT was discussed but no agreement on this threshold was reached.

If ongoing clinical surveillance at health facilities indicates the possibility of yaws suspected cases, this should trigger initiation of rapid assessments using point-of-care tests (RDT +/− DPP) to facilitate active case-finding. Other triggers to initiate such assessments could include unusually high rates of sero-positivity among blood donors and antenatal women tested for syphilis at sentinel sites.

- This approach could be especially useful for countries or areas with unknown status of yaws.

- Standard survey protocols are being developed for known endemic countries and countries of unknown endemicity status.

Surveillance indicators and case definitions

Core indicators were discussed and revised according to the surveillance tools presented. It was agreed that countries initiate a central registry and a monthly reporting form indicating suspected, probable (added at this meeting) and confirmed yaws cases.

Case definitions were updated to include a probable case:

- **Suspected case**: a person with a history of residence in an endemic area (past or present) who presents with clinically active yaws-like lesions.

- **Probable case**: a suspected case with a positive rapid treponemal point-of-care test, i.e. both treponemal and control lines visible.

- **Confirmed case**: a suspected or probable case that is both treponemal and non-treponemal positive on rapid DPP test[1] and/or positive PCR.

Laboratory issues

The availability of point-of-care tests and PCR testing facilities remains a critical issue for all countries.

Other cross-cutting issues

Yaws has been earmarked for eradication and should therefore be made a notifiable disease in all countries. The experience of the dracunculiasis eradication programme suggests that countries require ongoing advocacy from WHO and other international community partners both within and outside the