



ERADICATION OF YAWS

Surveillance, monitoring and evaluation

A manual for yaws eradication
programme managers

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**World Health
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External experts

Nsiire Patrick Agana, National Yaws Eradication Programme, Ghana Health Service, Accra, Ghana

Henri Assé, National Buruli Ulcer Control Programme, Ministry of Health and Public Hygiene, Abidjan, Côte d'Ivoire

Ron Ballard, Centers for Disease Control and Prevention (retired), Atlanta, United States of America

Belen Dofitas, Department of Medicine, Philippine General Hospital, Manila, Philippines

Emma Harding-Esch, London School of Hygiene & Tropical Medicine, London, United Kingdom

Wendy Houinei, Ministry of Health, Port Moresby, Papua New Guinea

Lucy John, Ministry of Health, Port Moresby, Papua New Guinea

Irma Surya Kusuma, Ministry of Health, Jakarta, Indonesia

Cynthia Kwakye, National Yaws Eradication Programme, Accra, Ghana

Michael Marks, London School of Hygiene & Tropical Medicine, London, United Kingdom

Eric Mooring, Harvard T.H. Chan School of Public Health, Boston, United States of America

Earnest Njih Tabah, Ministry of Public Health, Yaoundé, Cameroon

Chandrakant Revankar, WHO Regional Office for South-East Asia (retired), New Delhi, India

Nani Rizkiyati, Ministry of Health, Jakarta, Indonesia

Ade Erma Supriyatin, Ministry of Health, Jakarta, Indonesia

Alphonse Um Boock, Fairmed, Yaoundé, Cameroon

Lasse Vestergaard, Department of Infectious Disease Epidemiology and Prevention, Copenhagen, Denmark

WHO staff

Kingsley Asiedu, Global Yaws Eradication Programme, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Gautam Biswas, Preventive Chemotherapy and Transmission Control, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Daniel Argaw Dagne, Innovative & Intensified Disease Management, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Christopher Fitzpatrick, Strategy Development and Implementation Coordination, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Lise Grout, Innovative & Intensified Disease Management, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Sarabhbh Jain, Leishmaniasis Programme, Innovative & Intensified Disease Management, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Jonathan King, Global Programme to Eliminate Lymphatic Filariasis, Preventive Chemotherapy and Transmission Control, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Pamela Mbabazi, Preventive Chemotherapy and Transmission Control, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Sally-Ann Ohene, Technical Units, WHO Country Office in Ghana, Accra, Ghana

Gerardo Priotto, Human African Trypanosomiasis Programme, Innovative & Intensified Disease Management, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Dieudonné Sankara, Dracunculiasis Eradication Programme, Preventive Chemotherapy and Transmission Control, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Anthony Solomon, Trachoma Elimination Programme, Preventive Chemotherapy and Transmission Control, WHO Department of Control of Neglected Tropical Diseases, Geneva, Switzerland

Fasihah Taleo, WHO Country Office in Vanuatu, Port Vila, Vanuatu

Alexandre Tiendrebéogo, Regional Programme of Control of Neglected Tropical Diseases, WHO Regional Office for Africa, Brazzaville, Congo

Harish Verma, Clinical Trials and Research, WHO Department of Polio Eradication, Geneva, Switzerland

Core writing and review group

Kingsley Asiedu, Lise Grout, Michael Marks, Agana Nsiire, Chandrakant Revankar.

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Glossary

The definitions given below apply to the terms used in this document. They may have different meanings in other contexts.

General WHO concepts of disease control, elimination and eradication (1)

Control: Reduction of disease incidence, prevalence, intensity, morbidity and/or mortality to a locally acceptable level as a result of deliberate efforts; continued interventions are required to maintain the reduction. Control may or may not be related to global targets set by WHO.

Elimination as a public health problem: A term related to both infection and disease, defined by achievement of measurable targets set by WHO in relation to a specific disease. When reached, continued action is required to maintain the targets and/or to advance interruption of transmission. Documentation of elimination as a public health problem is called **validation**.

Elimination (interruption of transmission): Reduction to zero of the incidence of infection caused by a specific pathogen in a defined geographical area, with minimal risk of reintroduction, as a result of deliberate efforts; continued action to prevent re-establishment of transmission may be required. Documentation of elimination of transmission is called **verification**.

Eradication: Permanent reduction to zero of the worldwide incidence of infection caused by a specific pathogen as a result of deliberate efforts, with no risk of reintroduction. Documentation of eradication is called **certification**.

General WHO concepts of surveillance, monitoring and evaluation (2)

Evaluation: Periodic, rigorous and independent assessment of information about programme activities, processes and outcomes to make judgements about programme effectiveness and inform decisions about future programme development. It requires consideration of inter-programmatic and intersectoral engagement.

Impact indicators: Indicators that measure the extent to which the overall objectives of the programme are being achieved in terms of health status and financial risk protection.

Input indicators: Indicators that measure the resources needed to implement the intervention; they include trained personnel, finance, standards and guidelines, communication facilities, forms for surveillance, computers, medicines, diagnostics, stockpiles for emergency response and any other logistics as deemed necessary.

Monitoring: Regular gathering and use of data on programme implementation (weekly, monthly, quarterly or annually) to measure progress towards programme/project objectives through **tracking activities** conducted, **resource utilization** and the **outputs generated**; programme outcomes and impacts may also be included.

Outcome indicators: Indicators that measure the effect of interventions on programme enabling factors, disease risk factors and behaviours, among others.

Output indicators: Indicators that measure whether planned NTD programme activities and operations are actually occurring as intended; these are indicative of service availability, accessibility and quality, among others.

Process indicators: Indicators that measure procedural and administrative aspects of a programme that relate to the rate of implementation of planned health interventions which are critical for attaining programme goals.

Surveillance: Ongoing systematic collection, collation, analysis, interpretation and prompt dissemination of data for use in planning and implementation of public health programmes. A communicable disease surveillance system serves two key functions: **early warning** of potential threats to public health and **programme monitoring** functions which may be disease-specific or multi-disease in nature.

WHO-recommended clinical definitions of yaws cases (3)

Rumour of yaws: A person identified by a community member or volunteer with suspicion of yaws.

Suspected yaws case: A person of any age who is or was living in a previously or currently endemic area and who presents with clinical signs consistent with yaws.

Treponemal positive case: A case of suspected yaws with a positive rapid treponemal point-of care test (i.e. both treponemal and control lines visible) or a positive *T. pallidum* haemagglutination assay or *T. pallidum* particle agglutination assay.

Serologically confirmed yaws case: A suspected case confirmed by dual positive serology: in a dual path platform (treponemal and non-treponemal) (DPP) test or a *T. pallidum* haemagglutination or *T. pallidum* particle agglutination assay plus rapid plasma reagin test.

PCR-confirmed yaws case: A case that is positive in a polymerase chain reaction (PCR).

Other WHO-recommended definitions

People with past or current yaws infection

Person with past yaws infection: Someone with DPP results showing a reactive treponemal test and a non-reactive non-treponemal line; may be asymptomatic or symptomatic.

Person with active yaws infection: Someone with positive dual serological tests; may be asymptomatic or symptomatic (the latter being a serologically confirmed yaws case).

Case of infectious yaws: A clinical case (suspected, treponemal positive or confirmed) of yaws that was not treated and could potentially infect other people.

Person with latent yaws infection: Someone with positive DPP results but no current yaws-like clinical symptoms. Among cases that were not treated but healed spontaneously, the disease may enter a latent phase with no lesions.

Origin of infection

Autochthonous or indigenous case: A case in which the infection was probably acquired in the reporting implementation unit (IU).

Internally imported case: A case in which the infection was probably acquired outside the reporting IU but within the reporting country.

Internationally imported case: A case in which the infection was probably acquired outside the country in which it was diagnosed.

Index and contact

Index case: The first confirmed yaws case in a specified geographical area (village, district or country) identified as the origin of one or more secondary cases. The epidemiological characteristics trigger additional investigations of active cases or infection.

Index village: A village in which an index case is found.

Contact: A person who lives with or comes into close, frequent contact with a person with infectious yaws. For the purpose of yaws eradication, contacts are household members, schoolmates or close playmates.

WHO-recommended tests for yaws diagnosis

Yaws rapid diagnostic test (RDT): A rapid diagnostic test for the detection of treponemal antibodies in a finger-prick blood sample (4).

Yaws RDT result:

- **Positive:** The RDT for yaws is considered positive when both the treponemal and the control lines are visible.
- **Negative:** The RDT for yaws is considered negative when only the control line is visible.
- **Invalid:** The RDT for yaws is considered invalid if the control is not visible, regardless of the result of the treponemal line.

Dual path platform (treponemal and non-treponemal) (DPP) test: A test for simultaneous detection of treponemal and non-treponemal antibodies in a finger-prick blood sample to identify active infection. The trade name of the current test is Chembio Dual Path Platform Syphilis Screen & Confirm Test® (5).

DPP test result:

- **Dually positive/confirmed reactive:** The DPP for yaws is considered dually positive if the three lines (treponemal, non-treponemal and control) are visible.
- **Positive for past infection:** The DPP for yaws is considered positive for past infection if the treponemal and control lines are positive and the non-treponemal line is negative.
- **Non-reactive:** The DPP is considered non-reactive if only the control line is visible.
- **Invalid:** The DPP for yaws is considered invalid if the control line is not visible, regardless of the result on the other lines, or if the control line and the non-treponemal line are visible but the treponemal line is not, in which case, the test should be repeated.

WHO-recommended definitions of treatment outcome

Treatment success (cure): A confirmed yaws case who received a single oral dose of azithromycin (or injection of benzathine benzylpenicillin) that led to complete or partial healing of the clinical yaws-like lesion(s) within 4 weeks of treatment.

Treatment failure (non-response): A confirmed yaws case who received a single oral dose of azithromycin who showed no clinical improvement (persistent skin lesions) 4 weeks after treatment.

Operational WHO-recommended definitions

Evaluation unit: The unit in which yaws endemicity or prevalence will be assessed to trigger a response, i.e. total community treatment (TCT). It is at this level that decisions are made about the optimal treatment strategy. The recommended size of an evaluation unit is a population of 20 000–50 000 people.

Implementation unit (IU): The unit in which the yaws intervention (notably TCT) will be implemented. For yaws, the IU is the same as the evaluation unit, i.e. an administrative unit of 20 000–50 000 population.

Endemicity status

- **Endemic area:** Area in which at least one confirmed autochthonous or indigenous case of yaws has been reported in the past 3 years.
- **Non-endemic area:** Area in which no autochthonous or indigenous yaws case has ever been reported.
- **Previously endemic area:** An area from which yaws cases were formerly reported but from which no cases (no data) have been reported for ≥ 3 years.
- **Area with interrupted transmission:** An area from which yaws cases were previously reported but from which zero confirmed yaws case have been reported in the past ≥ 3 years despite heightened awareness and active clinical and serological surveillance.

Case detection strategy

- **Passive case detection:** Cases are detected during regular health service activities in health centres and clinics. Health workers manage cases and notify district authorities.
- **Active case detection:** Health workers or village health workers screen communities for cases. This is an essential component of a yaws eradication strategy, especially after initial widescale treatment. Active case detection may also be triggered by passive case detection in health facilities.
- Five approaches are available:
 - **House-to-house search:** Health workers or community volunteers visit every house in a community to screen household members for yaws.
 - **School-based:** All children at a school are screened.
 - **Camp-based:** The entire population of a community is screened clinically and/or in a laboratory in a central place.
 - **Index case:** A search is conducted in households, neighbouring households and schools of cases, as applicable.
 - **Incentive-based:** A community health volunteer or other community member receives a financial incentive for each case detected that is confirmed.

Community treatment intervention

- **Total community treatment (TCT):** Treatment of all eligible people in an IU with a single dose of azithromycin (30 mg/kg body weight; maximum, 2 g).
- **Total targeted treatment (TTT):** Treatment of all new cases (including imported cases) and their contacts with a single dose of azithromycin (30 mg/kg body weight; maximum, 2 g).

Classification of countries for certification of interruption of yaws transmission

Group A: Countries in which the endemicity of yaws is currently known

- **Group A1:** Countries that have interrupted transmission, as verified and certified by WHO.
- **Group A2:** Countries that have reported interruption of transmission in recent years, which has not been verified or certified by WHO.
- **Group A3:** Countries in which there is transmission and in which activities to interrupt transmission are to be implemented according to the Morges strategy and the programme managers' guide.

Group B: Countries with a history of yaws in the 1950s but no report since 2000 (current status unknown)

- **Group B1:** Countries in which yaws is not currently present and that will provide comprehensive evidence to support the absence of the disease.
- **Group B2:** Countries that cannot conclude that the disease is no longer present and will plan an assessment.

Group C: Countries with no history of yaws but in which absence of the disease must be certified for the purpose of global eradication

- **Group C1:** Countries with no history of yaws that have been certified by WHO as free of yaws.
- **Group C2:** Countries with no history of yaws that are pending certification by WHO as free of yaws.

1. Introduction

1.1 Yaws disease

Yaws is a non-venereal disease caused by infection with the spirochete *Treponema pallidum* subspecies *pertenue*, which is closely related to the causative agent of syphilis and those of the other endemic treponematoses, bejel and pinta. The disease is endemic in certain areas of the African, Americas, South-East Asian and Western Pacific regions of the World Health Organization (WHO). About 50 million people were treated with a single dose of long-acting penicillin during mass treatment campaigns conducted by WHO and the United Nations Children's Fund between 1952 and 1964, which reduced the prevalence of yaws disease by more than 95%, from 50 million to 2.5 million cases.

Three World Health Assembly resolutions have addressed yaws: WHA2.36 in 1949 (6), WHA31.58 in 1978 (7) and WHA66.12 in 2013 (8). The new road map for 2030 (9) includes the eradication of yaws. It re-emphasizes the importance of integrating neglected tropical diseases (NTDs) into common delivery platforms for several NTDs and, specifically, an integrated approach to the management of skin NTDs, including accelerated surveillance and elimination and eradication.

1.2 Yaws eradication strategy

A new treatment strategy

In January 2012, a randomized controlled clinical trial in Papua New Guinea (10) showed that a single oral dose of 30 mg/kg body weight azithromycin was as effective in treating yaws as the standard injection of benzathine penicillin. Similar results were obtained in a subsequent trial in Ghana (11).

In 2012, WHO held a consultation of yaws experts in Morges, Switzerland, who recommended a new strategy for yaws eradication, referred to as the “Morges strategy” (12). Treatment is based on a single dose of azithromycin. The initial campaign comprises TCT, which involves treating the entire population in an area at risk. This is followed by TTT of cases and contacts to achieve complete interruption of transmission in the area or country. Certification of interruption of transmission is based on the recommendations of an expert group and the visit of an international verification team. The Morges strategy framework was subsequently revised during a meeting of yaws experts in Geneva in 2018 (3) (summarized in *Annex 1*). To achieve eradication, countries must follow the eradication strategy described in *Eradication of yaws. A guide for programme managers* (13) the starting point depending on their current endemicity status. **Fig. 1** illustrates the activities during the different phases of yaws eradication, from planning to post-certification surveillance in yaws-endemic countries until global yaws eradication is achieved. The activities are further described in the eradication guide (13).

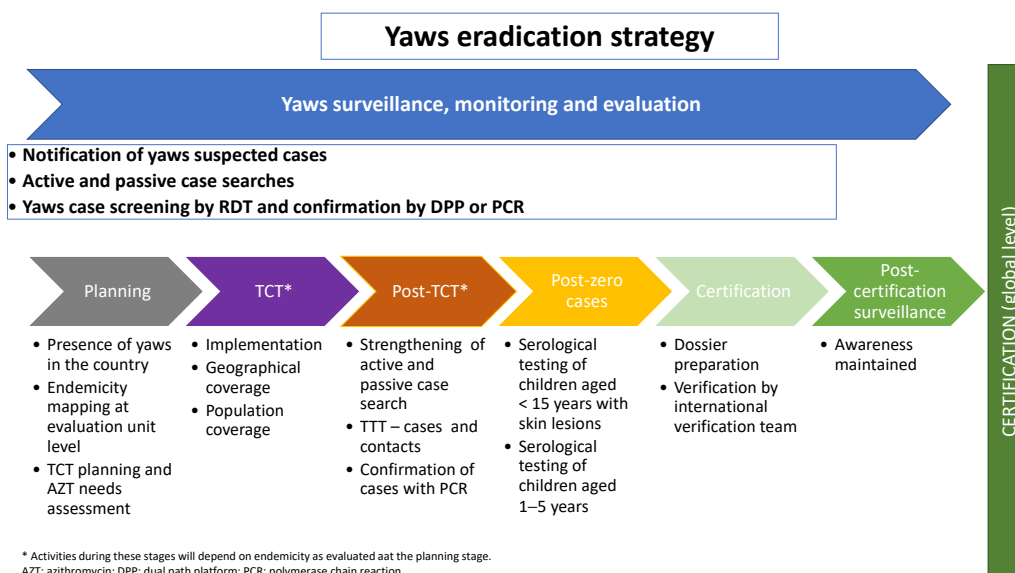


Fig 1. Main activities in the yaws eradication strategy, from planning to certification

1.3 Criteria for interruption of yaws transmission

Three types of criteria are to be met by endemic countries in confirming interruption of transmission.

- **Clinical:** The absence of any report of a new, infectious, confirmed (either serologically or by PCR) indigenous yaws case for 3 consecutive years, supported by high coverage of active surveillance
- **Serological:** The absence of transmission as confirmed by evidence of continuous negative results in serological surveys with a treponemal test for at least 3 consecutive years in asymptomatic children aged 1–5 years in the community
- **Molecular:** The absence of molecular positivity (e.g. by PCR) for *T. pallidum* spp. *pertenue* in a lesion of any serologically confirmed case during the post-zero surveillance period (13).

Endemic countries should ensure that data and records are properly kept to respond to any request during certification, as detailed in *Eradication of yaws. Procedures for verification and certification of interruption of transmission* (14).

1.4 Yaws endemicity status and actions required

The endemicity of countries, areas and territories for yaws was updated in 2019 on the basis of reports received from endemic countries and responses received to the 2017 WHO global yaws survey (Table 1 and Fig. 2).

Table 1. Distribution of countries, areas and territories endemic for yaws by WHO region, 2019

WHO region	Group A1 Interrupted transmission certified	Group A2 Interrupted transmission, pending verification	Group A3 Currently endemic	Group B Previously endemic but current status unknown ^a	Group C2 No history of yaws but to be certified ^a	Total no. of countries, areas and territories ^a
African	0	0	9 ^b	27 ^b	12	48
Americas	0	0 ^c	0	27 (33) ^d	7 (13)	34 (46)
Eastern Mediterranean	0	0	0	1	20 (21)	21 (22)
European	0	0	0	0	53	53
South-East Asian	1	0	2	3	5	11
Western Pacific	0	0	4	14 (19)	9 (14)	27 (37)
European	0	0	0	0	54	54
Total	1	0	15	72 (83)	105 (118)	194 (217)

^a Number of WHO Member States; in parentheses, numbers of countries, areas and territories.

^b Liberia recently reported yaws cases and therefore moved from Group B to Group A3.

^c Ecuador was moved from Group A2 to Group B, as no evidence was available on interruption of transmission. The country has planned surveys to provide evidence of interruption of transmission.

^d Colombia, Guatemala and Haiti recently reported suspected yaws cases but are maintained in group B until they report a confirmed case or cannot demonstrate the absence of transmission despite strengthened surveillance.

The endemicity status of countries is reported in the Global Health Observatory (15).

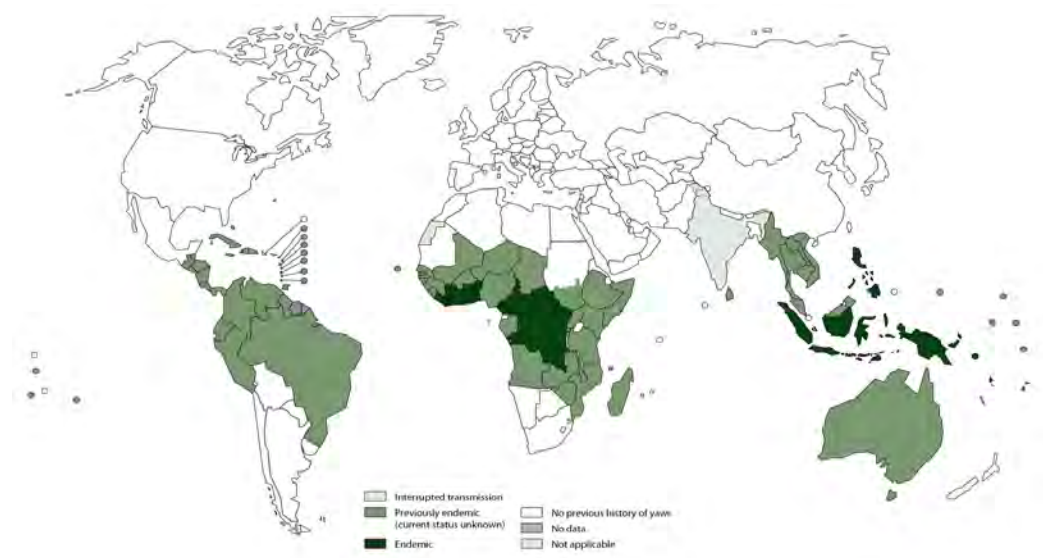


Fig. 2. Geographical distribution of yaws, 2018

The actions required in countries according to their endemicity status are described in the *Eradication of yaws. Procedures for verification and certification of interruption of transmission* (14) and summarized in **Table 2**.

Table 2. Actions required to achieve eradication of yaws in countries according to their current endemicity status

Endemicity status	Actions required for eradication	Equivalent phase in eradication	Group
Previous history of yaws (Group B)	Current status unknown (Group B2)	Assess endemicity by increasing awareness and reviewing past and current records. Conduct active case searches among children aged < 15 years, prioritizing previously endemic areas. Children with skin lesions should be tested serologically.	Assessment and planning
Current endemicity known (Group A)	Ongoing transmission (Group A3)	Assess endemicity by increasing awareness and reviewing past and current records. Conduct active case searches among children aged < 15 years, prioritizing previously endemic areas. Children with skin lesions should be tested serologically.	TCT
		Conduct active case searches among children aged < 15 years, prioritizing previously endemic areas. Children with skin lesions should be tested serologically. Implement the Morges strategy to interrupt transmission, in consultation with WHO.	Post-TCT surveillance and response
	Reported interruption (Group A2)	Confirm interruption of transmission or provide evidence of the absence of disease transmission as per the criteria and dossier template. Provide evidence of maintenance of high awareness about the disease in order to detect any suspected case. Sustain or introduce a reward or incentive to encourage voluntary reporting of rumours (depending on country policy). Summarize all data on yaws case detection and serological surveillance from all sources. Reassess interruption of transmission in a sample of children aged 1–5 years serologically, particularly in areas where yaws was previously endemic.	Post-zero case surveillance
		Submit a dossier to WHO for verification by an international verification team.	Certification

Endemicity status	Actions required for eradication	Equivalent phase in eradication	Group
	Interruption of transmission certified (Group A1)	Maintain high awareness about the disease and a robust community surveillance system to detect any suspected case. Maintain the system of rewards and incentives (if already practised) to encourage voluntary reporting of suspected cases. Report any confirmed case (by DPP positive serology and/or PCR) or otherwise ensure regular reporting to WHO on zero cases. Provide evidence that the country's health and surveillance systems are sufficiently robust to detect any imported yaws case.	Post-certification surveillance
Previous history of yaws (Group B)	Yaws considered to be absent (Group B1)	Confirm interruption of transmission or provide evidence of the absence of disease transmission as per the criteria and dossier template. Provide evidence of activities to maintain high awareness about the disease in order to detect any suspected case. Sustain or introduce a reward or incentive to encourage voluntary reporting of rumours and suspected cases (depending of country policy). Summarize data on yaws case detection and serological surveillance from all sources. Reassess interruption of transmission in a sample of children aged 1–5 years serologically, particularly in areas where yaws was previously endemic.	Post-zero case surveillance
No history of yaws (Group C)	Pending certification (Group C2)	Complete the declaration of status of yaws endemicity and the country dossier. Provide evidence that the country's health and surveillance systems are sufficient to detect any imported yaws case.	Certification
	Certified free of yaws (Group C1)	Maintain high awareness about the disease and a robust community surveillance system to detect any suspected case. Maintain the system of rewards and incentives (if already practised) to encourage voluntary reporting of suspected cases. Report any confirmed case (by DPP positive serology and/or PCR) or otherwise ensure regular reporting to WHO on zero cases. Provide evidence that the country's health and surveillance systems are sufficient to detect any imported yaws case.	Post-certification surveillance

DPP: dual path platform (treponemal and non-treponemal); PCR: polymerase chain reaction; TCT: total community treatment; TTT: total targeted treatment
See definitions in the Glossary

1.5 Objectives and scope of the manual

Surveillance, monitoring and evaluation are integral components of a public health programme. A robust, high-quality system is essential to assess whether the interventions of the national yaws eradication programme are necessary and to measure their impact. The objective of this manual is to provide guidance to countries throughout eradication, in:

- assessing the endemicity of yaws,
- determining the extent and geographical distribution of yaws in order to plan interventions,
- implementing a robust surveillance system for timely detection and notification of yaws cases to trigger the necessary actions,
- monitoring the performance and evaluating the impact of interventions and
- providing evidence of the absence of transmission.

After an overview of the monitoring and evaluation framework, the manual provides detailed information on each of monitoring, surveillance and evaluation.

This manual does not cover planning or organizing yaws TCT (please refer to *Eradication of yaws. A guide for programme managers (13)*), detailed data analysis (please see *Analysis and use of health facility data. Health statistics and information systems (16)*) or preparing the dossier for certification of yaws eradication (described in *Eradication of yaws. Procedures for verification and certification of interruption of transmission (14)*).

2. Monitoring and evaluation framework

Key messages

- Monitoring and evaluation are key to ensuring that yaws eradication programme activities are progressing satisfactorily and to identify gaps, in order to adjust the programme.
- The aim of monitoring is to measure progress towards the objectives of the programme or project by observing resource utilization, activities and outputs.
- Evaluation consists of rigorous, independent, periodic assessment of the relevance, effectiveness and impact of activities in respect of the objectives of the programme.
- Various sources of data should be used: from routine health information systems, health facility surveys, household surveys, operational research, supervision of health services and contextual data.
- The main indicators of impact in yaws eradication are the number of new confirmed cases, the seroprevalence of yaws among children and the number of IUs in which yaws has been eliminated. Indicators of outcomes (coverage of surveillance, TCT or TTT), outputs (active case screening campaigns or TCT conducted), process (training, delivery of commodities) and inputs (financial or human resources) should be monitored and evaluated in all phases of yaws eradication.

Supervision, monitoring and evaluation of yaws eradication activities are essential to assess progress and identify problems for rectification. Once the yaws situation in a country or area has been assessed, plans can be made to ensure the most effective use of resources to eradicate yaws. Plans should be reviewed periodically during implementation to determine whether the activities are achieving the desired outcomes or whether they should be adjusted.

2.1 Definitions of monitoring, evaluation and surveillance

See reference 2.

Monitoring is the regular collection, gathering and use of data on programme implementation (weekly, monthly, quarterly or annually) to measure progress towards programme/project objectives through **tracking activities** conducted, **resource utilization** and the **outputs generated**; programme outcomes and impacts may also be included.

External monitoring is the independent assessment by national or international teams outside the national programme. This activity is usually initiated by a national programme but may be part of a planned international assessment of countries for a specific purpose.

Evaluation is the periodic, rigorous and independent assessment of information about programme activities, processes and outcomes to make judgements about programme effectiveness and inform decisions about future programme development. It requires consideration of inter-programmatic and intersectoral engagement.

Evaluation generally consists of an independent, external, in-depth assessment of activities to determine their efficacy in achieving the set objectives and goals. It may be performed by a national team (e.g. national task force). It may be conducted at various stages of the public health project, depending on what is to be evaluated.

Surveillance is the ongoing systematic collection, collation, analysis, interpretation and prompt dissemination of data for use in planning and implementation of public health programmes. A communicable disease surveillance system serves two key functions: **early warning** of potential threats to public health and **programme monitoring** functions which may be disease-specific or multi-disease in nature.

The process of eradication, surveillance, monitoring and evaluation is illustrated in **Fig. 3**.

Monitoring and evaluation are critical to achieving the goals of national programmes and tracking progress towards the objectives. Once the yaws situation in a country or area has been assessed, plans are made to ensure the most effective use of resources to eradicate yaws. As plans are implemented, they should be reviewed periodically to determine whether the programme activities are achieving the desired outcomes or whether they should be adjusted (**Fig. 3**). “Monitoring” is considered to be conducted during any phase of the eradication strategy, while “evaluation” is used to determine whether a programme should move from one phase to the next.

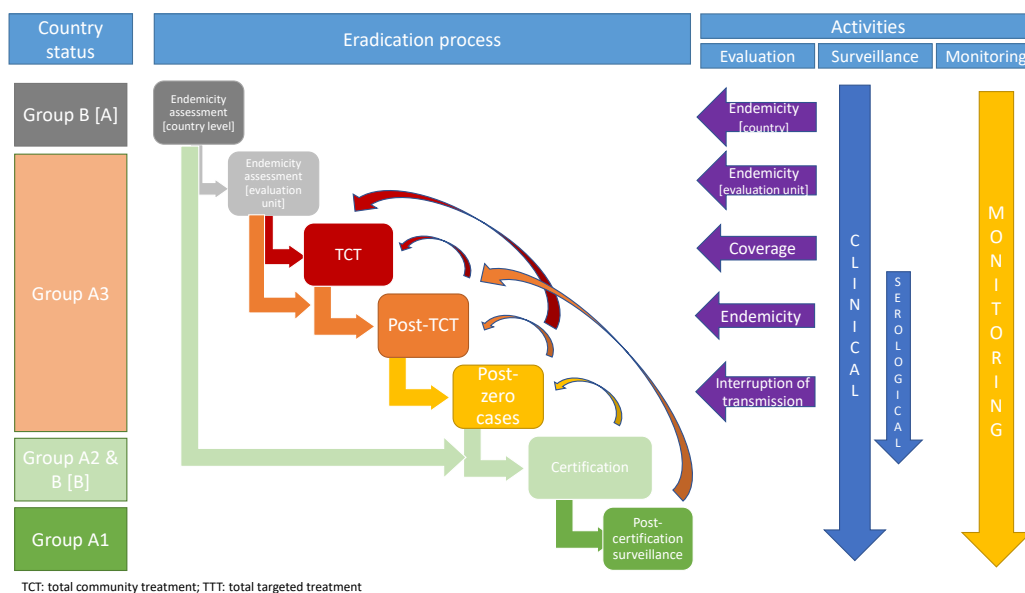


Fig 3. Process of eradication and surveillance, monitoring and evaluation

2.2 Objectives of monitoring and evaluation

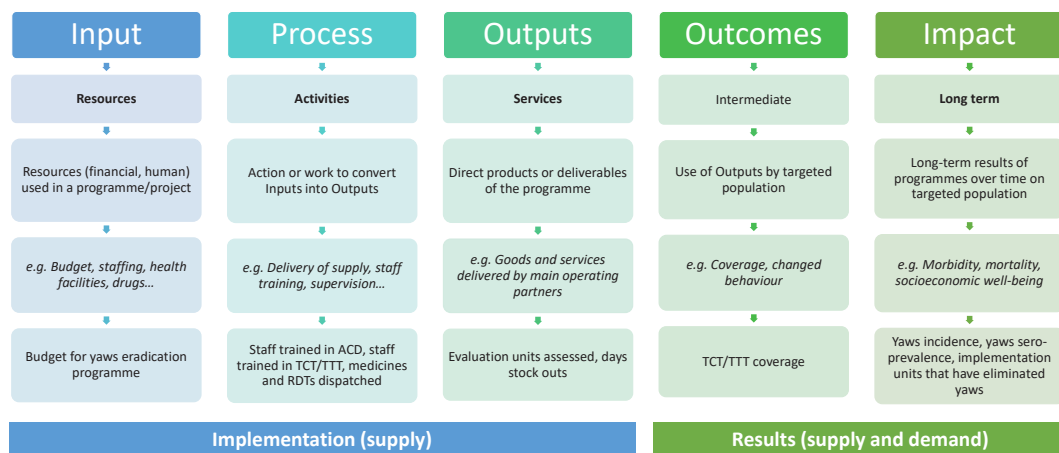
- Regularly assess whether plans are progressing as expected or whether adjustments are required to the scale of the intervention or to the combination of interventions.
- Allocate resources to the populations most in need in order to achieve the greatest possible public health impact.
- Account for the funding received to allow the public, their elected representatives and donors to determine whether they are obtaining value for money.
- Evaluate whether the programme objectives have been met to learn what has worked and what has not, so that more efficient, effective programmes can be designed.
- Advocate for investment in yaws eradication programmes in accordance with the yaws burden in the country or subnational area.
- Measure progress toward yaws eradication.

2.3 Components of a monitoring and evaluation framework

The monitoring and evaluation framework has several components (Fig. 4).

- **Input indicators** are the resources necessary to implement the system. They include trained personnel, finance, standards and guidelines, communication facilities, forms for surveillance, computers, stockpiles for emergency response and any other logistics deemed necessary.
- **Process indicators** are used to monitor implementation of planned activities that are critical for attaining the core functions of surveillance, such as training, supervision and preparation of guidelines and tools.

- **Output indicators** are measures of the immediate results of activities. They include reports on surveillance data, feedback to data providers, the number and proportion of health staff trained and the number and proportion of planned supervisory visits implemented.
- **Outcome indicators** are measures of the quality of the surveillance system and the extent to which the surveillance objectives are achieved. They may include indicators for assessing the usefulness of the system, the completeness of reporting, use of surveillance data for policy and programme decisions and the appropriateness of outbreak response.
- **Impact indicators** are measures of the extent to which the overall objectives of the system are being achieved. They may include changes in the rates of case fatalities from epidemic-prone diseases, changes in morbidity patterns, changes in how health staff use the system and changes in the health-related behaviour of the target population.



ACD: active case detection; RDT: rapid diagnostic test; TCT: total community treatment; TTT: total targeted treatment

Fig. 4. Components of a monitoring and evaluation framework

2.4 Sources of data for monitoring and evaluation

Various sources of data can be used for monitoring and evaluation.

- **Routine health information systems** may cover a number of programmes (notably if activities for NTDs with skin manifestation are integrated), be specific to yaws or be limited to certain activities (e.g. laboratory services, interventions, distribution, surveillance).
- **Health facility surveys and supervision** are usually conducted to determine whether the facilities have the physical and human resources necessary to provide services (especially diagnostic testing and treatment) and may include whether patients receive diagnostic testing and appropriate treatment.
- **Community surveys** usually cover several health interventions, especially for mass drug administration, although yaws-specific surveys are also necessary.

- **Operational research** usually addresses specific questions of relevance to yaws eradication programmes and may be based on household or health facility surveys and include studies of drug resistance.
- **Contextual data** are not collected routinely or during operational research but are useful for further understanding and for explaining changing trends in the yaws burden. They include population censuses and socioeconomic data.

2.5 Indicators used in monitoring and evaluation

A list of the main indicators for monitoring and evaluating both progress towards the achievement of eradication and the performance of activities of the eradication programme is proposed in **Annex 2**. They cover the spectrum of indicators, from input to impact, and the different aspects of an eradication programme, from strengthened surveillance to efficient mass drug administration.

3. Yaws surveillance

Main messages

- In order to capture all suspected cases, yaws should be a notifiable disease.
- Yaws surveillance should be strengthened and adapted to the yaws eradication phase and its objectives.
- Passive detection of yaws cases at health facility is not sufficient.
 - Community health workers should be trained in active search, recognition and notification of any rumour of yaws.
 - All communities or schools in endemic or potentially endemic areas should be screened regularly, if possible at the same time as other skin NTDs.
- Health workers should be trained in yaws case definition.
- All suspected yaws cases should be confirmed with serological or PCR tests.
- All suspected, treponemal positive and confirmed yaws cases should be recorded in the yaws case register (Yaws/003, **Annex 4**) and reported to national level and to WHO.
- Detection and confirmation of yaws cases should trigger action at community level (TCT or TTT).
- Data on yaws cases should be analysed regularly and disseminated to monitor progress towards yaws eradication, to inform evidence-based action and to guide movement from one phase of eradication to the next. Feedback should be provided to the workers in surveillance systems at different levels, and information should be disseminated regularly to the main partners.

As the goal is eradication of yaws, the quality and sensitivity of the surveillance system are key aspects for certification. As no single piece of evidence would be sufficient to prove the absence of yaws transmission, national yaws eradication programmes must provide extensive evidence that the surveillance system could detect even a single case.

Surveillance is part of monitoring and may evolve during yaws eradication to meet various objectives, as summarized in **Annex 3**.

3.1 Surveillance of communicable diseases

Surveillance of communicable diseases requires continuous, systematic collection, analysis and interpretation of the data necessary for planning, implementation and evaluation. Surveillance is essential for early warning of possible outbreaks, to document the impact of an intervention or track progress towards specified goals and to monitor and clarify the epidemiology of health problems in order to set priorities and to inform public health policy and strategies (17).

The components of a surveillance system include:

- health facilities for collection of primary data based on established case definitions and structured reporting forms (paper or electronic);
- officially mandated routes and frequencies of reporting, collation and monitoring at different levels of the designated health system;
- defined triggers for public health action;
- regular assessment of data quality to ensure completeness, timeliness, accuracy, regularity and reliability;
- regular analysis of collated data for trends over time and space;
- continuous monitoring and evaluation to assess the impact of the interventions; and
- regular feedback to the main workers in the surveillance and response system.

Surveillance is often represented as a continuous cycle, from setting objectives to collecting and analysing data, giving feedback and reassessing the objectives (**Fig. 5**). Without an adequate, robust surveillance system, diseases cannot be controlled, eliminated or eradicated (18).

3.2 Core functions of a surveillance system

The core functions of a surveillance system are as follows.

- **Case detection** is the identification of cases through a public or formal health system, private health systems and community organizations. Case definitions and a functioning rumour verification system are vital.
- **Case confirmation** requires epidemiological and laboratory capacity, which is enhanced by improved referral systems, networking and partnerships, to ensure adequate capacity for specimen collection, packaging and transport to designated laboratories. Internal and external quality control are important elements of case confirmation by ensuring the validity and reliability of test results.

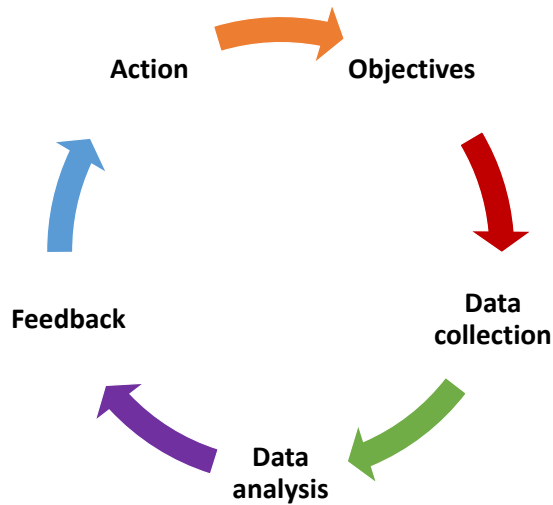


Fig 5. Yaws surveillance cycle

- **Case registration** is the recording of identified cases. A standardized register is required to record minimal data elements on targeted diseases and conditions.
- **Reporting** is the means by which surveillance data move through the surveillance system from the point at which they are generated. Various reporting systems may be available, depending on the type of data and information being reported, the purpose and urgency of transmitting the information and where the data is to be reported. National guidelines for reporting should be followed.
- **Data analysis** and interpretation should be conducted regularly and promptly to guide public health actions. Capacity for routine data analysis and interpretation should be established and maintained for both epidemiological and laboratory data.
- **Response** is possible only if the public health surveillance system provides appropriate data for a public health response and control.
- **Feedback** is an important function of all surveillance systems. Appropriate feedback can be provided through mechanisms such as supervisory visits, review meetings, newsletter and bulletins. The provision of feedback can be monitored at different levels of surveillance, with evaluation of the quality of the feedback provided and implementation of follow-up actions.

3.3 Objectives of surveillance for yaws

The objectives of surveillance for yaws depend on the phase of the eradication strategy (Table 3).

Table 3. Objectives of yaws surveillance according to the phase of yaws eradication

Yaws eradication phase	Surveillance objective
Assessment of endemicity for planning	Identify endemic evaluation units and TCT in all units.
TCT	Monitor impact of TCT by determining prevalence before and after. Detect treatment failure(s).
Post-TCT	Identify residual pockets of yaws transmission and trigger TTT or TCT. Detect treatment failure(s).
Post-zero cases (for at least 3 consecutive years)	Collect epidemiological evidence of the absence of yaws transmission.
Verification and certification (national)	Collect evidence of the absence of yaws transmission.
Post-certification	Detect any yaws cases.
Certification (global)	End of yaws surveillance.

TCT: total community treatment; TTT: total targeted treatment

Data collected during yaws surveillance enable movement among phases of yaws eradication.

3.4 Detection and confirmation of yaws cases

The eradication strategy has four implementation steps that comprise various activities, as shown in Fig. 5 and described below.

3.4.1 Yaws as a reportable or notifiable disease

As yaws is targeted for eradication, it should be a notifiable disease in all endemic countries, and surveillance should be comprehensive and of high quality. This implies that capacity should be built in all health facilities, both public and private, to report all suspected, treponemal positive and confirmed yaws cases. Interventions may, however, initially be focused in endemic areas because of resource constraints. In previously endemic countries, reference laboratories should be identified to confirm yaws cases, or WHO-recommended laboratories can be used.

Surveillance should be over the long term, until global certification of yaws eradication is achieved, and continuous, maintained throughout the year and in all phases of yaws eradication. A yaws surveillance system should be:

- **permanent:** Surveillance should be sustained in order to detect any increase or resurgence of yaws and should be continued even when the target of elimination is reached, as long as global eradication has not been achieved.
- **continuous:** Surveillance should be sustained throughout the year.

- **comprehensive:** The aim of surveillance should be to capture all cases in order to ensure the reliability of the data used to calculate indicators at national and subnational levels to support eventual certification. Surveillance at sentinel sites cannot capture the full burden of the disease.

As for the surveillance of all communicable diseases, zero reporting, i.e. reporting of the absence of cases of a disease under surveillance, is essential to demonstrate the absence of transmission and to ensure that there are no silent endemic foci and to certify interruption of transmission of yaws.

In endemic countries, timely reporting of all yaws cases to public health authorities is essential for effective yaws eradication activities, including early response (e.g. TCT or TTT). Data should also be collected from private health facilities. Timely notification will trigger responses such as TTT and therefore increase the speed of interruption of transmission.

Reporting is likely to be far more complete when notification of a disease is mandatory in a country and robust reporting systems are in place than when it is mainly voluntary. An exhaustive surveillance system in which all health workers and units must report, with notification of all suspected, treponemal positive and confirmed cases, is mandatory to claim interruption of transmission.

3.4.2 Strategies for detecting yaws cases

In routine disease control programmes, passive surveillance systems are usually adequate to meet programme demands, despite their limitations. For diseases targeted for eradication, however, such as yaws, every infectious case in every village or hamlet must be counted to interrupt transmission. The search for yaws cases should therefore be both active and passive.

Active case searching: As yaws is a focal disease, occurring in poor areas with limited access to health care, specific outreach activities are required to identify cases. In active case searching, trained health workers systematically screen the populations of communities and villages at risk to find, diagnose and treat yaws cases. Active case searching is a component of a yaws eradication strategy that helps to reduce transmission by shortening the infectious period of cases. Active detection of yaws cases in the communities at risk should be integrated with detection of other NTDs with skin manifestations. Active case searching can be conducted with various approaches.

- House-to-house searches are conducted by trained health workers and village volunteers, who visit homes in endemic areas to detect cases. Because of the high cost of this approach, it may be planned as focal case detection once a confirmed case is detected or reported from a village. It can be integrated with other health activities, such as family planning, vaccination, nutrition, school health and activities for other skin NTDs, such as leprosy.
- The “camp” approach involves organizing sites in communities defined as endemic for yaws at which mobile teams of health workers screen for skin diseases. The community is informed about the visit of the team, its purpose and the time, date and place. This approach is sensitive for detecting yaws cases and should include schools if they are in session. It is the preferred approach during the planning and TCT phases of yaws eradication and can include activities for other skin NTDs.

- In a school approach, all schoolchildren are screened for skin lesions and tested with an RDT or DPP. School authorities are informed of the visit of the team, its purpose, time, date and place. This is a sensitive means of detection because most yaws cases occur in school-aged children (6–15 years). It is the preferred approach during the planning and TCT phases and can be integrated with activities for other skin NTDs. In endemic areas, however, children who do not attend school may be at higher risk of yaws than those who do and community searches should also be conducted.
- The index case approach includes searching for yaws cases among immediate contacts (household, neighbours, school and playmates). It is the preferred method for active case searching in endemic areas and from the post-TCT phase. It should be conducted systematically from TCT onwards, with TTT.
- The incentive approach involves giving community volunteers a financial incentive to report cases that are eventually confirmed. The method may be particularly useful in areas of low endemicity, in the post-zero phase or in combination with the above methods. It may result in a snowball effect for finding yaws cases. The method nevertheless requires meticulous supervision and monitoring to prevent misuse of funds.

Passive case searching: In passive case searching or case detection, patients seek care for their illness in health facilities. Cases of suspected yaws in people who present voluntarily to a health facility must be confirmed, treated and notified. In general, children with yaws do not seek treatment at health facilities. This approach should also be used for reactive case searching in communities after a confirmed case and for TTT. It should cover both endemic and previously endemic areas and public health facilities at all levels; an effort should be made to cover private health facilities as well. Passive case searching is useful in areas in which community awareness about yaws is high and access to health services is good. The method does not require additional work or resources, as it is part of the health system. Health workers must be trained in case definition. RDTs, azithromycin and recording and reporting tools should be available.

Rumour investigation: The awareness of the community about yaws should be raised and volunteers trained in recognizing the disease so that they can suspect cases and report rumours, thus increasing the sensitivity of case detection.

3.4.3 Definitions of yaws cases and case confirmation

When a surveillance system is established, the event under surveillance must be well defined (see **Glossary**). The definitions given below and the algorithm shown in **Fig. 6** are recommended to ensure uniform case reporting and data management and to facilitate verification and certification. They were agreed at a meeting on yaws eradication held at WHO headquarters (3), where minor revisions were made to the definitions described in previous documents (12–14) for operational purposes.

Rumour of yaws: A person identified by a community member or volunteer with suspicion of yaws.

Suspected yaws case: A person of any age who is or was living in a previously or currently endemic area and who presents with clinical signs consistent with yaws.

Treponemal positive case: A case of suspected yaws with a positive rapid treponemal point-of care test (i.e. both treponemal and control lines visible) or a positive *T. pallidum* haemagglutination assay or *T. pallidum* particle agglutination assay.

Serologically confirmed yaws case: A suspected case confirmed by dual positive serology: in a dual path platform (treponemal and non-treponemal) (DPP) test or a *T. pallidum* haemagglutination or *T. pallidum* particle agglutination assay plus rapid plasma reagin test.

All rumoured cases should be notified to a health facility team. All suspected, treponemal positive and confirmed cases should be treated according to the national protocol and the data reported to the appropriate authorities and to WHO.

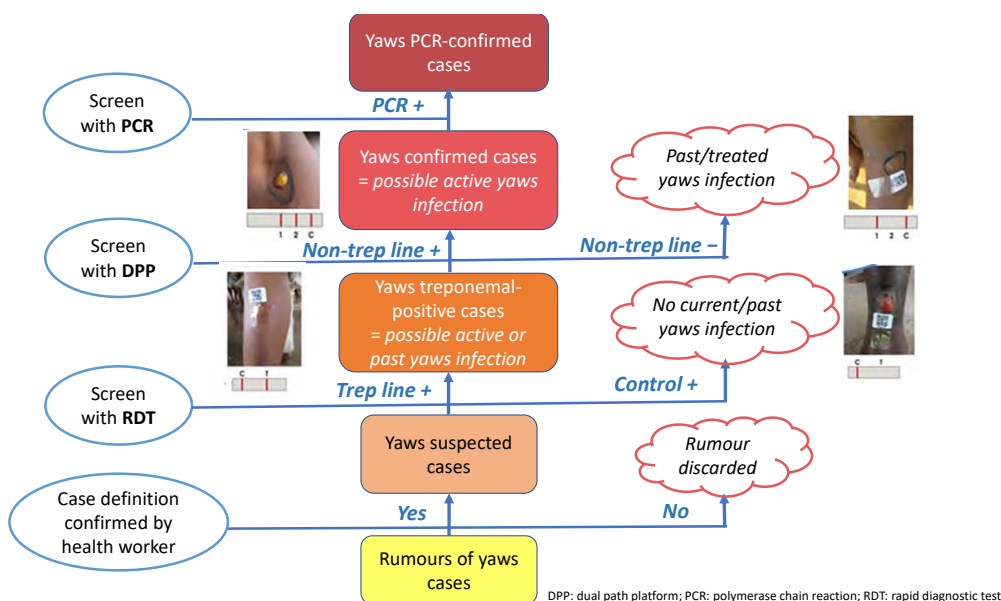


Fig 6. Algorithm for defining yaws cases

3.5 Registration of yaws cases

Forms for recording and reporting data on yaws cases are presented in **Annex 4**.

3.5.1 Registration of rumours after total community treatment

Volunteers in endemic communities should be trained to detect and notify rumours of yaws. Basic information associated with each rumour should be recorded in a village register, so that health workers can locate and confirm the suspected case.

3.5.2 Case registration

Yaws case register: All endemic countries should have a yaws case register. The minimum information to be recorded by health workers at health facilities or during active community screening for each new suspected, treponemal positive and confirmed yaws case is: date of clinical examination, name, age (in years) and gender, contact or relative (to follow up treatment and for targeted treatment, if relevant),

whether autochthonous or imported, results of diagnostic tests (RDT, DPP, PCR) and treatment. Each case should be followed up for 4 weeks after treatment, and the treatment outcome should be recorded.

Yaws investigation form: In countries that were previously endemic for yaws but the current status of which is unknown (Group B2) and in currently endemic countries (Group A3), an investigation form should be filled in for each case, from the post-TCT period until global certification of yaws eradication, in order to document the case and trigger a response. The minimum information should be summarized in the yaws case register. Health workers should record demographic data, clinical history, presentation and serological diagnosis when investigating the case initially and, when more information is available, PCR results, treatment outcome at 4 weeks and actions taken in the community.

Yaws laboratory tests request form: When PCR is requested (in case of treatment failure in the early phases of eradication or systematically from post-zero case to post-certification), a request form should be filled in by the health worker and sent with the specimen to the reference laboratory. On this form, the clinician provides general information about the case, previous tests results and reasons for requesting laboratory confirmation.

Active case detection registers: Active screening must be conducted in the community throughout yaws eradication, when possible for all skin NTDs, and recorded in a specific register. The minimum data on active screening should be: the type of case searching, the number of people targeted and seen, the number of people with skin lesions and the diagnosis. For yaws, the numbers of people tested and positive by RDT and DPP should be recorded.

In general, aggregated data are acceptable at community level. Collection of individual data is left to the discretion of the programme; however, all yaws cases (suspected, treponemal positive and confirmed) should be registered in the yaws case register.

3.6 Reporting of yaws cases and response

All yaws cases should be reported to the authorities, through an electronic system if possible, to ensure timely monitoring and response. Before any data are reported from the field or by health centres and district surveillance units, they should be checked for quality, including reliability, consistency, accuracy and completeness. Delay in reporting should be avoided, especially when suspected yaws cases are to be confirmed by the district surveillance units or by centres before an immediate response.

Reporting of activities should follow a “bottom-up” approach, from community surveillance units to the national yaws eradication programme, on the prescribed forms. Electronic reporting should be used if feasible. **Fig. 7** shows the steps in an illustrative surveillance and response framework, from community (step 1) to national level (step 6). This framework may be used at any phase of eradication but is especially important after TCT. It is based on use of rapid treponemal and non-treponemal tests.

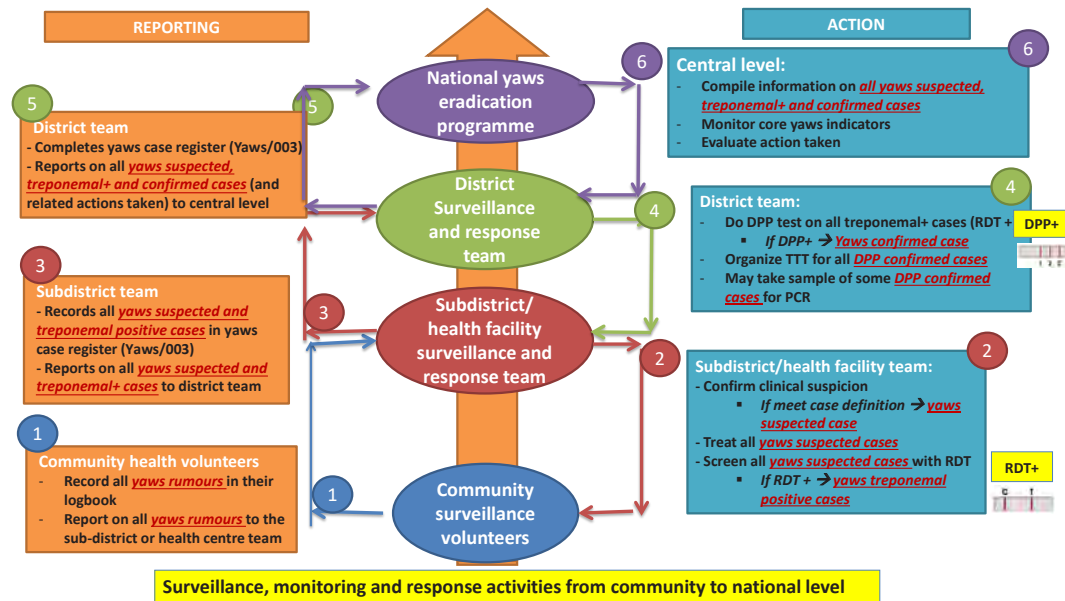


Fig 7. Example of a national yaws surveillance, monitoring and response system

Step 1: Community surveillance volunteers document rumours of yaws and inform the nearest health facility or subdistrict team.

Step 2: The health facility or subdistrict team investigates the rumour, confirms whether it meets the definition of a suspected clinical case with no other obvious etiology, tests the person with an RDT (only rapid treponemal tests are available at this level) and treats them, preferably with azithromycin. If the RDT is positive, the case becomes a treponemal positive case. Suspected cases detected actively or passively by health workers move directly to step 2.

Step 3: The health centre or subdistrict team records information on the case (suspected or treponemal positive) in the yaws case register and notifies the district surveillance team, which maintains DPP tests for case confirmation. Timely notification is important, as the DPP may be negative soon after treatment with azithromycin.

Step 4: The district team confirms treponemal positive cases with DPP (both treponemal and non-treponemal antibodies). If the DPP is dually positive, the case is considered confirmed. Swabs may be taken to request PCR if necessary on the laboratory request form. The response should be TTT, organized to treat at least contacts and neighbouring households or the whole community of the confirmed case as required. The yaws case register should be completed.

Step 5: The district team sends information on all suspected, treponemal positive and confirmed yaws cases and the actions taken to regional or central level.

Step 6: The central level (national programme) ensures that all data are entered in the central yaws case database, monitors indicators, evaluates the action taken by the surveillance team, sends feedback and advises on further action.

Ideally, anonymized individual data recorded in the yaws case register should be reported electronically to higher levels. Case data can be reported in the module available on the WHO integrated data platform or can be imported into any national health information system, notably if the country uses (District Health Information Software 2) DHIS2 software. If the country cannot use an electronic yaws case register during planning and TCT, monthly reporting forms can be used to report aggregated information, such as the numbers of:

- yaws cases (suspected, treponemal positive, serologically confirmed and PCR-confirmed), disaggregated by age and gender;
- yaws cases tested and positive by RDT, DPP and PCR;
- yaws cases treated with azithromycin;
- communities visited for active case detection and number of endemic communities;
- communities visited for TCT; and
- people targeted and treated during TCT, disaggregated by age and gender.

A monthly reporting form also ensures zero reporting from areas that are not (or no longer) endemic for yaws.

3.7 Assessment of the quality of data

Evidence-based decisions on yaws eradication can be made only if good-quality data are reported through the surveillance system. The quality of data must be assessed before they are analysed and interpreted, as the conclusions may be biased by poor data quality. The WHO data quality review toolkit (19) provides guidance on defining data quality, conducting a desk review and verifying data. It proposes standard indicators to be reported routinely in facility information systems and quantification of data completeness, timeliness, consistency and accuracy in order to ascertain the extent to which health facility data are fit for purpose. While monitoring indicates changes in data quality over time, periodic evaluation should be conducted to assess improvements in the quality of surveillance systems, the data they generate and the type and quality of the public health response to the information. Data quality should be assessed at regular intervals, internally and externally. For example, good-quality data should be complete and timely, i.e. provide sufficient information to make decisions about the health of the population and to target resources to improve health-system coverage, efficiency and quality; consistent and reliable, i.e. be plausible in relation to previous reports and remain consistent on repeated measurement; and accurate, i.e. faithfully reflect the actual level of service delivery in the health facility.

- Quality data should be **consistent** and **reliable** – i.e. data are plausible in view of what has previously been reported. Reliable data are those which remain consistent on repeated measurement.
- Quality data should be **accurate** – i.e. data faithfully reflect the actual level of service delivery that was conducted in the health facility.

While monitoring will help identify changes in the data quality over time, periodic evaluations should assess the extent of the improvements in the quality of surveillance systems, the data they generate, and the type and quality of the public health response to the information.

Data quality assessment is performed both by internal as a routine and by external assessment system at regular intervals.

Good evidence-based decision for yaws eradication can be taken only if the quality of the data reported through the surveillance system is good. The quality of the data should be regularly checked and ensured.

Completeness: The completeness of data is defined as the number of reports received out of the number of reports expected in a month. As yaws is a notifiable disease, the national eradication programme should ensure that all health facilities report. Reporting of zero cases is essential in eradication. The variables that are requested for the yaws case register were chosen for their importance in monitoring yaws eradication and should be recorded for all suspected cases. The completeness of recording of variables can be measured as the proportion recorded on the form out of the total expected on the yaws case register and, for each variable, the proportion of cases for which the variable is recorded out of the total number of cases.

Timeliness is defined as the percentage of reports that are submitted before the deadline. The delay between diagnosis and reporting should be minimized by reporting online.

Consistency: The consistency of the data must be checked before data review and should be checked over time and among indicators that are predicted to be related. The consistency of reported data and original records should also be assessed annually during supervision. A checklist for monitoring the quality of yaws surveillance is presented in **Annex 5**.

Reliability: Data should be collected by consistent procedures and protocols, should be precise, with sufficient, appropriate details, and should demonstrate integrity, free from deliberate bias or manipulation.

Accuracy: The data recorded should reflect what they are intended to measure, with minimal error (e.g. a male being pregnant). If reporting is done online, internal validation should be conducted to minimize errors in data entry. Duplication, double counting or double registration of cases may occur if patients seek care from different public or private health facilities and the cases are therefore reported several times in the surveillance system. Potential duplication of reports should be checked monthly by comparing identifying information. As yaws treatment now consists of only one dose of azithromycin, the risk of double-counting is low in yaws surveillance. A patient who presents with a recurrence of yaws should be counted as a new episode of yaws (relapse or reinfection).

3.8 Analysis of data

Data analysis involves extracting, cleaning, compiling and modelling raw or primary data in order to obtain constructive information to calculate indicators, formulate conclusions, predict outcomes or support decisions.

3.8.1 Indicators recommended for surveillance

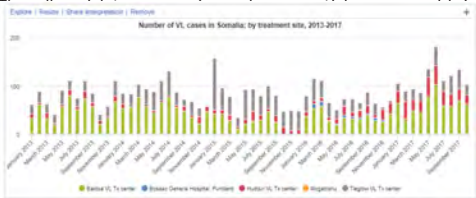

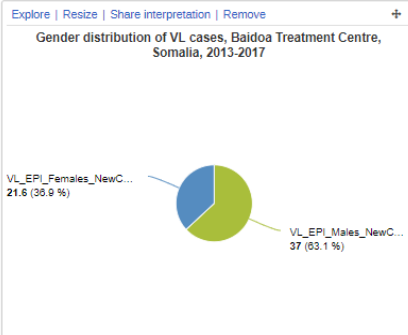
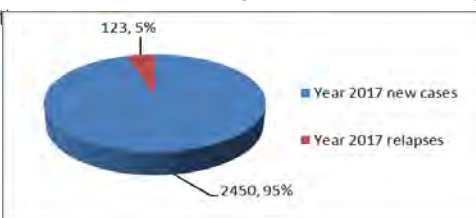
The recommended surveillance indicators to be collected and analysed over time

and space are presented in **Annex 6**. They include epidemiology, diagnosis, individual treatment, individual treatment outcome and active case detection. The indicators should ideally be calculated from case data recorded and reported in the yaws case register and the other data collection tools discussed above.

3.8.2 Basic data analysis

The aim of basic data analysis is to respond to the objectives of surveillance. Time (when), place (where), person (who) and topic (what) are important dimensions, and the framework can guide simple descriptive data analysis, as illustrated in **Table 4**.

Table 4. A framework for data analysis

"W"	Variable	Objective	Type of analysis and representation
When	Date of clinical examination	To describe trends and monitor progress towards elimination	
Where	Place of residence Place of diagnosis	To identify endemic areas in which action is required	
Who	Gender, age group	To identify groups at risk	Pie chart, stacked histogram to visualize changes over 
What	Laboratory confirmation Treatment outcome	To monitor the performance of the programme in laboratory confirmation To monitor treatment failure and detect any resistance to azithromycin	Pie chart, stacked histogram to visualize changes over 

The Health Data Collaborative has developed guidance on use of data collected in a community health information system and health facility data (16) to standardize and strengthen the use of information. It includes a module on use of yaws data.

The WHO yaws eradication programme has adopted a web-based platform for collecting, analysing and disseminating data, in collaboration with Member States. The online platform provides data collection forms and allows creation of dashboards to display graphs, tables and maps for real-time analysis of individual and aggregated data.

3.9 Dissemination of data and feedback

3.9.1 Dissemination

Information on progress in yaws eradication is disseminated in electronic and print media to reach different target groups, such as national policy- and decision-makers, researchers, health personnel and beneficiaries. Dissemination of information is important in the eradication of yaws to stimulate immediate action, solicit support or participation, document progress towards elimination and justify programme activities. It also assists in promoting behavioural change.

3.9.2 Feedback

The programme focal person in the district, in coordination with the data manager of the yaws eradication programme, should provide regular feedback to reporting officers after reviewing their reports. Feedback can be provided through an online platform and include comments, visualizations or messages to users or groups or users. Feedback can also be provided during supervisory visits, regular meetings or personal communication.

All reviews and supervisory visit reports should be summarized and the reports submitted to the next higher level with the monthly report. Regular feedback motivates data producers and improves data quality and use at all levels of the surveillance system.

4. Monitoring of a yaws eradication programme

A yaws eradication programme should collect not only data on cases but also regularly collect, analyse and disseminate data on other related activities.

4.1 Supervision and monitoring

The key indicators to be monitored are presented in **Annex 2**.

Input indicators: The programme should ensure that yaws is included in all national plans and budgets throughout eradication and that the programme has the adequate normative context and resources to achieve the target.

Process indicators: The purpose of process indicators is to demonstrate that the national eradication programme has adequately trained its health workforce and developed and used adequate protocols and logistics to achieve its aims.

Output indicators: The aim of output indicators is to assess the status of endemicity of evaluation units and case searching.

Outcome indicators: Outcome indicators are measured regularly to assess the coverage of the main activities: surveillance, diagnosis, individual treatment and mass drug administration.

Impact indicators: Impact indicators show whether a programme is on track to achieve elimination by monitoring the incidence, the seroprevalence and the proportion of units reporting zero cases.

4.2 Data to be collected

4.2.1 Sources

To monitor a national yaws eradication programme properly, data will be collected from various sources, and programme documentation will be reviewed, notably to monitor input indicators. The national health information system is an essential source of information for programme personnel to assess progress and identify gaps and opportunities to address any problems. The objective is to generate good-quality data in a timely manner and to process it at various levels as a basis for decisions on how to achieve public health targets. Some data are collected during regular health facility surveys or supervision. As several activities are conducted in communities, community surveys may be used to monitor some indicators.

4.2.2 Data collection tools

Specific tools are available for collecting data during surveillance, and a yaws tally sheet and a summary sheet have been prepared to facilitate data collection during TCT campaigns (**Annex 4**). The yaws TCT tally sheet is used to count the number of people in each community who received azithromycin during TCT, by age and gender. It contains a section on logistics and stocks of azithromycin and RDT and DPP tests. It is also used to record the number of people who experience severe adverse events, which should be reported to the national pharmacovigilance system.

Information from the tally sheet is aggregated into a daily summary sheet and is then compiled and assessed at each level up to central level so that any corrective measures can be applied quickly. The data flow for NTDs targeted for preventive chemotherapy is indicated in Fig. 8.

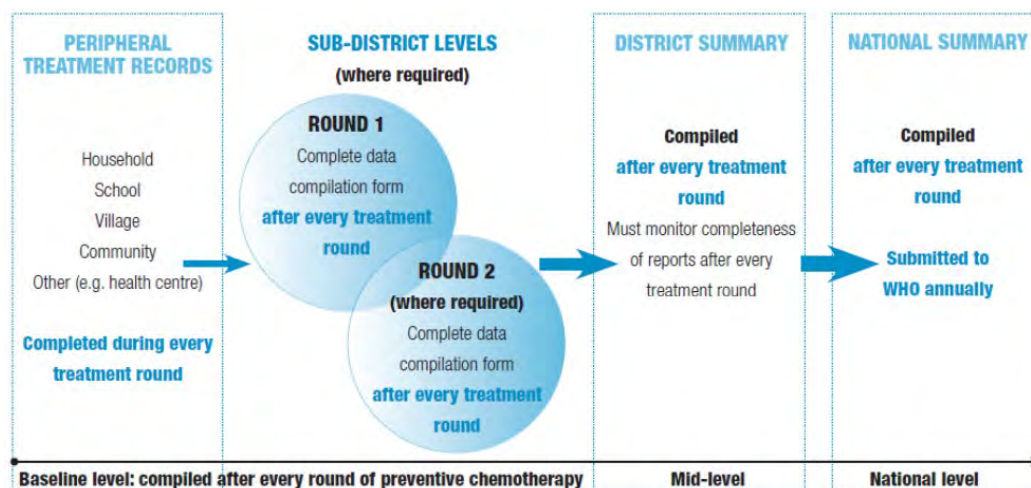


Fig. 8. Recommended pathway for data flow associated with preventive chemotherapy

4.3 Review of information and dissemination for action

Review meetings held in districts monthly or quarterly complement data and information management by ensuring that some basic collation and analysis of data can be reported. Properly organized review meetings with good leadership are important in dynamizing programmes.

The national programme should produce an annual report that summarizes the outcomes of meetings of the national task force, data collected during surveillance and case searches, progress and challenges towards eradication. Yaws eradication programmes should also produce a comprehensive report with an executive summary setting out feasible recommendations for repositioning or improving programme practice and management, presenting a new strategic plan or future funding proposals. Policy briefs should be issued for decision-makers on follow-up actions, including revision of policies when necessary.

5. Evaluation of activities during yaws eradication

The outcomes and impact of interventions should be evaluated regularly throughout yaws eradication to monitor progress and adjust interventions (**Table 5**). National programme managers should refer to the planning checklist in **Annex 9** to ensure adequate planning of the resources required.

Table 5. Evaluation, methods and objectives during the four phases of yaws eradication

Phase	Evaluation	Method	Objectives
Planning	Initial mapping of yaws endemicity	Desk review and active case search	To identify endemic evaluation units and trigger TCT and TTT
TCT (at each round)	Assessment of yaws prevalence (if not done during planning)	Exhaustive active case searches	To determine the baseline yaws prevalence for subsequent impact evaluation and to determine the necessary number of TCT rounds
	TCT coverage	Monitoring of administrative coverage	To monitor TCT coverage rapidly as part of programme monitoring
		TCT coverage survey	To determine yaws TCT coverage as part of programme evaluation (not required at each round)
	Continuous yaws surveillance	Strengthened surveillance and active case detection	To monitor the number of new cases reported in routine surveillance between TCT rounds
Post-TCT	Continuous yaws surveillance	Strengthened surveillance and active case detection	To monitor the number of cases reported in routine surveillance after TCT
Post-zero cases	Assessment of yaws seroprevalence	Active case search survey	To monitor for suspected yaws cases
		Seroprevalence survey	To determine the proportion of “sero-reactors” among children < 10 years of age

TCT: total community treatment; TTT: total targeted treatment

5.1 Initial mapping of yaws endemicity

As yaws eradication programmes evolve and while the disease is not yet notifiable at national level, there are currently limited good-quality data for deciding which type of treatment to use (mass drug administration, TCT or TTT). Hence, yaws-endemic countries should generate further evidence by mapping endemicity, as for other NTDs (trachoma, lymphatic filariasis, onchocerciasis), and by establishing a highly sensitive, community-based surveillance system (as for onchocerciasis).

Mapping of yaws endemicity has several benefits. It is a first phase in planning mass drug administration, TCT or TTT. It is necessary for estimating requirements and procuring medicines (azithromycin), diagnostic kits (RDT, DPP), swab collection and storage. It indicates the necessary activities according to the numbers of villages and populations to be covered, the transport facilities required and training of health personnel, including community health volunteers. Good mapping results in good geographical and population coverage for treatment and surveillance for total interruption of transmission of yaws and ultimate eradication of the disease globally.

5.1.1 Sources

Yaws endemicity mapping must be well prepared.

- The first step is to plan for active case-finding (the procedure for yaws case-finding is presented in **Annex 10**).
- Then, a desk review should be conducted at district level for the central team and then evaluated by district teams.
- Evaluation should comprise all information on yaws from national and district health directorates (especially surveillance departments) and from health centres, hospitals, medical colleges and universities. Information on syphilis in antenatal care units should also be collected from these sources when available. Both published and unpublished data should be included. The situation in neighbouring countries or districts should be considered and particularly areas with refugees from endemic countries or internally displaced people from within the same country. The results of the desk review are used to classify each evaluation unit as probably endemic or probably not endemic for yaws, and the relevant response should be initiated. If all the evaluation units in a district are classified as probably not endemic, the post-zero case phase should begin.
- Advocacy materials should be prepared to approach officials of the ministry of health, the health directorate, education and community development authorities and laboratories to ensure that mapping proposals can be developed with adequate funding. Officials of the ministry of health, district health office, education departments and community development and social departments should be sensitized about the importance and objectives of mapping yaws endemicity. Advocacy should also be prepared for school authorities, schoolteachers and village leaders in the area in which mapping exercise will be undertaken.
- Information, education and communication materials should be prepared to create awareness about yaws disease, the clinical presentation, single-dose treatment with azithromycin and the aim of the survey. All villages in all sub-districts should be listed by evaluation unit and population (children and adult, in and out of school), and the villages should be prioritized by yaws risk factors, such as being located > 5 km from a health centre and difficult access by road.

- Social and community mobilization should be conducted to obtain community support and cooperation, including in schools. Public awareness campaigns about signs and symptoms of yaws and other common skin diseases that resemble yaws should be conducted.
- Selected health facilities and district health surveillance units should be trained in survey methods and in screening children with skin lesions, testing with RDT and DPP, recording and reporting and data analysis and interpretation. Survey teams in subdistrict health centres (clinical and laboratory personnel and village health workers), district supervisory and surveillance personnel should be trained in survey methods, including laboratory aspects, recording, data management and interpretation. The algorithm in **Annex 8** should be used to guide health workers. Additional people, especially in the schools, should be made aware of drawing a blood sample from a finger-prick.
- Laboratory personnel should be trained in RDT, DPP testing and collection, storage and transport of swabs and scrapings for PCR testing. See **Annex 7** for standard operating procedures for RDT and DPP testing in the field. Estimates should be made of requirements, including numbers of tablets of azithromycin (500 mg), RDTs (SD Bioline Syphilis testing kits), DPP kits, swab collection material and other laboratory supplies, waste disposal boxes and medicines for managing other skin diseases and adverse events. The requirement for transport will depend on the number of villages to be covered and the number of teams of health workers.

5.1.2 Initial mapping

Endemicity should be mapped in each evaluation unit, i.e. an area with a population of 20 000–50 000. Active searches should be made for children <15 years with skin lesions by testing all children with skin lesions or suspected yaws with an RDT followed by DPP for confirmation. Children should be examined in both schools and villages to ensure coverage of > 90% of the child population (ideally 100%). Priority should be given to remote villages, > 5 km from a health facility and difficult to access by road. As soon as at least one serologically confirmed case of yaws has been detected, the entire evaluation unit should be considered endemic. Screening of additional villages in the evaluation unit is not mandatory, as TCT is recommended. Aggregated data on all suspected, treponemal positive and confirmed cases at both individual and village levels should be reported and recorded in registers (**Annex 4**).

5.1.3 Decisions to be taken after initial assessment of yaws endemicity

After the initial assessment, each evaluation unit is reclassified as: endemic for yaws, i.e. at least one confirmed case detected, and TCT is planned; or probably not endemic for yaws, and surveillance and active case searches are nevertheless continued (see section 5.4.1).

In countries in which transmission is believed to have been interrupted, targeted interventions against yaws should be conducted in an evaluation unit, and data should be collected to demonstrate interruption of transmission and eventually to support certification for eradication. Yaws cases should be sought among children < 15 years in at least 33% of villages each year for 3 years to demonstrate interruption of transmission, especially before and soon after the rainy season. A different group of randomly selected villages should be used each year, until all villages are covered. Although a minimum of 3 years of active surveillance is required, the recommended number of rounds of searches depends on funds and the time since the last reported case. Any

suspected case reported after transmission is believed to have been interrupted should be tested with the RDT and DPP tests. Swabs for PCR should be collected from confirmed (DPP-positive) cases, the evaluation unit should be re-classified as still endemic, and the ministry of health should resume activities to interrupt transmission.

If no DPP-confirmed autochthonous case of yaws is reported for 3 years, serological surveys of children aged 1–5 years should be undertaken in both endemic and non-endemic villages for 3 years to demonstrate interruption of transmission. Robust surveillance should be continued, with public awareness campaigns to encourage reporting of any suspected skin lesions. Yaws should be a notifiable disease and be included in disease surveillance reporting.

5.2 Evaluation of phases of total community treatment and response

As the aim of a yaws programme is eradication, at least one round of TCT is recommended in all communities in endemic IUs.

5.2.1 Assessment of prevalence at the time of total community treatment

The prevalence of yaws at the time of TCT is important for deciding whether further rounds of TCT will be necessary, to evaluate the effectiveness of previous interventions and to establish the geographical distribution of yaws in the IU. For operational reasons, prevalence at the time of TCT should be assessed in an exhaustive active case search. All residents who present for TCT should be screened for skin lesions, and all suspected yaws cases should be tested with an RDT, followed by DPP for confirmation. The goal of an exhaustive search at the time of TCT is to identify only suspected yaws cases, although other skin NTDs may be recorded for future investigation.

5.2.2 Assessment of coverage of total community treatment

The coverage of TCT, i.e. the proportion of people in the targeted population who received azithromycin, should be evaluated after each round of distribution. Coverage can be measured in two ways, as administrative coverage or in a population-based survey.

Administrative coverage is estimated from data collected during the campaign. The numerator is the number of people who received azithromycin, disaggregated by age and gender, which is calculated from the daily summary sheet. The denominator is the targeted population, disaggregated by age and gender, based on official population statistics, a quick census before the TCT campaign or other population figures used by the local health workforce. Administrative coverage may be biased. For example, the numerator may reflect not only people living in the targeted community but also those who were in the community on the day of the campaign and received a dose of azithromycin. This will artificially increase TCT coverage. The denominator may be inaccurate, which can skew coverage in one way or the other. Monitoring of administrative coverage is nevertheless useful, as a low result enables rapid corrective measures.

A more accurate estimate of the proportion of the targeted population who received a dose of azithromycin is made by a population-based survey after each round of TCT. Full guidance (a field guide (21) and training material (20)) on planning and conducting surveys to evaluate the coverage of preventive chemotherapy is available for other NTDs treated with mass drug administration, which can be used to assess TCT coverage for yaws. Such surveys are conducted with a 30-cluster design, and probability proportionate to size and segmentation in the cluster is used to select households. The method has been endorsed by the WHO Strategic and Technical Advisory Group for Neglected Tropical Diseases. An Excel® tool to assist survey coordinators in planning and implementing a coverage evaluation survey can be downloaded online (22).

For yaws, the survey area consists of IUs in which a round of TCT has been conducted within the previous 6 months. The survey population comprises people aged ≥ 6 months who lived in the survey area at the time of the TCT. The target is to cover as many people as possible and at least 90% of the population.

5.2.3 Continuous surveillance and active case searches

Strengthened passive surveillance and active case searches should be conducted continuously. Key components of a surveillance system are discussed in section 3.4 of this manual. Cases and contacts must continue to be detected and treated between TCT rounds.

5.2.4 Deciding whether a further round of total community treatment is required

It is usually recommended that TCT be conducted every 6 months, although other timing may be appropriate according to local circumstances. To decide whether a further round of TCT is required, the team should review the case search conducted during the previous round of TCT, all active and passive surveillance data for the previous 6 months and other data, such as logistics and equitable provision of TCT to the whole evaluation unit or movement among villages. These data can be used to calculate the proportion of communities in the IU in which at least one confirmed yaws case was detected within the previous 6 months. If confirmed yaws cases were detected in $\geq 20\%$ of communities in the previous 6 months, a further round of TCT is strongly recommended. If confirmed yaws cases were detected in $< 20\%$ of communities, a move to the post-TCT phase (section 5.3) could be considered. If data from continuous surveillance show an increase in the proportion of endemic communities, TCT should be reconsidered, even if $< 20\%$ of communities report cases.

Other data sources, including the coverage of previous TCT rounds and the quality of surveillance, should be considered in reaching a decision.

5.3 Evaluation of phases after total community treatment and response

Strengthened passive surveillance and active case searches should be conducted continuously, as discussed in section 3.4. During this phase, cases and contacts must continue to be detected and treated. Every 6 months, the team should review all data from active and passive surveillance and calculate the proportion of communities in an IU in which at least one confirmed yaws case has been detected. If confirmed yaws

cases were detected in $\geq 20\%$ of communities in the previous 6 months, resumption of TCT is strongly recommended. If confirmed yaws cases were detected in $< 20\%$ of communities, strengthened surveillance and response, including active case detection and TTT, should be continued until no more cases are detected.

5.4 Evaluation and response after zero cases

Countries enter this phase if all evaluation units have been classified as “Probably not endemic for yaws” in a desk review or if all evaluation units have moved to the post-TCT phase and no confirmed yaws case has been reported in any evaluation unit in the past full calendar year. This phase has two components: 3 consecutive years of strengthened passive and active surveillance with no confirmed yaws case reported and 3 consecutive years of seroprevalence surveys.

5.4.1 Strengthened passive and active surveillance for 3 consecutive years

The same principles apply as for the post-TCT phase. It is expected that, during the post-TCT phase, suspected cases continue to be reported through passive and active case surveillance, but no cases have been confirmed. In the post-zero case phase, each serologically confirmed yaws case must be confirmed by positive PCR. During this phase, it is particularly important to determine whether a case was imported or is autochthonous or indigenous. If a case is autochthonous, the country must decide whether to return to the TCT or post-TCT phase on the basis of a detailed investigation of the case and its contacts. If the case is imported, heightened surveillance must be conducted in the community in which it was detected.

5.4.2 Seroprevalence surveys for 3 consecutive years

Surveys should be conducted annually for a minimum of 3 years or for longer if serological reactors are detected. The design should exclude cities and towns according to the country classification; target children aged 1–5 years; involve use of validated diagnostic tests; have a sample size calculated by IU; and include lists of all formerly endemic and all formerly non-endemic IUs and villages and stratify samples according to former endemicity status. A new seroprevalence survey should be planned and conducted every year in all formerly endemic and formerly non-endemic villages. In small villages, all children aged 1–5 years may be tested.

Countries can decide to start seroprevalence surveys from the beginning of the post-zero case phase, although some children aged 2–5 years may be serologically reactive if the survey starts too soon after interruption of transmission. A few “sero-reactors” may be detected sporadically during surveys, due either to false-positive results or to congenital syphilis. The age and geographical distribution of sero-reactors should be analysed to determine whether the reaction is due to yaws transmission or to false-positive results. For example, detection of a cluster of sero-reactors should be interpreted by the verification team in the context of all the other evidence provided in the dossier.

5.5 Certification of yaws eradication

See reference 14.

5.6 Surveillance after certification

After a country has achieved “yaws-free status” or “elimination of yaws” after verification of interruption of transmission by an international team, it must sustain robust community surveillance until global yaws eradication is achieved, to prevent resurgence. The programme should continue to monitor the following activities and indicators to sustain yaws-free status:

- a robust community surveillance system and heightened public awareness on yaws;
- constant vigilance in the community, community organizations and public and private health facilities and integration with other public health activities;
- reporting of all rumoured or suspected indigenous yaws cases and serological and molecular confirmation to national level and then to WHO;
- re-confirmation by the national reference laboratory, in addition to the district surveillance and response team;
- PCR testing at an international or regional reference laboratory if facilities are not available in the country;
- investigation of the case to determine the possible source of infection, such as travel to an endemic country;
- reporting of imported yaws case and serological and molecular confirmation; and
- strict external quality assurance for all procedures.

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ANNEXES

Annex 1. Updated Morges strategy for yaws eradication

This is an update of Box 1 in an article published in the *Weekly Epidemiological Record* in May 2012 (1).

- **Global yaws eradication date:**
 - Road map target: 2030
 - Road map milestones: Number of countries certified free of transmission = 97 in 2023, 136 in 2025.
- **Expected date for interruption of transmission at country level:**
 - 2027.
- **Treatment policies:**
 - Total community treatment (recommended for initial treatment of an entire endemic community, irrespective of the number of active clinical cases)
 - Total targeted treatment (recommended for treatment of all active clinical cases and their close household, school and play contacts during repeat surveys or re-treatment or in response to a localized outbreak; also applicable for imported cases).
- **Eradication strategy:**
 - Component 1: Implementing the new treatment policies
 - Component 2: Strengthening health systems and community systems to implement total targeted treatment
 - Component 3: Training, health education and surveillance
 - Component 4: Operational research
- **Intervention drugs:**
 - Azithromycin (single oral dose): preferred treatment
 - Benzathine penicillin (single dose injection): alternative treatment.
- **Implementation unit (IU):**
 - Population of 20 000–50 000, equivalent to a subdistrict.
- **Criteria for treating an IU:**
 - Yaws cases confirmed by DPP or PCR.
- **Recommended treatment coverage:**
 - 100%, irrespective of the treatment policy
 - community-directed treatment to cover anyone missed during total community treatment
 - immediate registration and prophylactic treatment of new entrants to treated villages or communities.

- **Repeat surveys and re-treatment:**
 - Every 3–6 months as needed until zero cases
 - total targeted treatment or total community treatment according to local circumstances
- **Post-zero surveillance:**
 - Duration for declaration of interruption of transmission: 3 years
 - intensive information, education and communication to encourage passive reporting
 - immediate investigation of all reported or rumoured cases
 - monthly reporting of cases (including zero cases)
 - Annual serological surveys of children aged 1–5 years, starting 1 year after zero cases, for 3 years
 - international verification committee
- **Notification of yaws:**
 - All cases of yaws (suspected, treponemal positive and confirmed) should be notified to the relevant local and national health authorities and then to WHO.
 - All cases of yaws (suspected, treponemal positive and confirmed) should be recorded in a yaws case register (Yaws/003).
- **Centralized data management:**
 - Number of new clinical cases per village or community (incidence)
 - Coverage of treatment
 - Serological prevalence in children aged 1–5 years (post-zero case surveillance period).
- **National coordination:**
 - National yaws eradication programme (or national integrated skin NTD programme)
 - National task force on yaws eradication.
- **Global coordination**
 - WHO Yaws Eradication Programme
 - WHO Advisory Committee on Yaws Eradication.
- **Certification**
 - National verification team
 - International certification committee.

Reference

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Annex 2. Main indicators to be monitored and evaluated in yaws eradication programmes

Level	Topic	Indicator	Frequency	Target	Eradication step					Source of data			
					Planning and mapping	TCT	Post-TCT	Post-zero case	Post-certification	National programme documents	Routine health information system	Health facility survey or inspection	Community survey
Input (strategies, policies, financing)	National plan	National strategic plan for yaws according to Morges strategy, including information, education and communication and social mobilization	Annual		x	x	x	x	x	x			
	Structure	Functioning national task force for yaws eradication	Annual		x	x	x	x	x	x			
	Financing	Domestic and international funding available	Annual		x	x	x	x	x	x			
	Planning	Evaluation units to be assessed identified	Annual		x					x	x		
	Laboratory	Reference laboratory(ies) (national or international) identified	Annual		x	x	x	x	x	x			
	Surveillance	Yaws a notifiable disease in integrated disease surveillance system	Annual		x	x	x	x	x	x	x		
	Surveillance	Central yaws case register established	Annual		x	x	x	x	x	x	x		
	Training	No. of people trained according to national standards	Annual		x	x	x	x	x	x			
Process	Protocol	Protocols for each phase of yaws eradication defined and applied	Annual		x	x	x	x	x	x			
	Logistics	Annual request for azithromycin made to WHO	Annual		x	x	x	x		x			
	Logistics	Proportion of health facilities in IUs in which RDTs and azithromycin are available	Monthly		x	x	x	x			x	x	

Outputs (services, numbers reached, geographical coverage)	Logistics	Proportion of endemic districts in which RDTs, DPPs and azithromycin are available	Monthly		x	x	x	x	x	x						x	
	Logistics	Proportion of health facilities in endemic IUs in which information, education and communication materials are available	Annual		x	x	x	x								x	
	Logistics	Proportion of health facilities in endemic IUs in which means of transport are available for yaws eradication interventions	Annual		x	x	x	x	x							x	
	Logistics	Stocks of azithromycin meet those required as estimated with the WHO Excel® tool	Annual		x	x	x	x	x							x	
	Endemicity mapping	Proportion of evaluation units initially assessed for yaws endemicity within the defined period	Monthly until completion	100%	x												
	Planning	Endemic IUs that require TCT identified	Annual		x	x											
	Active case detection	No. of campaigns conducted	Monthly		x	x	x	x								x	
	Active case detection	Proportion of endemic IUs covered	Annual		x	x	x	x	x							x	
	Active case detection	No. of people with skin lesions examined	Monthly		x	x	x	x	x							x	
	Active case detection	No. of people tested with an RDT	Monthly		x	x	x	x	x							x	
	Active case detection	Proportion with positive RDT	Monthly		x	x	x	x	x							x	
	Active case detection	No. of people tested with DPP	Monthly		x	x	x	x	x							x	
	Active case detection	Proportion with positive DPP	Monthly		x	x	x	x	x							x	
	Preventive chemotherapy	Administrative population coverage of TCT	Monthly	> 90%		x										x	
	Preventive chemotherapy	Population coverage of TCT		Post-MDA coverage assessment: > 90%		x											x
Outcomes (changed behaviours, population coverage)	Preventive chemotherapy	Geographical coverage of TCT	Monthly	100%		x										x	
	Information, education and communication	Proportion of targeted communities covered by information, education and communication activities	Annual		x	x	x	x	x								x

Diagnosis	Proportion of suspected yaws cases tested with RDT, DPP or PCR in health facilities	Monthly		x	x	x	x	x	x	x							x	
Treatment	Proportions of suspected, treponemal positive and confirmed yaws cases that received the recommended treatment	Monthly		x	x	x	x	x	x	x							x	
Response	Ratio of no. of treated contacts to no. of confirmed cases	Monthly			x	x	x	x	x	x							x	
Response	Proportion of confirmed cases for whom contacts were traced and given ITT	Monthly			x	x	x	x	x	x								
Surveillance	No. of rumours reported to health facility team	Monthly			x	x	x	x	x	x							x	
Surveillance	Proportion of rumours reported to health facility team	Annual			x	x	x	x	x	x								x
Surveillance	Proportion of reported rumours investigated	Monthly			x	x	x	x	x	x								
Surveillance	Proportion of expected health facility reports received per month	Monthly				x	x	x	x	x								
Surveillance	Proportion of yaws cases reported to national health information or surveillance system for validation of reported data	Every 6 months															x	
Surveillance	Proportion of confirmed yaws cases among patients seeking care for skin lesions at the health facility	Monthly																x
Surveillance	Proportion of yaws cases detected passively	Monthly			x	x	x	x	x	x							x	
Laboratory	Proportion of treatment failures among confirmed yaws cases	Monthly			x	x	x	x	x	x								
Laboratory	Proportion of treatment failures among confirmed yaws cases tested by PCR	Monthly			x	x	x	x	x	x							x	

Annex 3. Yaws surveillance during eradication

Surveillance component		Phase of yaws eradication strategy					
		Planning	TCT	Post-TCT	Zero-case	Certification	Post-certification
Objectives		Identify at-risk IUs, and trigger TCT	Determine baseline prevalence in endemic communities	Detect residual pockets and trigger TCT/TTT	Detect yaws transmission in previously highly endemic areas	Detect potential yaws cases	
Surveillance strategy		Comprehensive surveillance – Yaws a notifiable disease					
Case detection	Passive case detection	Passive case detection					
	Active case detection	Purposive active case detection	Comprehensive active case detection where TCT Purposive active case detection	Reactive case detection Purposive active case detection	Purposive active case detection	Active case detection, if integrated with other diseases	
Laboratory confirmation	RDT	RDT for all suspected cases					
	DPP (or T. pallidum haemagglutination assay – rapid plasma reagin test)	DPP for some treponemal positive cases to trigger TCT	DPP for all treponemal positive cases				
	PCR	PCR for baseline azithromycin re-sis-tance assessment	PCR for baseline azithromycin resistance assessment	PCR if suspicion of treatment failure and 1/10 confirmed case	Systematic PCR for all RDT/DPP positive		
Recording tools		Yaws suspected case registry (Yaws/003)					
		Active case detection registry (Yaws/009)					
				Community volunteer logbook (Yaws/005) Yaws case investigation form (Yaws/006)			
Reporting format		Yaws/003, Yaws/004 and Yaws/009					
Zero case reporting		Mandatory					
Reporting frequency		Monthly					Immediate notification of RDT-positive cases Zero reporting Monthly

Investigation Response	Within 1 week			Within 1 week	
	Individual treatment	TCT		TTT or TCT	TTT or back to post-TCT phase
Data analysis and review	Monthly at all levels (health facilities, district and national levels)				Annually at all levels
Feedback to lower level	Monthly				Annually
Surveillance system monitoring	Quarterly?				

DPP: dual path platform; PCR: polymerase chain reaction; TCT: total community treatment; TTT: total targeted treatment

Annex 4. Standard WHO tools for data collection

Form	Name	Area	Phase					Purpose
			Planning and mapping	Total community treatment (TCT)	Post-TCT	Post-zero case	Post-certification	
SkinNTDs/001	Active case search summary sheet	Surveillance	x	x	x	x		To document the effort of active case search in the community – integrated with other neglected tropical diseases of the skin
Yaws/001	Community registers for volunteers	Surveillance	x	x	x	x	x	To keep track of all yaws “tumors” identified by community volunteers
Yaws/002	Case investigation form	Surveillance			x	x	x	To capture more detailed information on yaws suspected cases and their contacts after TCT phase
Yaws/003	Yaws case register	Surveillance	x	x	x	x	x	To capture individual information for each yaws suspected and confirmed cases detected at health facilities during active case searches in the community or schools or during TCT
Yaws/004	Laboratory request form	Surveillance	x	x	x	x	x	To request polymerase chain reaction analysis to confirm yaws cases and for cases that do not respond to treatment or appear after treatment
Yaws/005	Yaws TCT tally sheet	Monitoring		x				To help the country identify the number of people treated during TCT
Yaws/006	Yaws TCT daily summary sheet	Monitoring		x				To aggregate data after total community treatment activities each day
Yaws/007	Monthly reporting forms	Surveillance/ Monitoring	x	x	x	x	x	To provide monthly reports on core aggregated data on yaws activities at health facilities during active case searches or during TCT
Yaws/008	Implementation unit endemicity assessment	Evaluation	x					To capture the endemicity and number of cases of yaws at implementation unit level

Active case search campaigns for skin NTDs – Summary sheet (SkinNTDs/001)

District:
Community/village:
Latitude:
Date (dd/mm/yyyy):
Name of the chief/director:
Team number/name:

Subdistrict:
Closest health facility:
Longitude:
Screening targeting school? (Y/N):
Name of the school:
Team coordinator:

	Female			Male			Total
	< 5 years	5-14 years	≥ 15 years	< 5 years	5-14 years	≥ 15 years	
No. of people targeted							
No. of people screened							
No. of people with skin lesions							
Clinical suspicion							
BU	No. of new suspected BU cases						
	No. of BU cases for whom swab taken						
Leprosy	No. of new leprosy cases						
	No. of new PB cases						
	No. of new MB cases						
	No. of new leprosy case with G2D						
Yaws	No. of old leprosy cases						
	No. of suspected yaws cases (clinical)						
	No. of old leprosy cases						
	No. of people with RDT+						
	No. of people tested for yaws with DPP						
	No. of people with DPP+						
	No. of people treated with azithromycin						

Scabies	No. of scabies cases						
	No. of scabies cases treated						
CL	No. of new probable CL cases						
	No. of ringworm cases						
Other	No. of cases with another diagnosis						

Specify the other diagnosis that has been found in the village, followed by the number of cases, into brackets (e.g. Noma(1))
 BU: Buruli ulcer; CL: cutaneous leishmaniasis; DPP: dual path platform; G2D: grade 2 disability; MB: multibacillary; PB: paucibacillary

Commodities	Received	Used	Wasted	Remaining
No. of azithromycin tablets				
No. of tubes/jars of ketoconazole cream				
No. of griseofulvine tablets (250 mg)				
No. of rapid diagnostic tests				
No. of DPP tests				
No. of bars of soap				

Comments

Team supervisor
 Name:

Signature:

Yaws Eradication programme
Village volunteer register for yaws rumors

WHOTYAW\$1001

Page 1



Yaws case registration form (Yaws/002)

To be filled in for any suspected yaws case after total community treatment

Country: _____ Province/State: _____ District: _____

Part I: Immediate investigation

Section A: Demographic data		
1	Name of patient: _____	Phone #: _____
2	Name of father: _____	Name of mother: _____
3	Patient ID number: _____	
4	Date of birth (dd/mm/yyyy): __/__/____	Age (years): ____
5	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	4. Community/village:
7	Address of patient: Region: _____ District: _____ Community: _____	
Section B: History and clinical examination		
8	Duration of illness (in weeks): [_ _ _]	
9	Mode of detection: <input type="checkbox"/> Passive (health facility) <input type="checkbox"/> Active case search <input type="checkbox"/> TCT-TTT	
10	Previous treatment for yaws? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	If yes, please specify <input type="checkbox"/> TCT-TTT <input type="checkbox"/> individual Date of last treatment: dd - mm - yyyy
11	Previous treatment with azithromycin? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	If yes, please specify <input type="checkbox"/> TCT-TTT <input type="checkbox"/> individual Date of last treatment: dd - mm - yyyy
12	Previous treatment with benzathine penicillin? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	If yes, please specify <input type="checkbox"/> TCT-TTT <input type="checkbox"/> individual Date of last treatment: dd - mm - yyyy
13	Previous treatment of current lesions? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	If yes, please specify: _____ Date of treatment start: dd - mm - yyyy Duration in days: [_ _ _]
14	Family member or close contact with similar lesion(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	Relationship: _____ Diagnosis: _____
15	Is the patient a resident of the area <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	If no, please specify previous places of residence: _____
16	Travel history in the past 2 years: (Please specify country, region and if possible district and community/village): _____	
17	Probable origin of the infection: <input type="checkbox"/> Autochthonous/indigenous <input type="checkbox"/> Imported internally, i.e. from another implementation unit [Name: _____] <input type="checkbox"/> Imported internationally, i.e. from another country [Name: _____]	

18	Clinical forms of yaws (Refer to WHO pictorial guide)	
	<input type="checkbox"/> Papilloma <input type="checkbox"/> Papules <input type="checkbox"/> Ulcers <input type="checkbox"/> Macules	<input type="checkbox"/> Swellings of bones and joints <input type="checkbox"/> Hyperkeratosis of palm or sole <input type="checkbox"/> None of above <input type="checkbox"/> Unknown
20	Photograph taken <input type="checkbox"/> Yes (photo ID : _____) <input type="checkbox"/> No	
Section C: Serological diagnosis		
21	Initial specimen collection (Please tick box)	
	For serological test	For PCR
	<input type="checkbox"/> Finger prick blood for RDT/DPP <input type="checkbox"/> Blood for serological testing <input type="checkbox"/> Not done	<input type="checkbox"/> Swab/scraping from lesions for PCR <input type="checkbox"/> Not done
	If not done, specify the reason: <input type="checkbox"/> Infant <input type="checkbox"/> Refusal / uncooperative <input type="checkbox"/> No test available <input type="checkbox"/> Other : _____	
22	Initial laboratory results	
	Treponemal point-of-care RDT:  Please circle the visible lines <input type="checkbox"/> None <input type="checkbox"/> Not done	DPP dual point-of-care treponemal and non-treponemal line  Please circle the visible lines <input type="checkbox"/> None <input type="checkbox"/> Not done
Section D: Treatment		
23	Treatment given: <input type="checkbox"/> Yes <input type="checkbox"/> No If yes please specify: Date: (dd/mm/yyyy) __ / __ / ____ Treatment regimen: <input type="checkbox"/> Azithromycin (number of 500-mg tablets): _____ <input type="checkbox"/> Benzathine benzylpenicillin (check): <input type="checkbox"/> 0.6 MU or <input type="checkbox"/> 1.2 MU <input type="checkbox"/> Others (please specify what and why): _____ If no, please specify the reason: <input type="checkbox"/> Refused <input type="checkbox"/> No medicine available <input type="checkbox"/> Other: _____ Referred for further action: _____	
24	Adverse event	
	Serious adverse event: <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, specify _____	
Notes or comments (diagnosis and management of serologically negative cases):		
<div style="display: flex; justify-content: space-between;"> <div>Date: (dd)____(mm)____(yyyy)_____</div> <div>_____ Signature (health worker)</div> </div>		

A suspected case is one with a history of residence in an endemic area (past or present) and presents with clinically active yaws-like lesions, not serologically confirmed.

A treponemal positive yaws case is a suspected case with positive rapid treponemal point-of-care test .

A confirmed yaws case is a case that is positive in both treponemal and non-treponemal tests on rapid DPP testing with or without PCR.


A resident is someone who has lived in the area for the previous 2 years.

Part II: Further actions, results related to the yaws case

Section A: PCR follow-up	
Specimen sent for PCR? <input type="checkbox"/> For confirmation <input type="checkbox"/> For testing for azithromycin resistance <input type="checkbox"/> Not done	Date specimen sent: dd – mm – yyyy Date results received: dd – mm – yyyy
Results of PCR test for case confirmation <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not done	Results of PCR for azithromycin resistance testing <input type="checkbox"/> Mutation <input type="checkbox"/> No mutation <input type="checkbox"/> Not done
Section B: Patient follow-up – treatment outcome	
Date of treatment follow-up at 4 weeks : dd – mm – yyyy Treatment outcome at 4 weeks? <input type="checkbox"/> Completely healed <input type="checkbox"/> Partially healed <input type="checkbox"/> Not healed <input type="checkbox"/> A confirmed yaws case that is not healed at 4 weeks should be considered a treatment failure. A swab should be taken for PCR investigation. Please see the Programme managers' guide for further recommendations. <input type="checkbox"/> A confirmed yaws case that is only partially healed at 4 weeks should be followed up at 8 weeks to assess healing. If still not completely healed at 8 weeks, a swab should be taken for PCR investigation. See the Programme managers' guide for further recommendations.	
If not healed, further action taken:	
Date of specimen collection : dd – mm – yyyy Date specimen sent : dd – mm – yyyy	Specimen collection for PCR <input type="checkbox"/> Swab/scraping from lesions <input type="checkbox"/> Not done
Date PCR results received : dd – mm – yyyy	Results of PCR for azithromycin resistance <input type="checkbox"/> Mutation <input type="checkbox"/> No mutation <input type="checkbox"/> Not done
Section C: Further action taken in the community	
TTT in the community? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, type of TTT: <input type="checkbox"/> household and close contacts <input type="checkbox"/> neighbouring houses <input type="checkbox"/> whole community <input type="checkbox"/> schools Number of contacts treated: []	
Number of suspected yaws cases among contacts: [] Number of treponemal positive yaws cases among contact: [] Number of confirmed yaws cases among contacts: [] If no, please specify the reason: _____ _____ _____	
Date: (dd)____(mm)____(yyyy)_____	_____ Signature (health worker)

Yaws case Register

Name of Health Facility	Subdivided	Date
	Month	
Year		

General information					Anamnesis	Laboratory		Treatment			Outcome		PCR		Contacts
1. Unique identifier	2. Date of detection	3. Name	4. Age	5. Gender	6. Contact of the patient 6a. Community/Village or residence (Specify location, country, region, district) (If the patient lived from this district)	7. Origin of the infection (Autochthonous / Imported from another / Imported from another country)	8. Rapid Cycle Test Score/Graph  The present (Y/N): C T 1 2 3 C	9. ORP confirmation @ 1 2 3 C Line passed (Y/N)	10. Treatment regimen* (1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 40th, 41st, 42nd, 43rd, 44th, 45th, 46th, 47th, 48th, 49th, 50th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th, 59th, 60th, 61st, 62nd, 63rd, 64th, 65th, 66th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 75th, 76th, 77th, 78th, 79th, 80th, 81st, 82nd, 83rd, 84th, 85th, 86th, 87th, 88th, 89th, 90th, 91st, 92nd, 93rd, 94th, 95th, 96th, 97th, 98th, 99th, 100th, 101st, 102nd, 103rd, 104th, 105th, 106th, 107th, 108th, 109th, 110th, 111th, 112th, 113th, 114th, 115th, 116th, 117th, 118th, 119th, 120th, 121st, 122nd, 123rd, 124th, 125th, 126th, 127th, 128th, 129th, 130th, 131st, 132nd, 133rd, 134th, 135th, 136th, 137th, 138th, 139th, 140th, 141st, 142nd, 143rd, 144th, 145th, 146th, 147th, 148th, 149th, 150th, 151st, 152nd, 153rd, 154th, 155th, 156th, 157th, 158th, 159th, 160th, 161st, 162nd, 163rd, 164th, 165th, 166th, 167th, 168th, 169th, 170th, 171st, 172nd, 173rd, 174th, 175th, 176th, 177th, 178th, 179th, 180th, 181st, 182nd, 183rd, 184th, 185th, 186th, 187th, 188th, 189th, 190th, 191st, 192nd, 193rd, 194th, 195th, 196th, 197th, 198th, 199th, 200th, 201st, 202nd, 203rd, 204th, 205th, 206th, 207th, 208th, 209th, 210th, 211st, 212nd, 213th, 214th, 215th, 216th, 217th, 218th, 219th, 220th, 221st, 222nd, 223rd, 224th, 225th, 226th, 227th, 228th, 229th, 230th, 231st, 232nd, 233rd, 234th, 235th, 236th, 237th, 238th, 239th, 240th, 241st, 242nd, 243rd, 244th, 245th, 246th, 247th, 248th, 249th, 250th, 251st, 252nd, 253rd, 254th, 255th, 256th, 257th, 258th, 259th, 260th, 261st, 262nd, 263rd, 264th, 265th, 266th, 267th, 268th, 269th, 270th, 271st, 272nd, 273rd, 274th, 275th, 276th, 277th, 278th, 279th, 280th, 281st, 282nd, 283rd, 284th, 285th, 286th, 287th, 288th, 289th, 290th, 291st, 292nd, 293rd, 294th, 295th, 296th, 297th, 298th, 299th, 300th, 301st, 302nd, 303rd, 304th, 305th, 306th, 307th, 308th, 309th, 310th, 311st, 312nd, 313th, 314th, 315th, 316th, 317th, 318th, 319th, 320th, 321st, 322nd, 323rd, 324th, 325th, 326th, 327th, 328th, 329th, 330th, 331st, 332nd, 333rd, 334th, 335th, 336th, 337th, 338th, 339th, 340th, 341st, 342nd, 343rd, 344th, 345th, 346th, 347th, 348th, 349th, 350th, 351st, 352nd, 353rd, 354th, 355th, 356th, 357th, 358th, 359th, 360th, 361st, 362nd, 363rd, 364th, 365th, 366th, 367th, 368th, 369th, 370th, 371st, 372nd, 373rd, 374th, 375th, 376th, 377th, 378th, 379th, 380th, 381st, 382nd, 383rd, 384th, 385th, 386th, 387th, 388th, 389th, 390th, 391st, 392nd, 393rd, 394th, 395th, 396th, 397th, 398th, 399th, 400th, 401st, 402nd, 403rd, 404th, 405th, 406th, 407th, 408th, 409th, 410th, 411st, 412nd, 413th, 414th, 415th, 416th, 417th, 418th, 419th, 420th, 421st, 422nd, 423rd, 424th, 425th, 426th, 427th, 428th, 429th, 430th, 431st, 432nd, 433rd, 434th, 435th, 436th, 437th, 438th, 439th, 440th, 441st, 442nd, 443rd, 444th, 445th, 446th, 447th, 448th, 449th, 450th, 451st, 452nd, 453rd, 454th, 455th, 456th, 457th, 458th, 459th, 460th, 461st, 462nd, 463rd, 464th, 465th, 466th, 467th, 468th, 469th, 470th, 471st, 472nd, 473rd, 474th, 475th, 476th, 477th, 478th, 479th, 480th, 481st, 482nd, 483rd, 484th, 485th, 486th, 487th, 488th, 489th, 490th, 491st, 492nd, 493rd, 494th, 495th, 496th, 497th, 498th, 499th, 500th, 501st, 502nd, 503rd, 504th, 505th, 506th, 507th, 508th, 509th, 510th, 511st, 512nd, 513th, 514th, 515th, 516th, 517th, 518th, 519th, 520th, 521st, 522nd, 523rd, 524th, 525th, 526th, 527th, 528th, 529th, 530th, 531st, 532nd, 533rd, 534th, 535th, 536th, 537th, 538th, 539th, 540th, 541st, 542nd, 543rd, 544th, 545th, 546th, 547th, 548th, 549th, 550th, 551st, 552nd, 553rd, 554th, 555th, 556th, 557th, 558th, 559th, 560th, 561st, 562nd, 563rd, 564th, 565th, 566th, 567th, 568th, 569th, 570th, 571st, 572nd, 573rd, 574th, 575th, 576th, 577th, 578th, 579th, 580th, 581st, 582nd, 583rd, 584th, 585th, 586th, 587th, 588th, 589th, 590th, 591st, 592nd, 593rd, 594th, 595th, 596th, 597th, 598th, 599th, 600th, 601st, 602nd, 603rd, 604th, 605th, 606th, 607th, 608th, 609th, 610th, 611st, 612nd, 613th, 614th, 615th, 616th, 617th, 618th, 619th, 620th, 621st, 622nd, 623rd, 624th, 625th, 626th, 627th, 628th, 629th, 630th, 631st, 632nd, 633rd, 634th, 635th, 636th, 637th, 638th, 639th, 640th, 641st, 642nd, 643rd, 644th, 645th, 646th, 647th, 648th, 649th, 650th, 651st, 652nd, 653rd, 654th, 655th, 656th, 657th, 658th, 659th, 660th, 661st, 662nd, 663rd, 664th, 665th, 666th, 667th, 668th, 669th, 670th, 671st, 672nd, 673rd, 674th, 675th, 676th, 677th, 678th, 679th, 680th, 681st, 682nd, 683rd, 684th, 685th, 686th, 687th, 688th, 689th, 690th, 691st, 692nd, 693rd, 694th, 695th, 696th, 697th, 698th, 699th, 700th, 701st, 702nd, 703rd, 704th, 705th, 706th, 707th, 708th, 709th, 710th, 711st, 712nd, 713th, 714th, 715th, 716th, 717th, 718th, 719th, 720th, 721st, 722nd, 723rd, 724th, 725th, 726th, 727th, 728th, 729th, 730th, 731st, 732nd, 733rd, 734th, 735th, 736th, 737th, 738th, 739th, 740th, 741st, 742nd, 743rd, 744th, 745th, 746th, 747th, 748th, 749th, 750th, 751st, 752nd, 753rd, 754th, 755th, 756th, 757th, 758th, 759th, 760th, 761st, 762nd, 763rd, 764th, 765th, 766th, 767th, 768th, 769th, 770th, 771st, 772nd, 773rd, 774th, 775th, 776th, 777th, 778th, 779th, 780th, 781st, 782nd, 783rd, 784th, 785th, 786th, 787th, 788th, 789th, 790th, 791st, 792nd, 793rd, 794th, 795th, 796th, 797th, 798th, 799th, 800th, 801st, 802nd, 803rd, 804th, 805th, 806th, 807th, 808th, 809th, 810th, 811st, 812nd, 813th, 814th, 815th, 816th, 817th, 818th, 819th, 820th, 821st, 822nd, 823rd, 824th, 825th, 826th, 827th, 828th, 829th, 830th, 831st, 832nd, 833rd, 834th, 835th, 836th, 837th, 838th, 839th, 840th, 841st, 842nd, 843rd, 844th, 845th, 846th, 847th, 848th, 849th, 850th, 851st, 852nd, 853rd, 854th, 855th, 856th, 857th, 858th, 859th, 860th, 861st, 862nd, 863rd, 864th, 865th, 866th, 867th, 868th, 869th, 870th, 871st, 872nd, 873rd, 874th, 875th, 876th, 877th, 878th, 879th, 880th, 881st, 882nd, 883rd, 884th, 885th, 886th, 887th, 888th, 889th, 890th, 891st, 892nd, 893rd, 894th, 895th, 896th, 897th, 898th, 899th, 900th, 901st, 902nd, 903rd, 904th, 905th, 906th, 907th, 908th, 909th, 910th, 911st, 912nd, 913th, 914th, 915th, 916th, 917th, 918th, 919th, 920th, 921st, 922nd, 923rd, 924th, 925th, 926th, 927th, 928th, 929th, 930th, 931st, 932nd, 933rd, 934th, 935th, 936th, 937th, 938th, 939th, 940th, 941st, 942nd, 943rd, 944th, 945th, 946th, 947th, 948th, 949th, 950th, 951st, 952nd, 953rd, 954th, 955th, 956th, 957th, 958th, 959th, 960th, 961st, 962nd, 963rd, 964th, 965th, 966th, 967th, 968th, 969th, 970th, 971st, 972nd, 973rd, 974th, 975th, 976th, 977th, 978th, 979th, 980th, 981st, 982nd, 983rd, 984th, 985th, 986th, 987th, 988th, 989th, 990th, 991st, 992nd, 993rd, 994th, 995th, 996th, 997th, 998th, 999th, 1000th, 1001st, 1002nd, 1003rd, 1004th, 1005th, 1006th, 1007th, 1008th, 1009th, 1010th, 1011st, 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Legend:
A suspected *Yersinia* case is a person of any age who is or was living in a previously or currently endemic area, presenting with clinical signs consistent with yaws. A probable *Yersinia* case is a suspected *Yersinia* case with a positive rapid treponemal *Point of Care (POC)* test (i.e. both treponemal and control lines visible) or *TPHA/TPPA* positive (serologically confirmed) *Yersinia* case is a confirmed *Yersinia* case who is confirmed through dual positive serology (either *DPP4-Jury* positive or *TPHA/TPPA*-RPR positive). A PCR-confirmed *Yersinia* case is a case that is positive to *Polymerase Chain Reaction (PCR)*.

[illegible]

which the infection was most probably acquired outside the country in which it was diagnosed.

3. Remainder: DVP Test result is Confirmed if the three lines (Exponential (E), Non-Exponential (N), and Control (C)) are all present.

 40a. Treatment regimen: Aflunovon (A2). Benzathine penicillin (B2). Other or None |

19. *Wang, Y. and J. J. Gray, 1995, "A new method for the analysis of the relationship between the size of the firm and the size of the market," Journal of Business Finance & Accounting, 22(1), 1-15.*

[illegible]

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Laboratory request form (Yaws/004)



Request for PCR confirmation of a yaws case or treatment failure

Part I. Information provided

A. General information

Region or province: _____ District: _____ Sub-district: _____	
1. Name of treatment facility: _____	
2. Name of patient: _____	3. Identification number: _____
4. Age (year): _____	5. Sex: <input type="checkbox"/> M <input type="checkbox"/> F
6. Community/village: _____	7. District: _____
8. Previous treatment with azithromycin: <input type="checkbox"/> Individual <input type="checkbox"/> TCT-TTT <input type="checkbox"/> None <input type="checkbox"/> Unknown Date of last azithromycin treatment (dd/mm/yyyy): ____/____/____	
9. Clinical form(s): <input type="checkbox"/> Papilloma (P) <input type="checkbox"/> Ulcer (U) <input type="checkbox"/> Other (O)	
10. Date of specimen collection (dd/mm/yyyy): ____/____/____	
11. Type (and number) of specimen: <input type="checkbox"/> Scraping (__) <input type="checkbox"/> Swab from lesion (__)	
12. Date specimen sent to laboratory (dd/mm/yyyy): ____/____/____	

B. History and clinical examination

<p>Treponemal point-of-care test (RDT):</p>  <p>Please circle the lines that are visible: <input type="checkbox"/> None <input type="checkbox"/> Not done</p>	<p>DPP dual point-of-care treponemal line</p>  <p>Please circle the lines that are visible: <input type="checkbox"/> None <input type="checkbox"/> Not done</p>
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C. Reasons for requesting laboratory confirmation

13. <input type="checkbox"/> Confirmation of diagnosis
14. <input type="checkbox"/> No improvement 4 weeks after a single dose of azithromycin (No. of tablets taken _____; Date treatment given (dd/mm/yyyy): ____/____/____)
15. <input type="checkbox"/> New lesions after a single dose of azithromycin (No. of tablets taken _____; Date treatment given (dd/mm/yyyy): ____/____/____)
Name of health worker requesting the test: _____
Institution or health facility: _____
Contact number: _____

II. Results

Date specimen received in the laboratory (dd /mm/yyyy): __/__/____

Date of analysis (dd/mm/yyyy)	PCR (positive or negative)	Resistance mutation (positive or negative)
--/ --/ ----		
--/ --/ ----		

Comments: _____

Name of laboratory scientist providing the results: _____

Name of laboratory: _____

Date results sent (dd/mm/yyyy): __/__/ ----

District:		Community/Village:		School:		Date:								
Round of treatment:								/						
						Team supervisor's phone #:								
						Team No./Name:								

Instructions:

Tick the square for each person who received azithromycin.

For each adverse reaction, color the whole square in grey. If the adverse reaction is severe, please refer the person to the closest health facility.

Please prefill the grey zones before going to the community. For population, at least prefill the total targeted population.

Age group	Male	Female	Total
15-19	1.2	1.1	1.15
20-24	1.5	1.4	1.45
25-29	1.8	1.7	1.75
30-34	2.1	2.0	2.05
35-39	2.4	2.3	2.35
40-44	2.7	2.6	2.65
45-49	3.0	2.9	2.95
50-54	3.3	3.2	3.25
55-59	3.6	3.5	3.55
60-64	3.9	3.8	3.85
65-69	4.2	4.1	4.15
70-74	4.5	4.4	4.45
75-79	4.8	4.7	4.75
80-84	5.1	5.0	5.05
85-89	5.4	5.3	5.35
90-94	5.7	5.6	5.65
95-99	6.0	5.9	5.95
100+	6.3	6.2	6.25

6mths-5yrs (one crushed tablet)										6-9yrs (2 Tablets)					10-14yrs (3 Tablets)					15 yrs+ (4 Tablets)										
No.	Male					Female					Male					Female					Male					Female				
	1	2	3	4	5	2	3	4	5	1	2	3	4	5	2	3	4	5	1	2	3	4	5	1	2	3	4	5		
1	6	9	9	10	8	7	9	10	8	7	8	9	10	8	6	7	8	10	8	7	8	9	10	8	7	8	9	10		
2	12	12	12	14	12	11	12	13	14	12	11	12	13	14	12	11	12	13	14	12	11	12	13	14	12	11	12	13		
3	15	15	15	16	15	14	15	16	17	15	14	15	16	17	15	14	15	16	17	15	14	15	16	17	15	14	15	16		
4	12	17	14	17	16	16	17	18	17	16	17	18	19	18	18	17	18	19	18	17	18	19	18	17	18	19	18			
5	13	22	19	24	21	13	13	13	13	18	19	21	22	23	19	18	19	24	21	13	13	13	13	18	19	21	22			
6	26	27	28	29	30	26	27	28	29	32	31	32	33	34	32	31	32	33	34	32	31	32	33	34	32	31	32			
7	33	32	31	34	35	31	32	33	34	39	38	39	40	41	39	38	39	40	41	39	38	39	40	41	39	38	39			
8	39	37	38	39	40	36	37	38	39	42	41	42	43	44	42	41	42	43	44	42	41	42	43	44	42	41	42			
9	42	42	42	44	45	42	42	42	43	46	45	46	47	48	46	45	46	47	48	46	45	46	47	48	46	45	46			
10	42	47	42	49	50	46	47	48	49	52	51	52	53	54	52	51	52	53	54	52	51	52	53	54	52	51	52			
11	51	52	52	54	55	51	52	53	54	58	57	58	59	60	58	57	58	59	60	58	57	58	59	60	58	57	58			
12	59	57	54	59	60	54	57	54	57	62	61	62	63	64	62	61	62	63	64	62	61	62	63	64	62	61	62			
13	61	62	62	64	65	61	62	63	64	67	66	67	68	69	67	66	67	68	69	67	66	67	68	69	67	66	67			
14	65	67	62	69	70	64	67	64	67	72	71	72	73	74	72	71	72	73	74	72	71	72	73	74	72	71	72			
15	72	72	72	74	75	71	72	73	74	78	77	78	79	80	78	77	78	79	80	78	77	78	79	80	78	77	78			
16	78	77	78	79	80	74	77	74	77	82	81	82	83	84	82	81	82	83	84	82	81	82	83	84	82	81	82			
17	82	82	82	84	85	81	82	83	84	88	87	88	89	90	88	87	88	89	90	88	87	88	89	90	88	87	88			
18	85	87	82	89	90	84	87	84	87	92	91	92	93	94	92	91	92	93	94	92	91	92	93	94	92	91	92			
19	92	92	92	94	95	91	92	93	94	98	97	98	99	100	98	97	98	99	100	98	97	98	99	100	98	97	98			
20	95	97	98	99	100	96	97	98	99	102	101	102	103	104	102	101	102	103	104	102	101	102	103	104	102	101	102			
Total persons treated																														
# Adverse reaction																														
Persons targeted																														

Logistics				
Items (a)	Quantity Received (b)	Quantity Used (c)	Quantity Worn (d)	Quantity Returned (e=(b-c-d))
Activities Table				
ROF suits				
OSP suits				

[illegible]

Monthly reporting form (Yaws/006)

Passive detection			WHO/YAWS/006a:
Month of reporting:	Month-Year	Date of submission:	dd /mm / yyyy
Name of region:		Name of district:	
Name of sub-district:		Name of health facility or department	

Passive detection at a health facility; from the yaws case register (WHO/Yaws/003)

Cases detected at health facility									
	Age	< 5 years		5–14 years		≥ 15 years		Total	
	Gender	F	M	F	M	F	M	F	M
No. of suspected yaws cases									
No. of treponemal positive yaws cases									
No. of DPP-confirmed yaws cases									
No. of PCR-confirmed yaws cases									
Total									

Yaws testing	RDT	DPP	PCR
No. of suspected yaws cases tested with...			
No. of cases positive by...			

Yaws individual treatment	Suspected cases	Treponemal positive cases	Confirmed cases
No. of yaws cases treated with azithromycin			

Date: _____

Name of reporting officer: _____ Signature of reporting officer: _____

Suspected yaws case: case in a person with a history of residence in an endemic area (past or present) who presents with clinically active yaws-like lesions, not serologically confirmed

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

Confirmed yaws cases: a case that is both treponemal and non-treponemal positive on rapid DPP test and/or positive on PCR

Monthly yaws reporting form – active detection			WHO/YAWS/006b
Month of reporting:	Month-Year	Date of submission:	dd /mm / yyyy
Name of region:		Name of district:	
Name of sub-district:		Name of health facility	

Active detection in the community during active case searches. Data from the yaws case register (WHO/Yaws/003) and the active case search register (WHO/Yaws/009)

Active detection campaigns	
No. of communities visited for active case detection	
No. of communities visited with ≥ 1 suspected yaws case	
Name of community with cases	
Total no. of endemic communities	

Cases detected during active screening									
	Age	< 5 years		5–14 years		≥ 15 years		Total	
	Gender	F	M	F	M	F	M	F	M
No. of suspected yaws cases									
No. of treponemal positive yaws cases									
No. of DPP-confirmed yaws cases									
No. of PCR-confirmed yaws cases									
Total									

Yaws testing	RDT	DPP	PCR
No. of suspected yaws cases tested with...			
No. of yaws cases positive to...			

Yaws individual treatment	Suspected cases	Treponemal positive cases	Confirmed cases
No. of yaws cases treated with azithromycin			

Date: _____

Name of reporting officer: _____ Signature of reporting officer: _____

Monthly yaws reporting form – community treatment			WHO/YAWS/006c
Month of reporting:	Month-Year	Date of submission:	dd /mm / yyyy
Name of region:		Name of district:	
Name of sub-district:		Name of health facility	

Data from the yaws case register (WHO/Yaws/003) and the TCT-TTT daily summary sheet (WHO/Yaws/002)

Total community treatment		Round 1		Round 2		Round 3		Targeted		Total
No. of communities visited for TCT										
Population coverage										
	Age	6 months–5 years		6–9 years		10–14 years		≥ 15 years		Total
	Gender	F	M	F	M	F	M	F	M	
TCT	Population targeted									
	Population treated									
Targeted treatment	Population targeted									
	Population treated									
Total	Population targeted									
	Population treated									
Adverse events during community treatment										
No. of severe adverse events reported during community treatment										

Cases detected during community treatment									
	Age	< 5 years		5–14 years		≥ 15 years		Total	
	Gender	F	M	F	M	F	M	F	M
No. of suspected yaws cases									
No. of treponemal positive yaws cases									
No. of DPP-confirmed yaws cases									
No. of PCR-confirmed yaws cases									
Total									

Yaws testing	RDT	DPP	PCR
No. of suspected yaws cases tested with...			
No. of yaws cases positive to...			

Yaws individual treatment	Suspected cases	Treponemal positive cases	Confirmed cases
No. of yaws cases treated with azithromycin			

Date: _____

Name of reporting officer: _____ Signature of reporting officer: _____

Annex 5. Checklist for quality of surveillance in a yaws eradication programme

(Please tick Yes or No)

Indicator	Expected output	Planning	TCT	Post-TCT	Post-zero	Yes	No
Sensitivity of surveillance	At least one suspected yaws case should be detected annually per 10 000 population in children aged > 15 years	x	x	x	x		
Sensitivity of surveillance	At least one suspected yaws case should be detected annually per 10 000 population in children aged > 15 years	x	x	x	x		
Completeness of case investigation	All suspected yaws cases should be investigated (investigation form filled in, contact tracing, TTI)			x	x		
Completeness of follow-up	> 80% of confirmed yaws cases should be followed up within 4 weeks of treatment to assess clinical response	x	x	x	x		
Timely, complete reporting	At least 80% of expected routine (monthly) yaws surveillance reports (in endemic and non-endemic IUs) should be received on time, including zero reports where no yaws cases are seen.	x	x	x	x		
Serological confirmation	All suspected yaws cases should be tested serologically (RDT, DPP or T. pallidum particle agglutination assay – T. pallidum haemagglutination assay + rapid plasma reagin test).		x				
PCR confirmation	All serologically confirmed cases (with papilloma and ulcers) should be tested with PCR.		x				
Detecting azithromycin resistance	All 100% of treatment failures in confirmed yaws cases should be tested for antimicrobial resistance	x	x	x	x		

DPP: dual path platform; IU: implementation unit; PCR: polymerase chain reaction; RDT: rapid diagnostic test; TTI: total targeted treatment

Annex 6. Yaws surveillance indicators

Core indicator	Definition	Disaggregation	Comments
Epidemiology			
Yaws cases	Number of new suspected cases	By origin (autochthonous, imported) By age group (< 5 years, 5–14 years, ≥ 15 years) By gender	Number of new confirmed yaws cases is part of core morbidity data. Data from the yaws case register
	Number of new treponemal positive cases	By origin (autochthonous, imported) By age group (< 5 years, 5–14 years, ≥ 15 years) By gender	Number of new confirmed yaws cases is part of core morbidity data. Data from the yaws case register
	Number of new DPP-confirmed cases	By origin (autochthonous, imported) By age group (< 5 years, 5–14 years, ≥ 15 years) By gender	Number of new confirmed yaws cases is part of core morbidity data. Data from the yaws case register
	Number of new PCR-confirmed cases	By origin (autochthonous, imported) By age group (< 5 years, 5–14 years, ≥ 15 years) or (< 6 years, 6–9 years, 10–14 years, ≥ 15 years) By gender	Number of new confirmed yaws cases is part of core morbidity data. Data from the yaws case register
Yaws incidence	Number of new autochthonous confirmed yaws cases per 10 000 population	At finest administrative level available By age and gender if population data are available	Yaws incidence is part of the core morbidity module, based on number of new autochthonous confirmed yaws cases reported. Population data at finest administrative level are required
Endemic communities or villages	Number of yaws-endemic communities, i.e. communities where at least one new confirmed yaws case has been reported in the past 3 years	At community level	Communities endemic for yaws is part of the core morbidity module, based on number of new autochthonous confirmed yaws cases reported.
Population at risk of yaws	Number of people living in a yaws-endemic community, i.e. a community in which at least one new confirmed yaws case was reported in the past 3 years	At community level	Population at risk of yaws is part of the core morbidity module, based on number of new confirmed yaws cases reported. Population data at community level for endemic communities are required

Population that requires intervention against yaws	Population at risk living in an IU in which TCT is planned		
Gender distribution of new confirmed yaws cases	Proportion of females among new confirmed yaws cases = number of females among new confirmed yaws cases / total number of new confirmed yaws cases x 100		Data from yaws case register
Age distribution of new confirmed yaws cases	Proportion of children < 5 years among new confirmed yaws cases = number of children < 5 years among new confirmed yaws cases / total number of new confirmed yaws cases x 100		Data from yaws case register
	Proportion of children aged 5–14 years among new confirmed yaws cases = number of children aged 5–14 years among new confirmed yaws cases / total number of new confirmed yaws cases x 100		Data from yaws case register
	Proportion of new confirmed yaws cases > 15 years of age = number of new confirmed yaws cases > 15 years / total number of new confirmed yaws cases x 100		Data from yaws case register
Diagnosis			
Screening with RDT	Proportion of new suspected yaws cases positive by RDT = Number of new suspected yaws cases with positive result to RDT / Total number of new suspected yaws cases x 100		Data from yaws case register
	Proportion of positive RDT= Number of positive RDT / Total number of RDT performed x 100		Data from laboratory register or yaws register if it contains suspected yaws

Confirmation by DPP	Proportion of new yaws cases confirmed by DPP = Number of new suspected yaws cases with positive result to DPP / Total number of new suspected yaws cases x 100		Data from yaws case register
	Proportion of positive DPP = Number of positive DPP / Total number of DPP performed x 100		Data from laboratory register or yaws register if it contains suspected yaws
Confirmation by any recommended serological test	Proportion of new yaws cases confirmed by any recommended serological test = Number of new confirmed yaws cases with positive result to a recommended serological test / Total number of new suspected yaws cases x 100		Data from yaws case register
	Proportion of positive recommended serological tests = Number of positive recommended serological tests / Total number of any recommended serological test performed x 100		Data from laboratory register or yaws register if it contains suspected yaws
Confirmation by PCR	Proportion of new suspected yaws cases confirmed by PCR = Number of new suspected yaws cases with positive result to PCR / Total number of new suspected yaws cases x 100		Data from yaws case register
	Proportion of positive PCR = Number of positive PCR / Total number of PCR performed x 100		Data from laboratory case register
Individual treatment			
Proportion of new confirmed yaws cases treated with azithromycin	Proportion of new confirmed yaws cases treated with azithromycin = Number of new confirmed yaws cases treated with azithromycin / Total number of new confirmed yaws cases treated x 100		Data from yaws case register

Active case detection			
Active case detection campaigns	Number of communities visited for active case detection		Data from active case detection register
	Number of people examined during active case detection	At community level	
	Number of people who present with skin lesions during active case detection	At community level	
	Number of people tested with RDT during active case detection	At community level	
	Number of treponemal positive yaws cases identified during active case detection = Number of people positive to RDT during active case detection	At community level	
	Number of people tested with DPP during active case detection	At community level	
	Number of DPP-confirmed yaws cases during active case detection = Number of people positive to DPP during active case detection	At community level	

DPP: dual path platform; IU: implementation unit; PCR: polymerase chain reaction

Annex 7. Standard operating procedures for rapid diagnostic and dual path platform tests in the field

Both RDT and DPP tests can be performed in the field, and kits can be stored at room temperature. Laboratory technicians (and other health workers) should be trained well and should strictly follow the instructions of the manufacturer and the standards in performing the tests. Infection control should be ensured by wearing gloves and disposing of laboratory waste bags into a container.

Results should be read after the specified time, which is 20 min for RDTs and 15 min for DPPs.

The method, including taking a blood sample, should be explained to people with suspected yaws before testing.

RDT for syphilis (SD Bioline 3.0) for screening all suspected cases of yaws

The SD Bioline Syphilis 3.0 test is an immunochromatographic assay for qualitative detection of antibodies of all isotypes (IgG, IgM, IgA) against *Treponema pallidum*.



A video link on performing the test is available at:

<http://www.standardia.com/en/home/support/training/Syphilis.htm>.

- Take the test kits from the box, and keep the all the items on the table at which the suspected yaws case is to be tested.
- Write the number of the suspected case on the test kit.
- Wear gloves to prevent infection.
- Clean the finger of the suspected case with an alcohol swab, and prick it with a needle.
- Collect 20 µL of whole blood in a capillary tube, and drop it slowly into the test well.

- Add four drops of diluent to the well.
- Wait for 20 min, and read the result. Do not wait longer than 20 min.

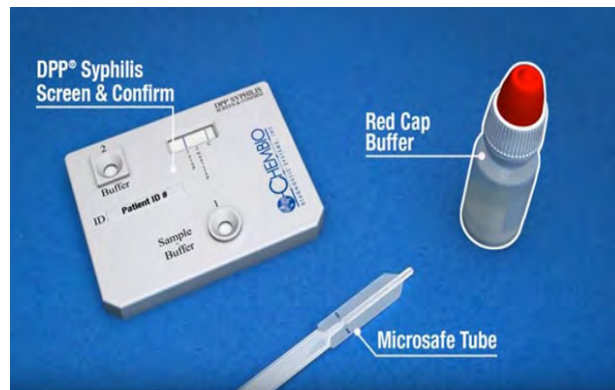


Positive RDT: test (T) and control (C) lines are present. Negative RDT: only the control (C) line is present.

Dual path platform (treponema and non-treponema)

A video link for performing the test is available at:

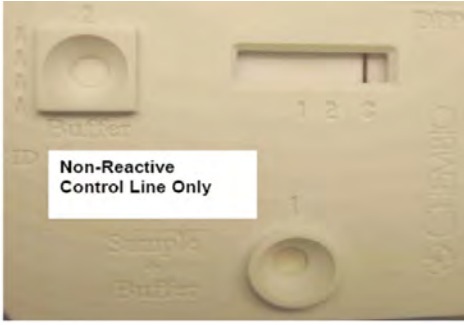
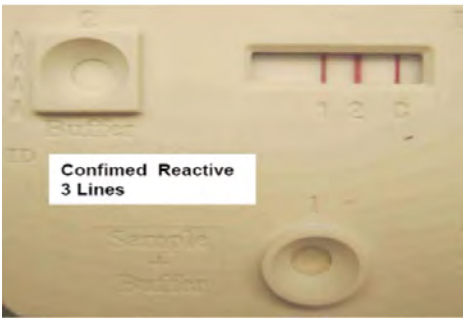
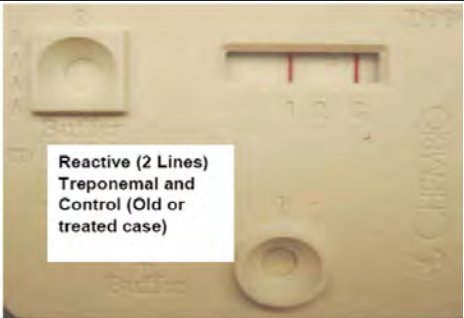
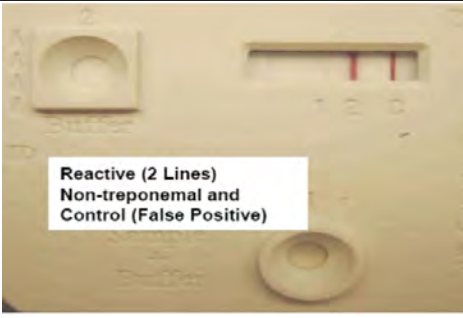
<http://chembio.com/products/human-diagnostics/dpp-syphilis-screen-and-confirm/>.



The Chembio DPP® Syphilis Screen & Confirm Assay is a single-use immunochromatographic, rapid screening test for simultaneous detection of antibodies to non-treponemal and *T. pallidum* antigens in finger-stick whole blood. As each DPP test kit costs US\$ 2.5, it is best to use a DPP test to confirm yaws cases that are found to be positive in an RDT, which cost US\$ 0.5 each.

- Wearing gloves, prick the person's finger, and collect 10 µL of blood with a micropipette.
- Discard the first drop of blood, and collect the second.
- Transfer the blood to well 1, and add two drops of buffer solution from the bottle with a red cap.
- Wait for 5 min, until the blue and green lines on the test kit disappear.
- Then, add five drops of buffer solution to well 2.
- Read the results after 15 min. Do not wait longer than 15 min.
- Results can be read 20 min after the beginning of the test.
- Dispose of all waste and used materials in a bin provided for this purpose.
-

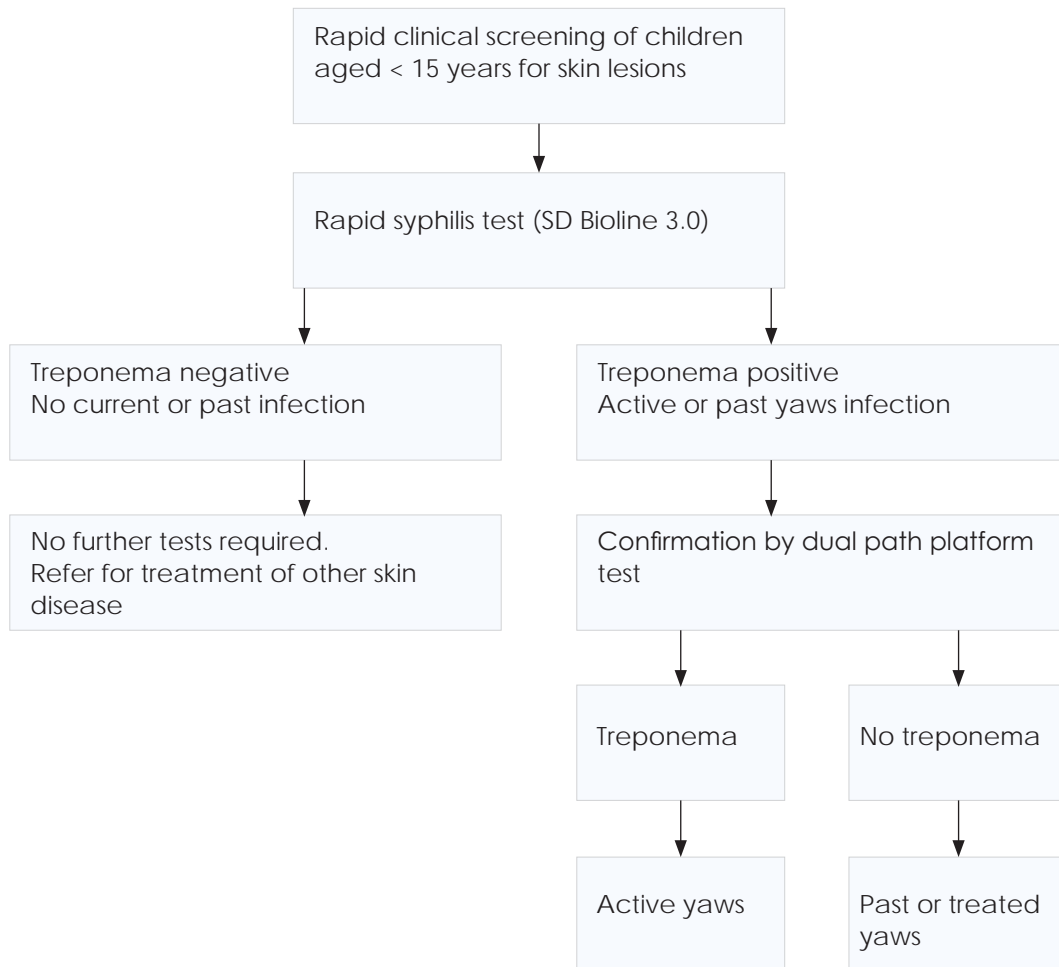
The instructions in www.chembio.com should be followed strictly.

 <p>Non-Reactive Control Line Only</p>	 <p>Confirmed Reactive 3 Lines</p>
<p>Interpretation of results</p>	<p>Interpretation of results</p>
 <p>Reactive (2 Lines) Treponemal and Control (Old or treated case)</p>	 <p>Reactive (2 Lines) Non-treponemal and Control (False Positive)</p>

Standard operating procedures for collecting specimens from skin ulcerations and papillomata in children for detection of *T. pallidum* and *Haemophilus ducreyi* by PCR

- Identify the lesion selected for photographing, and write the patient's identification number on the test tube into which the sample will be collected.
- If the lesion is dry, moisten a swab or curette (in cases of papillomata) with saline, and collect exudates from the base of ulcerations with a rolling motion of the swab.
- If a papilloma is present, the lesion should be moistened and a curette used to collect exudates or other material from the growths.
- When the sample is collected on a swab, carefully insert the swab into the sample collection test tube and seal it.
- A photograph is taken on collection of tissue for PCR testing.

Annex 8. Algorithm for clinical screening and serological confirmation of a yaws case



Annex 9. Checklist for planning implementation of the Morges strategy (revised 6 December 2018)

Therapeutic coverage

- ≥ 90%

Geographical coverage

- 100%

Initial mapping

- Systematic serological testing of children (aged 1–14 years) with skin lesions in a purposive active search for yaws cases

Active surveillance

- Systematic serological testing of all suspected yaws cases detected passively and actively, integrated with other skin diseases when possible
- Investigation of all rumours of yaws cases reported by community volunteers

Criteria for eradication of yaws

- Absence of new serologically confirmed indigenous cases for 3 consecutive years.
- Absence of PCR positivity in any serologically confirmed test (DPP or *T. pallidum* particle agglutination assay–*T. pallidum* haemagglutination assay plus rapid plasma reagin test positive) in an autochthonous yaws case after interruption of transmission.
- Absence of evidence of transmission for 3 continuous years measured in serological surveys of children aged 1–5 years.

	Planning	
	Yes	No
Strategy and plan in place for > 90% treatment and 100% geographical coverage of the targeted IUs?	<input type="checkbox"/>	<input type="checkbox"/>
Endemicity of the IUs to be treated established from:		
o Routine surveillance data?	<input type="checkbox"/>	<input type="checkbox"/>
o Purposive active case search data?	<input type="checkbox"/>	<input type="checkbox"/>
o Survey data?	<input type="checkbox"/>	<input type="checkbox"/>
Estimated population to be treated calculated?	<input type="checkbox"/>	<input type="checkbox"/>
Adequate resources secured to ensure TCT, post-TCT (follow-up active surveillance, resistance monitoring, ITT) and post-zero case phases activities?		
o Funding	<input type="checkbox"/>	<input type="checkbox"/>
o Rapid diagnostic tests: RDT (quantities determined according to local circumstances and resources)	<input type="checkbox"/>	<input type="checkbox"/>

o DPP (quantities determined according to local circumstances and resources)	<input type="checkbox"/>	<input type="checkbox"/>
o Swab sticks (quantities determined according to local circumstances and resources)	<input type="checkbox"/>	<input type="checkbox"/>
o PCR specimen collection containers and transport media (quantities determined according to local circumstances and resources)	<input type="checkbox"/>	<input type="checkbox"/>
o Laboratory identified to conduct PCR?	<input type="checkbox"/>	<input type="checkbox"/>
o Azithromycin 500 mg secured for TCT and/or TTT?	<input type="checkbox"/>	<input type="checkbox"/>
o Benzathine penicillin (as a backup) and lidocaine 2 mL for anaesthesia before injection of benzathine penicillin: (quantities determined according to local circumstances and resources)	<input type="checkbox"/>	<input type="checkbox"/>
Adrenaline or hydrocortisone secured for treatment of allergy to benzathine penicillin? (quantities determined according to local circumstances and resources)	<input type="checkbox"/>	<input type="checkbox"/>
o Logistics for treating other conditions in the field	<input type="checkbox"/>	<input type="checkbox"/>
o Surveillance forms (print and electronic forms) distributed	<input type="checkbox"/>	<input type="checkbox"/>
o Information, education and communication materials available (quantities determined according to local circumstances and resources)	<input type="checkbox"/>	<input type="checkbox"/>
o Transport	<input type="checkbox"/>	<input type="checkbox"/>
Advocacy to district political, health and education authorities?	<input type="checkbox"/>	<input type="checkbox"/>
Training of all key personnel planned (for TCT and strengthened surveillance)?		
o Doctors and nurses	<input type="checkbox"/>	<input type="checkbox"/>
o Laboratory technicians	<input type="checkbox"/>	<input type="checkbox"/>
o Other health workers	<input type="checkbox"/>	<input type="checkbox"/>
o Data managers	<input type="checkbox"/>	<input type="checkbox"/>
o Village volunteers	<input type="checkbox"/>	<input type="checkbox"/>
o Schoolteachers	<input type="checkbox"/>	<input type="checkbox"/>
o Strategies to deal with "rumours" about drugs and any adverse events clearly stressed during training	<input type="checkbox"/>	<input type="checkbox"/>
Community mobilization		
o Information sessions planned for all communities and schools?	<input type="checkbox"/>	<input type="checkbox"/>
o Timetable to visit each community planned and communicated to the communities?	<input type="checkbox"/>	<input type="checkbox"/>
o Importance of everyone taking the medicine to interrupt transmission stressed during community mobilization and TCT?	<input type="checkbox"/>	<input type="checkbox"/>
o Importance of anyone who is missing during TCT to report for treatment so that transmission is interrupted should be stressed during community mobilization and TCT?	<input type="checkbox"/>	<input type="checkbox"/>
o Strategies to handle "rumours" about drugs and any adverse events clearly outlined in the communication plan?	<input type="checkbox"/>	<input type="checkbox"/>
o Adequate information, education and communication in all communities (100%)?	<input type="checkbox"/>	<input type="checkbox"/>
o Importance of hygiene stressed in health education messages?	<input type="checkbox"/>	<input type="checkbox"/>
TCT (mass drug administration)	<input type="checkbox"/>	<input type="checkbox"/>
o Azithromycin and rapid tests sent to IU or health centres at which TCT will be coordinated?	<input type="checkbox"/>	<input type="checkbox"/>
o Endemic communities (including schools) are informed of date of TCT? information, education and communication (posters, radio announcements) done?	<input type="checkbox"/>	<input type="checkbox"/>

o TCT completed?	<input type="checkbox"/>	<input type="checkbox"/>
o Records of participants kept safely on site, including registration and treatment records for independent verification?	<input type="checkbox"/>	<input type="checkbox"/>
o Therapeutic coverage calculated?	<input type="checkbox"/>	<input type="checkbox"/>
o Geographical coverage calculated?	<input type="checkbox"/>	<input type="checkbox"/>
o Documentation of refusals and follow-up of refusals planned?	<input type="checkbox"/>	<input type="checkbox"/>
o Depending on community endemicity after previous round, further TCT planned?	<input type="checkbox"/>	<input type="checkbox"/>
Post-TCT activities planned?		
o Immediate mop-up plan in place?	<input type="checkbox"/>	<input type="checkbox"/>
o 4-week follow-up planned to assess immediate treatment outcome (cured or not cured or to identify treatment failure)?	<input type="checkbox"/>	<input type="checkbox"/>
o Collection of swabs from presumed treatment failures for PCR and azithromycin resistance testing planned?	<input type="checkbox"/>	<input type="checkbox"/>
o Treatment of presumed treatment failures with injected benzathine penicillin planned?	<input type="checkbox"/>	<input type="checkbox"/>
o Active village surveillance planned?	<input type="checkbox"/>	<input type="checkbox"/>
o Awareness and information, education and communication planned?	<input type="checkbox"/>	<input type="checkbox"/>
o Depending on coverage, TTT planned?	<input type="checkbox"/>	<input type="checkbox"/>
Management of other skin diseases		
o Treatment of other common skin diseases planned?	<input type="checkbox"/>	<input type="checkbox"/>
o Referral of cases of other skin diseases found planned?	<input type="checkbox"/>	<input type="checkbox"/>
Supportive close supervision and monitoring planned by:		
o National technical committee for yaws eradication?	<input type="checkbox"/>	<input type="checkbox"/>
o National yaws eradication programme?	<input type="checkbox"/>	<input type="checkbox"/>
o Regional or provincial technical team?	<input type="checkbox"/>	<input type="checkbox"/>
o District and sub-district technical teams?	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of planned supervision and monitoring throughout implementation at district, regional and provincial levels		
o Monthly?	<input type="checkbox"/>	<input type="checkbox"/>
o Quarterly?	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of planned supervision and monitoring from national level throughout implementation		
o Quarterly?	<input type="checkbox"/>	<input type="checkbox"/>
o 6-monthly?	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of planned supervision and monitoring from international level throughout implementation		
o 6-monthly?	<input type="checkbox"/>	<input type="checkbox"/>
o Annually?	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of house-to-house visits by village volunteers planned		
o Weekly?	<input type="checkbox"/>	<input type="checkbox"/>
o Bi-weekly?	<input type="checkbox"/>	<input type="checkbox"/>

Frequency of transmitting reports from health centre, to district, province and higher level		
o Weekly?	<input type="checkbox"/>	<input type="checkbox"/>
o Monthly?	<input type="checkbox"/>	<input type="checkbox"/>
Review of work at district, provincial and national levels		
o Monthly?	<input type="checkbox"/>	<input type="checkbox"/>
o Quarterly?	<input type="checkbox"/>	<input type="checkbox"/>
o Half-yearly?	<input type="checkbox"/>	<input type="checkbox"/>
External quality assurance of PCR samples planned?		

IU: implementation unit; PCR: polymerase chain reaction; RDT: rapid diagnostic test; TCT: total community treatment; TTT: total targeted treatment

Annex 10. Procedures for finding yaws cases

Objectives

1. To assess the true endemicity of yaws to guide mass treatment
2. To establish a continuous active surveillance system to detect and respond to yaws

Note: Depending on the other diseases that are endemic in the area and available resources, it may be appropriate to consider integrated case searching for other skin NTDs,¹ such as Buruli ulcer, leprosy and leishmaniasis, depending on the country. WHO has prepared guidance on considerations for integrating surveillance of skin NTDs, for used when planning activities.

1. Preparatory meetings at national level

A national meeting to discuss advocacy and technical requirements is convened to decide on the protocol, a proposal for case searches and a provisional budget. The protocol includes the rationale, justification, objectives, expected outputs, methods, tools, photography, training, consent (if required), ethical approval (if required), data analysis, data dissemination, benefits to the community and engagement of the community, education sectors and the media (multisectoral collaboration).

Meetings should also be held with other sectors, such as the ministries of education and of social and community development, as schoolchildren are the primary target of surveys, to explain the purpose of case-searching and to obtain central support.

2. Preliminary planning meetings with regional, district and subdistrict health teams

During initial meetings with regional, district and subdistrict health teams (including dermatologists when available and feasible), the objectives of the project should be discussed, including:

- training (who to train, on what and for how long);
- information, education and communication (IEC) and mobilization of communities and schools;
- method for active case searches (in schools, communities, workplaces), by whom and how (in every village), house-to-house or at a central location (community meeting places, schools or both);
- photographs of every case and the results of rapid diagnostic tests (RDTs) and dual path platform (DPP) tests;
- taking the global positioning system (GPS) coordinates of villages;
- diagnosis (RDTs, DPP test and swabs for yaws in children aged < 15 years);
- collection, storage and transport of samples to the reference laboratory;
- treatment of cases and also of other skin diseases and referral of cases that are difficult to diagnose;
- surveillance in communities and health facilities; and
- data collection, analysis, including mapping, and dissemination.

¹ Skin NTDs. Geneva: World Health Organization; 2020 (<https://www.who.int/teams/control-of-neglected-tropical-diseases/skin-ntds>).

Meetings with other regional, district and subdistrict sectors, such as the ministry of education or of social and community development and local government officials should be held to explain the purpose of case searches and to obtain their support. Meetings should be held with the media to increase community awareness and obtain their cooperation in surveys.

Training in practical aspects of yaws

Train a core team of health workers in standardized procedures for:

- finding skin lesions and hand and foot disability;
- performing and interpreting RDT and DPP test results;
- collecting, labelling, storing and transporting swabs;
- collecting, labelling, storing and transporting blood specimens (if required);
- performing sensory testing of skin lesions with cotton wool or nylon thread;
- dressing wounds;
- taking the GPS coordinates of villages;
- collecting, entering and analysing data; and
- counselling people with confirmed cases and building community confidence by alleviating fear of tests and treatment of any adverse events.

IEC and social mobilization

- Train health workers.
- Train village volunteers.
- Train schoolteachers.
- Organize community durbars (including religious leaders and traditional healers) to discuss yaws, the eradication policy, its rationale and why their full cooperation is necessary. Encourage open discussion, so that the population can express its views.
- Develop, adapt or acquire resource materials (IEC, training).
- Ensure that IEC materials are widely distributed and displayed in all health facilities, villages, schools, market- and workplaces before case searching or mass treatment.
- Use local radio to inform the population, with standardized messages on yaws and on the importance of early reporting broadcast regularly.
- Ensure discussion of other locally appropriate points.

Active case search

Every village should be searched (highly recommended)

Start from most remote villages and work back towards less remote ones. The most remote villages are > 5 km from health facilities and from main, tarred roads.

Step 1

- List all the villages in the district or subdistrict and their populations.
- Make a schedule for visits of the case search team to villages.
- Inform the populations well in advance, and choose days on which community members are likely to be at home or when schools are open. When schools are closed or on holidays, a community case search will reach schoolchildren.

Step 2

- Train the team in a cascade manner.
- Discuss and choose team members, and define their roles according to national and district situations.
- Identify the skills or training required to ensure the composition of the team.

Team	Proposed composition	Role
National	Clinician or dermatologist Epidemiologist Laboratory scientist Nurse Data analyst Driver (who can also assist)	Coordinate, support and monitor districts
Regional	Clinician or dermatologist Epidemiologist Laboratory scientist Nurse Driver (who can also assist)	Coordinate, support and monitor districts
District	Health worker or clinician Nurse Laboratory technician Person to enter and analyse data Driver (who can also assist)	Plan, coordinate and support or implement the case search with subdistrict and community team members
Subdistrict and community	Health worker or clinician Nurse Laboratory technician Person to enter data Driver (who can also assist)	Plan and implement the case search

Step 3

Decide on the screening approach (community and/or school)

- Children in school should be screened in schools.
- Children out of school should be screened at a central location in the village.
- Adults should be screened at a central location in the village.
- House-to-house screening can be used, particularly in small villages.
- Take the GPS coordinates of every village searched.

Step 4

Actual screening day (school or community)

- The team should arrive at the school or village early, to set up the place for screening.
- Meet the village chief and elders, village volunteers, head of the school and other community members.
- Ensure that the set-up allows a logical flow of the people (enter --> registration, screening, RDT, DPP, swab collection, treatment and recording --> exit).
- Manage the crowd to ensure order during screening.

Diagnosis

- Screen all children aged < 15 years with skin lesions with an RDT (SD Bioline 3.0).
- Confirm any that are positive with a DPP test (Chembio).
- For those positive in a DPP test, take swabs from ulcers and scrapings from papillomas and place in a swab tube without preservative or transport media (dry swabs).
- Carefully label the specimens, and complete the necessary laboratory form. The swabs can be transported in a cold box or at ambient temperature for PCR analysis.

Treatment and referral of cases

Yaws

All DPP-positive cases found during the case search should be treated with a single dose of azithromycin (30 mg/kg). National recommendations may be for dosing based on weight, height or age. One dosing regime, based on age, is provided below.

Age (years)	Number of tablets (500 mg)
< 6*	1 tablet crushed and mixed with water
6–9	2 tablets
10–14	3 tablets
≥ 15	4 tablets

* Azithromycin is not administered to infants < 6 months of age.

Other ulcers

Cases of yaws-like ulcers should be managed according to national treatment guidelines. All will require wound management and treatment with or without antibiotics. Note: Some small yaws-like ulcers that are DPP-negative in children can be treated with a single dose of azithromycin. These ulcers are commonly caused by *Haemophilus ducreyi*.

Other skin lesions

Cases of other non-ulcerative lesions identified during case searches should be managed or referred.

Data collection, analysis and dissemination

The yaws-specific register (Yaws/003) should be used to record all cases of yaws screened, tested with an RDT and confirmed with a DPP test, the details of treatment and treatment results at 4 weeks. Other forms, such as a laboratory request, should accompany any specimen sent for PCR (refer to Procedures for collection, storage and transport of specimens for PCR diagnosis of yaws: guidance for health workers). Data analysis should include mapping villages by the endemicity of the diseases found.

Estimation of coverage during case searches

To estimate the population covered during a case search, the team must enumerate the populations of the villages, communities and schools to be visited well in advance. These figures will be used as the denominator in calculations of coverage.

Surveillance

After the case search, the results should be used to strengthen the surveillance system for yaws and other diseases.

Surveillance can be conducted in one of two ways, by:

- active surveillance in a community or village, in which village volunteers record all suspected yaws lesions in their communities and report them to the nearest health centre, including teachers who report cases among children; or
- surveillance in health facilities (health centres and hospitals), which is mainly passive, in which trained health workers diagnose, treat and report any case and use the appropriate recording and reporting forms. All health centre staff should be trained in performing RDTs (and DPP tests). Ideally, DPP testing should be performed at district level to confirm any suspected RDT-positive cases, although this recommendation depends on the local situation.

In close cooperation with the community or village volunteers, a system of active detection and response (see below) should be established to ensure that all suspected yaws cases are promptly followed up by the district health team with the necessary investigations and treatment.

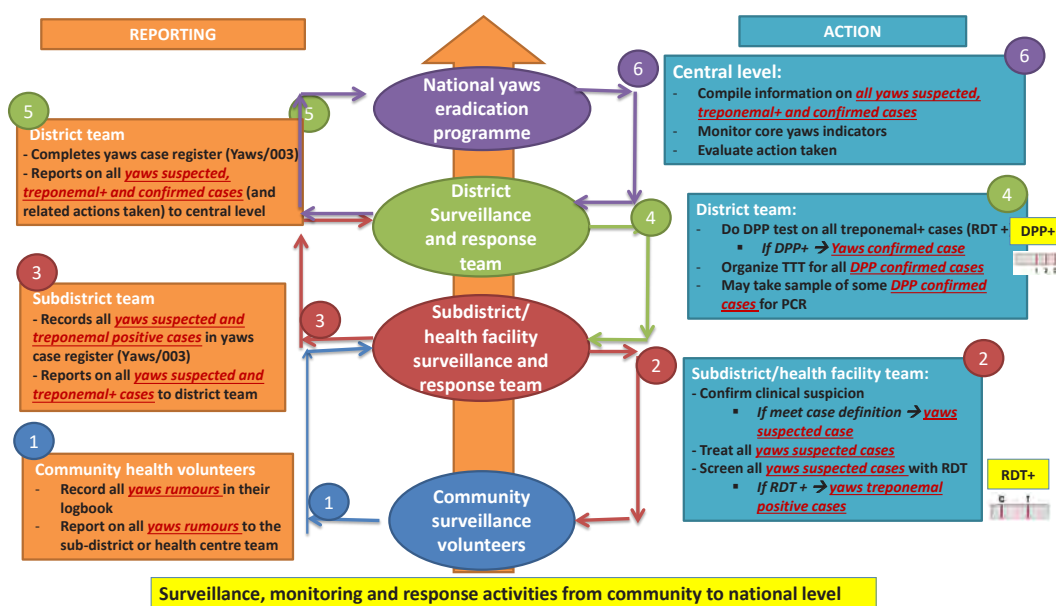


Fig. 7. Example of a national yaws surveillance, monitoring and response system

Duration of case-searching in a subdistrict

Depending on the population of the villages and distances, a team can complete a good case search in a single village in about 1 day.

Budget items

- preparatory meetings at national level;
- preliminary planning meetings with regional, district and subdistrict teams;
- training of health workers, village volunteers and schoolteachers;
- IEC and community mobilization;
- case searches;
- supervision;
- transport;
- RDTs (total population x 42% x 30%);
- DPP tests (10% x RDTs);
- azithromycin (quantities according to DPP results plus another 10% to treat DPP-negative yaws-like ulcers);
- other supplies and logistics (see checklist, below);
- laboratory confirmation by PCR;
- technical support (consultancy, monitoring, supervision and laboratory); and
- data entry and analysis and report-writing.

Checklist for yaws field work	
<ul style="list-style-type: none"><input type="checkbox"/> IEC materials (posters and booklets)<input type="checkbox"/> azithromycin<input type="checkbox"/> rapid tests ([] RDT and [] DPP)<input type="checkbox"/> lancet<input type="checkbox"/> alcohol swabs<input type="checkbox"/> gloves (disposable)<input type="checkbox"/> cold box for storing samples<input type="checkbox"/> cotton swabs for collecting samples from lesions<input type="checkbox"/> curettes for removing scabs from papillomas<input type="checkbox"/> dressing materials (normal saline, gauze, cotton-wool, bandages)<input type="checkbox"/> sharps containers<input type="checkbox"/> plastic refuse bags<input type="checkbox"/> recording forms<input type="checkbox"/> markers	<ul style="list-style-type: none"><input type="checkbox"/> snacks and drinks<input type="checkbox"/> disposable cups for administering azithromycin<input type="checkbox"/> camera or mobile phone with good camera<input type="checkbox"/> GPS or mobile phone app<input type="checkbox"/> plasters<input type="checkbox"/> scissors<input type="checkbox"/> other common medicines (e.g. paracetamol, antimalarial, antifungal)<input type="checkbox"/> disposable tissues<input type="checkbox"/> antiseptic solutions<input type="checkbox"/> soap<input type="checkbox"/> sanitizers<input type="checkbox"/> venous blood collection tubes<input type="checkbox"/> butterfly needles for blood collection<input type="checkbox"/> needle (23-G) and syringe (5 mL)<input type="checkbox"/> tourniquets for collecting blood

DPP: dual path platform; GPS: global positioning system; IEC: information, education and communications; RDT: rapid diagnostic test

Example of budget items for similar activities by other programmes (for guidance only)	
Advocacy (and media briefing)	Vehicles
Data management	Communication and IT equipment
Specific drug supply	Accommodation equipment
Supervision	Mass drug administration and IEC equipment
IEC and social mobilization	Travel and transport
Baseline prevalence	Vehicle fuel and maintenance
Mapping	Accommodation and sustenance
Monitoring and evaluation	Mass drug administration and IEC consumables and other charges
Mass drug administration	Drugs (other general for adverse events)
Planning and organization	Communication
Training	Personnel

IEC: information, education, communication; IT: information technology

Examples of activities and items included in costing for other programmes (for guidance only)	
Activity	Items to be budgeted
Pre-meetings To sensitize communities and schools To plan surveys with local teams	Meeting facilities (meeting materials, handouts, pens, writing pads, coffee and lunch if applicable) Supplies Honoraria for resource people Per diem and lodging Travel
Training On-the-job training for local staff	Meeting facilities Supplies Food Honoraria for resource people Per diem and lodging Travel
Survey Implementation of survey and data collection	RDT and DPP Supplies for using rapid tests (gloves, lancet, alcohol swabs, cotton balls, sharps containers, biohazard bags, etc.) Swabs In-country transport of RDTs Drugs to treat positive survey patients Social mobilization of communities Stationery Per diem and lodging Food Travel Vehicle rental and/or fuel Prepaid phone cards Snacks for survey participants
Post-survey meetings to inform district health offices of results	Meeting facilities Supplies Honoraria for resource people Per diem and lodging Travel
Confirmatory testing PCR on selected swabs for confirmatory and resistance testing	Meeting facilities (meeting materials, handouts, pens, writing pads, coffee and lunch if applicable) Supplies Honoraria for resource people Per diem and lodging Travel
Survey design, data analysis and report-writing	Support for survey design, data collection and report-writing
Other	Ethics review committee fees Overhead costs for local nongovernmental organization support Translation costs Contingency costs

DPP: dual path platform; RDT: rapid diagnostic test; PCR: polymerase chain reaction

Yaws mainly affects children living in poor communities in 15 countries of the World Health Organization (WHO) African, South-East Asia and Western Pacific regions. The disease is targeted for eradication by 2030.

This manual provides guidance for countries on how to implement surveillance activities, and monitor and evaluate the achievements towards the interruption of yaws transmission. It is intended for use by programme managers of national yaws eradication programmes, partners involved in the implementation of yaws eradication activities and WHO technical staff who provide technical support to countries in the eradication of yaws.

Eradication of yaws: surveillance, monitoring and evaluation. A manual for yaws eradication programme managers should be used together with Eradication of yaws: a guide for programme managers, Eradication of yaws: procedures for verification and certification of interruption of transmission and Summary report of a consultation on the eradication of yaws.

