

WHO Malaria Technical Updates



July 2023

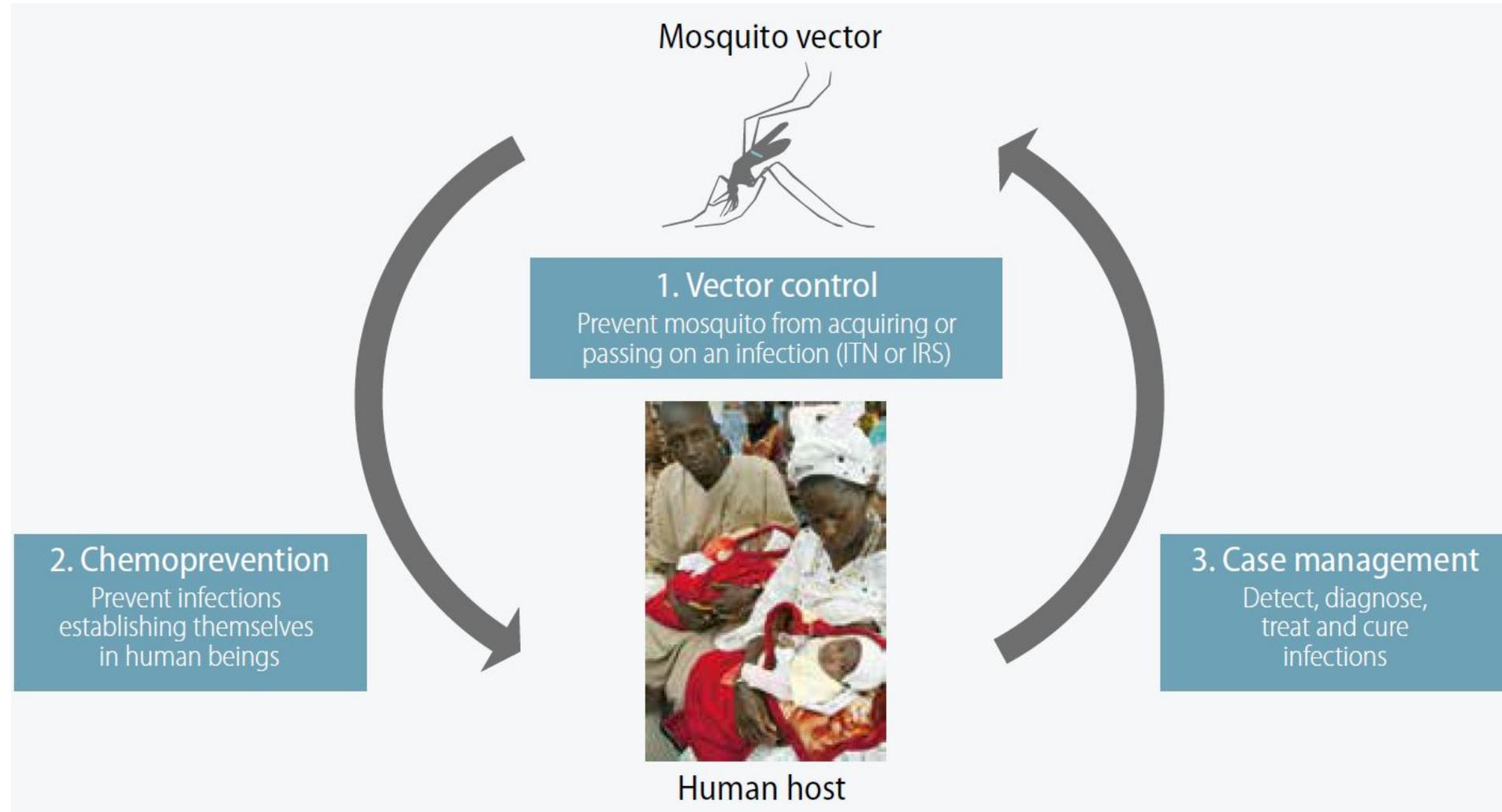
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Global **Malaria** Programme



**World Health
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Main malaria prevention and treatment strategies



Key antimalarial interventions & strategies

Prevention

- Insecticide-treated mosquito nets
- Indoor Residual Spraying

Preventive Chemotherapy

- IPT in pregnancy (IPTp)
- Perennial Malaria Chemoprevention (PMC /IPTi+)
- SMC
- IPT in School Children
- Post Discharge malaria chemoprevention
- MDA

Malaria vaccine

Diagnosis & Treatment

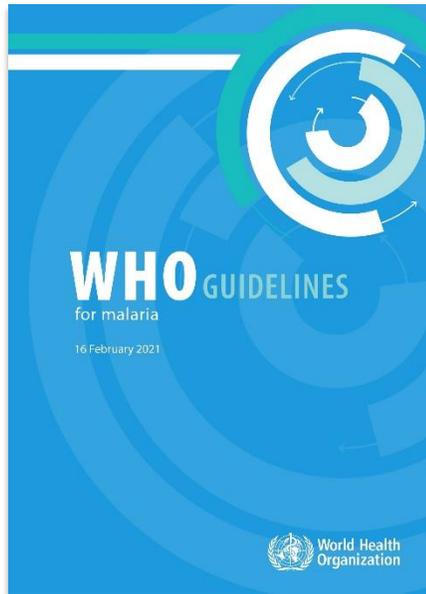
- Parasite based diagnosis
 - Microscopy
 - Rapid Diagnostic Tests
 - Artemisinin-based combination therapies (ACTs)
 - Severe Malaria
 - Artesunate
- Case management service delivery areas::
- Health facilities
 - Community Case Management
 - Private sector

Surveillance, M & E

- Routine HMIS
- Malaria surveillance and response systems
- Household surveys
- Health Facility Surveys

Strengthening health systems in endemic countries

Main malaria prevention and treatment strategies



Malaria Prevention

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Entomology and Vector Control





Strong recommendation for , High certainty evidence

Pyrethroid-only nets (2019)

Pyrethroid-only long-lasting insecticidal nets (LLINs) should be deployed for the prevention and control of malaria in children and adults living in areas with ongoing malaria transmission.

Conditional recommendation for , Moderate certainty evidence

Pyrethroid-PBO ITNs (2022)

Pyrethroid-PBO ITNs instead of pyrethroid-only LLINs can be deployed for the prevention and control of malaria in children and adults in areas with ongoing malaria transmission where the principal malaria vector(s) exhibit pyrethroid resistance.



Strong recommendation for , Moderate certainty evidence

New

Pyrethroid-chlorfenapyr ITNs vs pyrethroid-only LLINs (2023)

Pyrethroid-chlorfenapyr ITNs should be deployed instead of pyrethroid-only LLINs for prevention of malaria in adults and children in areas with pyrethroid resistance.

Conditional recommendation for , Moderate certainty evidence

New

Pyrethroid-chlorfenapyr ITNs vs pyrethroid-PBO ITNs (2023)

Pyrethroid-chlorfenapyr ITNs can be deployed instead of pyrethroid-PBO ITNs for prevention of malaria in adults and children in areas with pyrethroid resistance.



Conditional recommendation for , Moderate certainty evidence **New**

Pyrethroid-pyriproxyfen ITNs vs pyrethroid-only LLINs (2023)

Pyrethroid-pyriproxyfen ITNs can be deployed instead of pyrethroid-only LLINs for prevention of malaria in adults and children in areas with pyrethroid resistance.

Conditional recommendation against , Moderate certainty evidence **New**

Pyrethroid-pyriproxyfen ITNs vs pyrethroid-PBO ITNs (2023)

Pyrethroid-pyriproxyfen ITNs are not recommended for deployment over pyrethroid-PBO ITNs for prevention of malaria in adults and children in areas with pyrethroid resistance.



Good practice statement

Achieving and maintaining optimal coverage with ITNs for malaria prevention and control (2019)

To achieve and maintain optimal ITN coverage, countries should apply mass free net distribution through campaigns, combined with other locally appropriate delivery mechanisms such as continuous distribution using antenatal care (ANC) clinics and the Expanded Programme on Immunization (EPI).

Good practice statement

Management of old ITNs (2019)

Old ITNs should only be collected where there is assurance that: i) communities are not left without nets, i.e. new ITNs are distributed to replace old ones; and ii) there is a suitable and sustainable plan in place for safe disposal of the collected material.



Strong recommendation for , Low certainty evidence

Indoor residual spraying (2019)

IRS should be deployed for the prevention and control of malaria in children and adults living in areas with ongoing malaria transmission.

Conditional recommendation against , Moderate certainty evidence

Prioritize optimal coverage with either ITNs or IRS over combination (2019)

The co-deployment of ITNs and IRS is not recommended for prevention and control of malaria in children and adults in areas with ongoing malaria transmission. Priority should be given to delivering either ITNs or IRS at optimal coverage and to a high standard, rather than introducing the second intervention as a means to compensate for deficiencies in the implementation of the first intervention.



Good practice statement

Access to ITNs or IRS at optimal coverage levels (2019)

Access to effective vector control using ITNs or IRS at optimal coverage levels should be ensured for all populations at risk of malaria in most epidemiological and ecological settings.

Good practice statement

No scale-back in areas with ongoing local malaria transmission (2019)

In areas with ongoing local malaria transmission (irrespective of both the pre-intervention and current level of transmission), vector control interventions should not be scaled back. Ensuring access to effective malaria vector control at optimal levels for all inhabitants of such areas should be pursued and maintained.



Strong recommendation for , High certainty evidence

Insecticide-treated nets: Humanitarian emergency setting (2022)

Insecticide-treated nets (ITNs) should be deployed for the prevention and control of malaria in children and adults in areas with ongoing malaria transmission affected by a humanitarian emergency.

Conditional recommendation for , Very low certainty evidence

Indoor residual spraying: Humanitarian emergency setting (2022)

IRS can be deployed for the prevention and control of malaria in children and adults in areas with ongoing malaria transmission affected by a humanitarian emergency.



Conditional recommendation for , Low certainty evidence

Larviciding (2019)

Insecticides can be regularly applied to water bodies (larviciding) for the prevention and control of malaria in children and adults as a supplementary intervention to ITNs or IRS in areas with ongoing malaria transmission where aquatic habitats are few, fixed and findable.

Conditional recommendation for , Low certainty evidence

House screening (2021)

Screening of residential houses can be used for the prevention and control of malaria in children and adults in areas with ongoing malaria transmission.



Conditional recommendation against , Low certainty evidence

Insecticide-treated clothing (2019)

Deployment of insecticide-treated clothing is not recommended for the prevention and control of malaria at the community level in areas with ongoing malaria transmission; however, insecticide-treated clothing may be beneficial as an intervention to provide personal protection against malaria in specific population groups.

Conditional recommendation against , Very low certainty evidence

Space spraying (2019)

Space spraying is not recommended for the prevention and control of malaria in children and adults in areas with ongoing malaria transmission; IRS or ITNs should be prioritized instead.

Conditional recommendation against , Low certainty evidence

Topical repellents (2019)

The deployment of topical repellents in areas with ongoing malaria transmission is not recommended if the aim is to prevent and control malaria at the community level.

Preventive Chemotherapies

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Intermittent preventive treatment of malaria in pregnancy (IPTp)

4.2.1 Intermittent preventive treatment of malaria in pregnancy (IPTp)

 Strong recommendation for , Moderate certainty evidence

Intermittent preventive treatment of malaria in pregnancy (2022)

In malaria-endemic areas, pregnant women of all gravidities should be given antimalarial medicine at predetermined intervals to reduce disease burden in pregnancy and adverse pregnancy and birth outcomes.

- Antenatal care (ANC) contacts remain an important platform for delivering IPTp. Where inequities in ANC service and reach exist, other delivery methods (such as the use of community health workers) may be explored, ensuring that ANC attendance is maintained and underlying inequities in ANC delivery are addressed.

Perennial Malaria Chemoprevention (former IPTi)

4.2.2 Perennial malaria chemoprevention (PMC) - formerly intermittent preventive treatment of malaria in infants (IPTi)

Conditional recommendation for , Moderate certainty evidence

Perennial malaria chemoprevention (2022)

In areas of moderate to high perennial malaria transmission, children belonging to age groups at high risk of severe malaria can be given antimalarial medicines at predefined intervals to reduce disease burden.

PMC: Practical information

- Medicines for PMC should be different from that used for first-line malaria treatment.
- Evidence is limited on other medicines besides SP; including potential cumulative toxicity, efficacy, adherence to multi-day regimens, and cost-effectiveness in the context of PMC in young children.
- The EPI platform remains important for delivering PMC, especially in the first year of life, and it may be possible to make use of the EPI or other routine health visits or establish new contacts to reach children over 1 year of age. Research on alternative approaches for PMC delivery beyond the EPI schedules may be warranted.

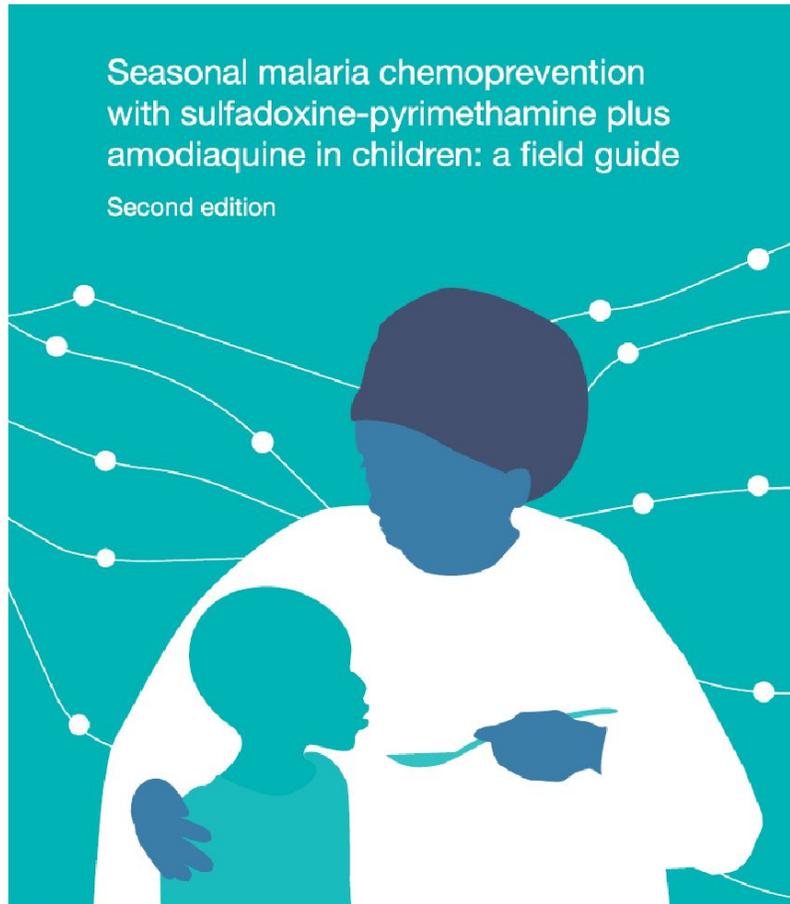
Seasonal Malaria Chemoprevention

4.2.3 Seasonal malaria chemoprevention (SMC)

 Strong recommendation for , Moderate certainty evidence

Seasonal malaria chemoprevention (2022)

In areas of seasonal malaria transmission, children belonging to age groups at high risk of severe malaria should be given antimalarial medicines during peak malaria transmission seasons to reduce disease burden.



- Update implementation field guide (2013) to reflect current Guidelines recommendation
 - specify age groups, transmission intensity thresholds, numbers of doses or cycles, or specific drugs.

26 May 2023

<https://www.who.int/publications/i/item/9789240073692>

- **Target area:**
 - malaria transmission is highly seasonal and the majority (>60%) of clinical malaria cases occur within 4 consecutive months
 - the clinical attack rate of malaria (without SMC) is at least 0.1 episodes per child during the transmission season in the target group
- **Target population**
 - Children in age groups at high risk of severe malaria are eligible. In most countries with intense seasonal malaria transmission, these are children below 5 years of age.

- **Number of cycles**
 - SMC courses should be given at 28-day intervals, beginning at the start of the transmission season and continuing for 3–5 cycles, depending on the local context.
 - In some settings, three cycles may be sufficient.
 - Add a fifth cycle if a month on either side of the 4-month season contributes more than 10% of the annual burden
 - Gains from adding a sixth SMC cycle appear to be minimal and not cost effective
- **Recommended medicines**
 - The combination of SP+AQ is currently recommended for SMC.

Intermittent preventive treatment of malaria in school-aged children (IPTsc)

4.2.4 Intermittent preventive treatment of malaria in school-aged children (IPTsc)

Conditional recommendation for , Low certainty evidence

Intermittent preventive treatment of malaria in school-aged children (2022)

School-aged children living in malaria-endemic settings with moderate to high perennial or seasonal transmission can be given a full therapeutic course of antimalarial medicine at predetermined times as chemoprevention to reduce disease burden.

Post-discharge malaria chemoprevention (PDMC)

4.2.5 Post-discharge malaria chemoprevention (PDMC)

 Conditional recommendation for , Moderate certainty evidence

Post-discharge malaria chemoprevention (2022)

Children admitted to hospital with severe anaemia living in settings with moderate to high malaria transmission can be given a full therapeutic course of an antimalarial medicine at predetermined times following discharge from hospital to reduce re-admission and death.

Adoption and Implementation of Chemoprevention Recommendations

Adoption and adaptation of the chemoprevention recommendations will be guided by specificities provided through implementation field manuals, based on current available evidence.

- SMC
 - Implementation Field manual 2nd edition (*26 May 2023*)
- IPTp at community level
 - New field manual (*in process*)
- PMC
 - Projects and early implementation underway to provide the evidence required for expansion of IPTi beyond the current recommendation and transition to PMC. – Development of updated implementation field manual – (*planned*).
- IPTsc and PDMC
 - Deployment studies and experience required to develop implementation guidance documents
 - Implementation Guidance – (*planned*)

Mass Drug Administration (MDA): Burden /transmission reduction

Technical area	Strength & evidence	For/against	Recommendation	New/update
MDA	Conditional, low-certainty	For	MDA in moderate-high transmission for short-term <i>P. falciparum</i> burden reduction	New
MDA	Conditional, low-certainty	For	MDA in emergency settings for short-term <i>P. falciparum</i> burden reduction	New
MDA	Conditional, low-certainty	For	MDA to reduce <i>P. falciparum</i> transmission in very low to low transmission	New
MDA	Conditional, very low-certainty	Against	MDA to reduce <i>P. falciparum</i> transmission in moderate to high transmission	New
MDA	Conditional, very low-certainty	For	MDA with antimalarial medicine to reduce <i>P. vivax</i> transmission	New
MDA	Conditional, very low-certainty	Against	MDA with 8-aminoquinoline alone to reduce <i>P. vivax</i> transmission	New

Conditional recommendation for

Conditional recommendation against

Strong recommendation for , High certainty evidence

Malaria vaccine (2021)

The RTS,S/AS01 malaria vaccine should be used for the prevention of *P. falciparum* malaria in children living in regions with moderate to high transmission as defined by WHO.

- *The RTS,S/AS01 malaria vaccine should be provided in a four-dose schedule in children from 5 months of age.*
- *Countries may consider providing the RTS,S/AS01 vaccine seasonally, with a five-dose strategy, in areas with highly seasonal malaria or with perennial malaria transmission with seasonal peaks.*
- *Countries that choose to introduce the vaccine in a five-dose seasonal strategy are encouraged to document their experiences, including adverse events following immunization.*
- *RTS,S/AS01 malaria vaccine should be provided as part of a comprehensive malaria control strategy.*

Malaria Case Management



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5.1 Diagnosing malaria

Good practice statement

Diagnosing malaria (2015)

All cases of suspected malaria should have a parasitological test (microscopy or RDT) to confirm the diagnosis.

Both microscopy and RDTs should be supported by a quality assurance programme.

- The results of parasitological diagnosis should be available within less than two hours of the patient presenting. In the absence or delay, patients with suspected severe malaria, and other high-risk groups, should be treated on clinical grounds.



5.2.1 Treating uncomplicated malaria

5.2.1.1 Artemisinin-based combination therapy

Strong recommendation for , High certainty evidence

Artemisinin-based combination therapy (2015)

Children and adults with uncomplicated *P. falciparum* malaria should be treated with one of the following ACTs*:

- artemether-lumefantrine (AL)
- artesunate-amodiaquine (AS+AQ)
- artesunate-mefloquine (ASMQ)
- dihydroartemisinin-piperaquine (DHAP)
- artesunate + sulfadoxine-pyrimethamine (AS+SP)
- artesunate-pyronaridine (ASPY) (2022)

*Artesunate + sulfadoxine-pyrimethamine and artesunate-pyronaridine are not recommended for use in the first trimester of pregnancy. For details of treatment using ACTs in the first trimester of pregnancy, see 5.2.1.4.1 below.



5.2.1.1.1 Duration of treatment

Strong recommendation for , High certainty evidence

Duration of ACT treatment (2015)

ACT regimens should provide 3 days' treatment with an artemisinin derivative.

5.2.1.3 Reducing the transmissibility of treated *P. falciparum* infections in areas of low-intensity transmission

Strong recommendation for , Low certainty evidence

Reducing the transmissibility of treated *P. falciparum* infections (2015)

In low-transmission areas, a single dose of 0.25 mg/kg bw primaquine should be given with an ACT to patients with *P. falciparum* malaria (except pregnant women, infants aged < 6 months and women breastfeeding infants aged < 6 months) to reduce transmission. G6PD testing is not required.



5.2.1.4.1 Pregnant and lactating women

Strong recommendation for , Low certainty evidence

Treatment in the first trimester of pregnancy (2022)

Pregnant women with uncomplicated *P. falciparum* malaria should be treated with artemether-lumefantrine during the first trimester.

Remark:

- Limited exposures to other ACTs (artesunate-amodiaquine, artesunate-mefloquine and dihydroartemisinin-piperaquine) suggest that the current evidence is insufficient to make a recommendation for routine use of these other ACTs in the first trimester of pregnancy. However, consistent with the previous WHO recommendation that provided for limited use of ACTs if the first-line recommended medicine was not available, these other ACTs may be considered for use where artemether-lumefantrine is not a recommended ACT for uncomplicated malaria or is not available, given the demonstrated poorer outcomes of quinine treatment, along with the challenges of adherence to a seven-day course of treatment.
- Antifolates are contraindicated in the first trimester of pregnancy. Therefore, ACTs containing sulfadoxine-pyrimethamine are contraindicated during the first trimester of pregnancy.
- There is currently no documented record of the use of artesunate-pyronaridine during the first trimester of pregnancy.



- Treat infants weighing less than 5 kg with an ACT dosed at the same mg/kg target as for children weighing 5 kg
- In people who have HIV/AIDS avoid AS+SP if on treatment with co-trimoxazole and avoid AS+AQ if on treatment with efavirenz.
- Treat travelers returning to non-endemic settings with uncomplicated *P. falciparum* malaria with an ACT



Strong recommendation for , High certainty evidence

Blood stage infection (2015)

In areas with chloroquine-susceptible infections, adults and children with uncomplicated *P. vivax*, *P. ovale*, *P. malariae* or *P. knowlesi* malaria should be treated with either an ACT or chloroquine.

In areas with chloroquine-resistant infections, adults and children with uncomplicated *P. vivax*, *P. ovale*, *P. malariae* or *P. knowlesi* malaria should be treated with an ACT.

* For details of treatment using ACTs in the first trimester of pregnancy, see section 5.2.1.4.1.

Strong recommendation for , High certainty evidence

Preventing relapse in *P. vivax* or *P. ovale* malaria (2015)

To prevent relapse, children and adults (except pregnant women, infants aged < 6 months, women breastfeeding older infants unless they are known not to be G6PD deficient, and people with G6PD deficiency) should be treated with a 14-day course of primaquine in all transmission settings.



Strong recommendation for , Very low certainty evidence

Short-course standard dose primaquine treatment (2022)

To prevent relapse, an additional treatment option of using primaquine 0.5 mg/kg/day for seven days is recommended to treat *P. vivax* or *P. ovale* malaria in children and adults (except pregnant women, infants aged < 6 months, women breastfeeding infants aged < 6 months, women breastfeeding older infants unless they are known not to be G6PD deficient, and people with G6PD deficiency).

Conditional recommendation against , Very low certainty evidence

Short-course standard high-dose primaquine treatment (2022)

To prevent relapse, an additional treatment option of using primaquine 1.0 mg/kg/day for seven days to treat *P. vivax* or *P. ovale* malaria is not recommended.



Conditional recommendation for , Very low certainty evidence

Preventing relapse in people with G6PD deficiency (2015)

In people with G6PD deficiency, primaquine base at 0.75 mg/kg bw once a week for 8 weeks can be given to prevent relapse, with close medical supervision for potential primaquine-induced haemolysis.

Good practice statement

Preventing relapse in *P. vivax* or *P. ovale* malaria (2015)

When G6PD status is unknown and G6PD testing is not available, a decision to prescribe primaquine should be based on an assessment of the risks and benefits of adding primaquine.

Conditional recommendation for , Moderate certainty evidence

Pregnant and breastfeeding women (2015)

In women who are pregnant or breastfeeding, weekly chemoprophylaxis with chloroquine can be given until delivery and breastfeeding are completed, then, on the basis of G6PD status, primaquine can be given to prevent future relapse.



- **Therapeutic objectives**
 - Main objective is to prevent the patient from dying
 - Secondary objectives are to prevent disabilities and prevention of recrudescence infection
- **Death from severe malaria often occurs within hours of onset of symptoms or admission to hospital**
 - Essential that therapeutic concentrations of a highly effective antimalarial are achieved as soon as possible
- **Management of severe malaria comprises four main areas**
 - Clinical assessment of patient
 - Specific antimalarial treatment
 - Additional treatments (managements of other complications), and
 - Supportive care



5.2.2 Treating severe malaria

5.2.2.1 Artesunate

 Strong recommendation for , High certainty evidence

Treating severe malaria (2015)

Adults and children with severe malaria (including infants, pregnant women in all trimesters and lactating women) should be treated with intravenous or intramuscular artesunate for at least 24 h and until they can tolerate oral medication. Once a patient has received at least 24 h of parenteral therapy and can tolerate oral therapy, treatment should be completed with 3 days of an ACT.

 Strong recommendation for

Treating severe malaria in children (2015)

Children weighing < 20 kg should receive a higher dose of artesunate (3 mg/kg bw per dose) than larger children and adults (2.4 mg/kg bw per dose) to ensure equivalent exposure to the drug.

*Not evaluated using the GRADE framework; recommendation based on pharmacokinetic modelling

5.2.2.2 Parenteral alternatives when artesunate is not available

 Conditional recommendation for , Low certainty evidence

Parental alternatives when artesunate is not available (2015)

If artesunate is not available, artemether should be used in preference to quinine for treating children and adults with severe malaria.



5.2.2.3 Pre-referral treatment options

Strong recommendation for , Moderate certainty evidence

Pre-referral treatment options (2015)

Where complete treatment of severe malaria is not possible, but injections are available, adults and children should be given a single intramuscular dose of artesunate, and referred to an appropriate facility for further care. Where intramuscular artesunate is not available, intramuscular artemether or, if that is not available, intramuscular quinine should be used.

Where intramuscular injection of artesunate is not available, children < 6 years should be treated with a single rectal dose (10mg/kg bw) of artesunate, and referred immediately to an appropriate facility for further care. Rectal artesunate should not be used in older children and adults.



- In October 2022, WHO convened a technical consultation of independent experts to conduct a formal evidence review of the data from the CARAMAL project, as well as data from other studies evaluating the deployment of pre-referral RAS at programmatic level
- The outcomes of the review, including results of additional analyses undertaken by the WHO-appointed experts, form the basis of this 2023 update on the use of RAS as a pre-referral treatment for severe *Plasmodium falciparum* malaria.

The use of rectal artesunate as a pre-referral treatment for severe *Plasmodium falciparum* malaria

2023 update

4 July 2023

<https://www.who.int/publications/i/item/9789240075375>



From Efficacy to Effectiveness

- The technical review identified several issues in the design of the CARAMAL study, which have left it susceptible to a number of biases and made the results difficult to interpret, particularly in terms of the impact of RAS on mortality and referral completion.
 - The CARAMAL project, however, highlighted many challenges and deficiencies along the cascade of care, revealing health system weaknesses and inadequate quality of care.
- Implementation research on scaling up the use of RAS for treatment of severe malaria at the community level in Zambia showed that the CFR decreased from 3.1% to 0.1% in the two high-intensity intervention districts and from 10.7% to 1.4% in the other districts



Artemisinin resistance

- In a sub study in Uganda, the CARAMAL project reported that the prevalence of the kelch 13 (K13) C469Y marker for partial artemisinin resistance increased at day 28 post-RAS in children who failed to complete referral treatment (20%) compared to on day 0 in children directly presenting at a referral health facility, without receiving RAS (6.2%).
 - This finding is difficult to interpret, as it was based on a relatively small number of children and convenience sampling was used.
 - K13 C469Y molecular markers for partial artemisinin resistance were present in Uganda before RAS was deployed and were widely present and increasing in the northern provinces – in some CARAMAL districts and in other districts where RAS was not deployed.
- Despite the limitations noted above, this study provides a signal that RAS alone, when not followed by referral and complete treatment with a full course of ACT, may select partial artemisinin-resistant parasites with the K13 C469Y mutation.



Risk mitigation

- Countries that are already implementing or considering implementation of RAS for pre-referral treatment of severe malaria need:
 - to strengthen all aspects of the continuum of care for a severely sick child – from community health workers being adequately trained and stocked for giving RAS in the areas where it is most needed, to ensuring rapid transfer and access to referral facilities where a complete course of post-referral treatment is given following WHO recommendations for the treatment of severe malaria;
 - to ensure support for adequate supply chain management and referral systems from community health workers and health facilities to referral treatment centres, which is essential for achieving the intended impact of RAS;
 - to address barriers to referral completion, as this will improve outcomes not only for severe malaria but also for other severe diseases; and
 - to ensure effective community sensitization to increase understanding of severe malaria, its causes, how dangerous it is for children, how to recognize danger signs and the need to promptly seek care if such signs are present.



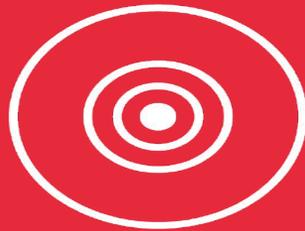
Risk mitigation (contd)

- Malaria programmes and their partners should ensure that health providers adhere strictly to malaria treatment guidelines and make sure that caregivers of children with severe malaria are aware of the importance of completing treatment courses. Intense efforts should be made to ensure that:
 - artemisinin-based monotherapies (both rectal and parenteral) are used only for treating severe malaria cases as per WHO guidelines;
 - referral facilities treat severe malaria patients with parenteral artesunate and a full course of an effective ACT;
- Antimalarial resistance surveillance should be strengthened at the population level across Africa, and most urgently in East Africa, with:
 - prioritization of interventions to holistically address the drivers of resistance selection;
 - prompt response in line with the WHO Strategy to respond to antimalarial drug resistance in Africa when resistance is detected.



- CCM of malaria delivered as part of integrated CCM (iCCM), which includes the treatment of pneumonia and diarrheal diseases.
- Trained community providers (CHWs, Medicine Sellers or Retailers) should be provided with:
 - Rapid Diagnostic Tests (RDTs)
 - ACTs for treatment of uncomplicated malaria.
 - Rectal artemisinin suppositories for pre-referral treatment of severe malaria.
 - Information, Education and Communication materials.
 - simple patient registers and reporting forms.
- ***WHO/GMP producing a field guidance document: the WHO Implementation Manual for Effective Deployment of Rectal artesunate as pre-referral treatment of malaria.***

MALARIA ELIMINATION / PREVENTION OF RE-INTRODUCTION



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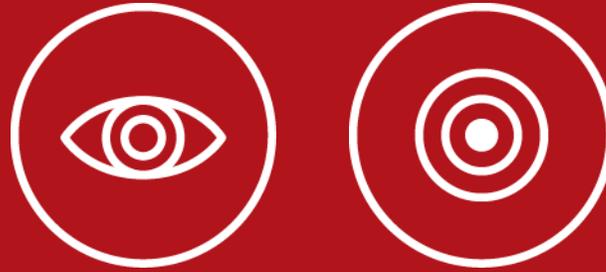
Malaria Elimination Guidelines



Technical area	Strength & evidence	For/against	Recommendation	New/update
Elimination	Conditional, very low-certainty	For	Targeted drug administration to reduce transmission in low/very low transmission	New
Elimination	Conditional, moderate certainty	Against	Mass testing and treatment to reduce malaria transmission	New
Elimination	Conditional, very low-certainty	Against	Testing and treatment of people at increased risk to reduce transmission	New
Elimination	Conditional, low-certainty	For	Reactive drug administration to people near malaria cases to reduce transmission	New
Elimination	Conditional, very low-certainty	For	Testing and treatment of people near malaria cases to reduce transmission	New
Elimination	Conditional, very low-certainty	For	Reactive indoor residual spraying near malaria cases to reduce transmission	New
Elimination	Conditional, very low-certainty	Against	Routine test and treatment of people at points of entry to reduce importation	New
Elimination	Conditional, very low-certainty	For	Testing and treatment of groups from endemic areas to reduce importation	New



Surveillance





Surveillance definition:

Public health surveillance is the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice.

One of the 3 pillars of the GTS is to Transform malaria surveillance into a core intervention



Strong surveillance enables programmes to optimise their operations, by empowering programmes:

- To advocate investment from domestic and international sources, commensurate with the malaria disease burden in a country or sub-national level
- To allocate resources to populations most in need in order to achieve the greatest possible public health impact
- To access regularly whether plans are progressing as expected and where adjustments are needed
- To account for the impact of the resources and demonstrate value for money
- To periodically evaluate the overall programme objectives and achievement and thus plan accordingly

Malaria surveillance



Pillar 3 of the GTS 2016-2030
 Transform Malaria Surveillance into a Core Intervention

	High	Moderate	Low	Very Low	Zero	Maintaining Zero
Case detection	Passive case detection	Passive case detection	Passive case detection	Passive + Active case detection		
Recording	Outpatient and inpatient registers	Outpatient and inpatient registers	Outpatient and inpatient registers	Individual patient forms		
Reporting frequency	Monthly	Weekly	Weekly	Real Time		
Resolution of reported data	Aggregate case by age	Aggregate case by age	Aggregate case or line listing by age	Case reports with recommended details on patient history		
Data use: health facility	Data analysed and displayed weekly	Data analysed and displayed weekly	Data analysed and displayed weekly	Data analysed and displayed in real time		
Data use: district	Data analysed and displayed monthly	Data analysed and displayed monthly	Data analysed and displayed weekly	Data analysed and displayed weekly		
Data use: province & national	Data analysed and displayed monthly or quarterly	Data analysed and displayed monthly	Data analysed and displayed monthly	Data analysed and displayed weekly		
Response time	Monthly	Monthly or weekly	Weekly	Case & foci investigation within 48 hours, foci response within 7 days		
Feedback frequency to lower level	Annually	Quarterly	Monthly	Every two weeks		
Surveillance system monitoring	Annually	Quarterly	Monthly	Every two weeks		

Strengthening the use of data for impact

Tailoring the malaria response to subnational context



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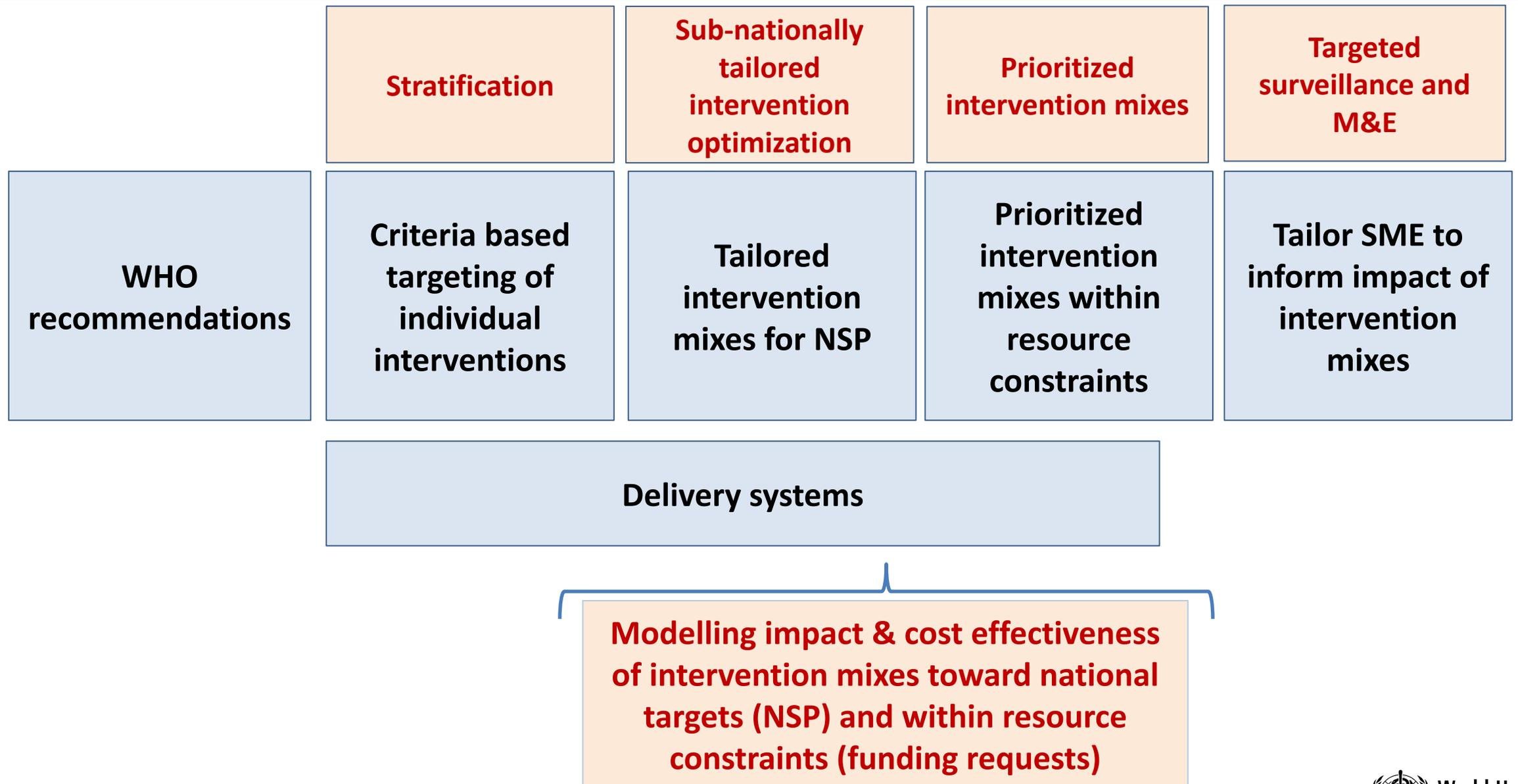
Definitions

Term	Definition	Remarks
Sub-national tailoring of malaria interventions	The use of local data and contextual information to determine the appropriate mixes of interventions and strategies , for a given area, such as a district, health facility catchment or village, for optimum impact on transmission and burden of disease .	Interventions & strategies include - prevention, diagnosis, treatment, surveillance, monitoring and evaluation, delivery systems, support functions, capacity building
Stratification	The process of geographically (and temporally) classifying malaria risk and its determinants into meaningful categories to inform the tailored targeting of the intervention under consideration.	Eventually, this process leads to intervention (and strategy) mixes for each subnational unit. Geospatial analysis/modeling approaches are useful for stratification

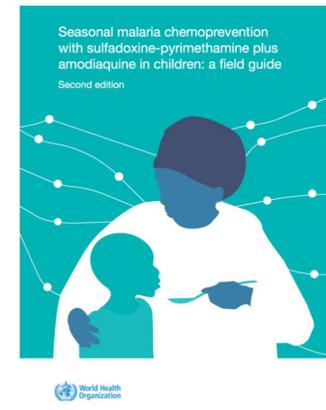
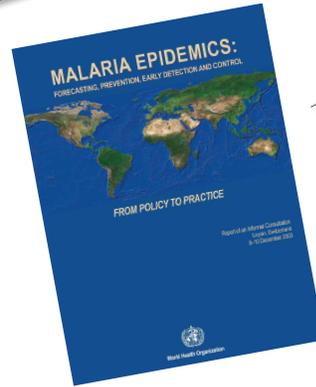
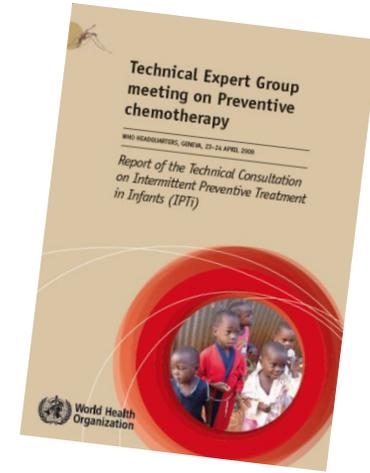
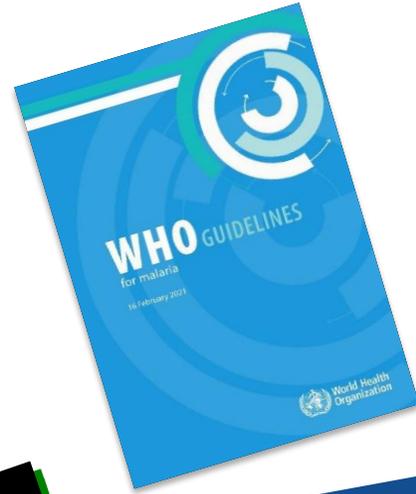
Definitions

Term	Definition	Remarks
Optimization	<p>The process of ensuring that the interventions and strategies selected for NSP are most likely to lead to best possible impact toward national targets. These analyses should ensure that system-wide synergies are considered.</p>	<p>This is the basis for NSP costing. National malaria strategic plans ought to reflect the ambition of a country in its fight against malaria. These targets are linked to overall national health and development targets.</p>
Prioritization	<p>Process aims to provide the right evidence to inform the hard decisions countries need to make to prioritize investments for impact, social justice and equity.</p>	<p>Often, the resources required to fully implement national malaria strategic plans are not available. The difference between the NSP costing and the prioritized plan is the resource gap.</p>

Subnational tailoring of interventions: the analysis process



In summary, effective malaria



Keep our eye on the prize: a world free of malaria

Thank you