MCHIP Child Health

Inventory of IMCI Training and Supervision Tools in PMI Countries

Funded by the President's Malaria Initiative

This tool was made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of the Leader with Associates Cooperative Agreement GHS-A-00-08-00002-00. The contents are the responsibility of the Maternal and Child Health Integrated Program (MCHIP) and do not necessarily reflect the views of USAID or the United States Government.

Table of Contents

Abbreviations

ACT	Artemisinin-based combination therapy
ASA	Acetylsalicylic acid
DRC	Democratic Republic of Congo
HSA	Health surveillance assistant
IMCI	Integrated Management of Childhood Illness
IMNCI	Integrated Management of Neonatal and Childhood Illnesses
MCHIP	Maternal and Child Health Integrated Program
NMCP	National malaria control program
PMI	President's Malaria Initiative
RDT	Rapid diagnostic test
WHO	World Health Organization

List of Tables

List of Exhibits

List of Recommendations

Executive Summary

The quality of care for malaria depends on how well national malaria guidelines as well as health worker training and supervisory materials conform to the most recent World Health Organization (WHO) standards. To assess the level of adherence to WHO standards, we collected training and supervisory materials for health workers in President's Malaria Initiative (PMI) countries and appraised them for adherence to the standard WHO materials. Special attention was paid to training in and use of diagnostics like rapid diagnostic tests (RDTs) and assessment and management of severe febrile diseases.

Training materials from 13 countries and supervision tools from 7 countries were reviewed (out of the total 16 countries contacted).

For children suspected to have uncomplicated malaria, prompt parasitological confirmation by microscopy or RDT is recommended before treatment is administered. Nine of the countries under review had introduced testing in their Integrated Management of Childhood Illness (IMCI) protocols, but only four had step-by-step instructions on how to conduct a rapid diagnostic test or microscopy. Four countries had included malaria test by RDT or microscopy in the classification of severe febrile disease/severe malaria, a practice that diverges somewhat from the WHO guidelines, which emphasize the need for urgent treatment over diagnosis.

Anemia may be the only clinical sign of malaria, but with the exception of two countries, IMCI materials reviewed did not include instructions to perform an RDT when a child is identified as having anemia. Materials from one country did not include presumptive treatment for malaria as standard treatment for the anemic child.

Six countries still have parenteral quinine as the drug of first choice for pre-referral treatment of severe febrile disease. Since it has been shown that artesunate has significant advantages over quinine in the treatment of severe malaria in children, countries that have not yet done so should consider changing their first-line treatment for severe febrile disease to rectal or parenteral artesunate in children between two months and to five years old.

Convulsions are frequently associated with severe febrile disease or severe malaria and should be promptly treated. However, no prophylactic treatment should be given. Severe malaria is also often accompanied by hypoglycemia, which in itself can be life-threatening in children. Materials received from one country had no clear guidelines on how to treat convulsions or on how to prevent/treat hypoglycemia.

Treatment for uncomplicated malaria was very much in line with IMCI standards and current WHO recommendations. Materials from all countries reviewed had artemisinin-based combination therapy (ACT) as the first-line oral antimalarial drug.

Wherever possible, treatment failure must be confirmed parasitologically, preferably by blood slide examination, as RDTs may remain positive for weeks after the initial infection. Of the 11 countries that provided material dealing with treatment failure, five had retesting with an RDT

in the protocol, while another five countries used a clinical diagnosis without microscopy or RDT to reclassify a child as having malaria before administering a second-line drug.

We reviewed supervision materials from seven countries. Materials from four of these countries included an adequate number of observation checks related to the health worker while assessing, classifying, treating, and counseling. None of the supervision tools reviewed included a caretaker interview.

Only two countries had supervision checklists that were adequate in appraising the condition and organization of services related to the treatment of malaria.

While it is not possible to judge how feedback is given from the supervision forms reviewed, we noted that the supervision tools rarely stressed the importance of summarizing the findings jointly with the facility staff. No supervision forms clearly summarized which actions were taken the day of a visit, and we are under the impression that the supervisors leave action plans rather than trying to solve problems during the visit.

By order of priority, our main recommendations are:

A. Since it has been shown that artesunate has significant advantages over quinine in the treatment of severe malaria in children, countries that have not yet done so should consider changing their first-line treatment for severe febrile disease to rectal or parenteral artesunate in children between two months and five years old.

B. Severe malaria is often accompanied by hypoglycemia and/or convulsions. If not properly treated, these conditions can be life-threatening in children. Countries should thus consider including treatment and prevention guidelines for hypoglycemia and treatment guidelines for convulsions in their standard guidelines for the treatment of severe malaria.

C. Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classification of the sick child with anemia and do not routinely provide presumptive malaria treatment for anemia should consider doing so, especially in high-risk malaria areas.

D. Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classification of the sick child with fever should consider doing so to improve diagnosis and reporting of malaria. This will lead to improved patient care in parasite-positive as well as parasite-negative children and will slow down the spread of resistance to the current first-line drugs.

E. Countries that have not yet developed or do not include teaching or training materials on the proper use of microscopy or RDTs in their IMCI training materials should consider doing so when they next update their IMCI materials. Doing so will improve diagnosis and reporting of malaria.

F. Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classification of the sick child with anemia should consider doing so to improve

diagnosis and reporting of malaria. This will lead also to improved patient care in parasite-positive children.

Introduction

Through the President's Malaria Initiative (PMI), USAID supports 19 countries in rolling out malaria prevention and control programs. PMI resources support the training and supervision of health workers to improve skills in conducting case management using the Integrated Management of Childhood Illness (IMCI) strategy. Standard guidelines for the treatment of malaria and IMCI training and supervision are available from the World Health Organization (WHO), and countries adapt them based on their local contexts. Countries have adopted and adapted either the 11-day or the six-day IMCI training. Supervision either is conducted under the direct leadership of the national malaria control program (NMCP) or is integrated with other service areas.

The quality of care depends on how well NMCP and IMCI training and supervisory materials for health workers conform to the most recent WHO standards. To assess the level of adherence to WHO standards, we collected training and supervisory materials for health workers in PMI countries and appraised them for adherence to the standard WHO materials. Special attention was paid to training in and use of diagnostics like rapid diagnostic tests (RDTs) and assessment and management of severe febrile diseases.

Methodology

The latest widely available WHO materials for IMCI as well as the 2010 WHO *Guidelines for the Treatment of Malaria* were reviewed and key standards of assessment, diagnosis, care, and treatment were identified. These key standards are shown in exhibits throughout this document. IMCI training and supervisory materials, as well as malaria training materials for health workers in PMI countries, were requested from the ministries of health and MCHIP partners in all 19 PMI countries (Angola, Benin, Democratic Republic of Congo, Ethiopia, Ghana, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zambia, and Zimbabwe). The obtained country material was reviewed against the key standards. Special attention was paid to the use of diagnostics like RDTs and assessment and management of severe febrile disease or severe malaria.

A Microsoft Excel spreadsheet was used to compare the main technical content of the country tools against the WHO standards. The WHO standards include the assessment, classification, and management of sick children who are between two months and five years old, with a focus on the assessment of danger signs; fever and anemia; the use of a parasitological/laboratory diagnosis, especially the use of an RDT; and identification of treatment and treatment protocols. With regard to supervision, the tool focused on observing case management, interviewing the caretaker, reviewing the facility's support system and how the supervision visit was summarized, and providing feedback from the findings and recommendations to facility staff.

The tool was shared and discussed with USAID and MCHIP technical officers.

Results

Materials were received from 16 out of the 19 PMI countries contacted. Thirteen countries submitted IMCI or NMCP health worker training materials and tools, and seven countries shared IMCI or malaria supervision materials. Three countries did not supply materials (Angola, Ghana, and Guinea). One country (Mozambique) provided materials in Portuguese, which were not reviewed since the reviewer was not fluent in the language (Table 1).

Most IMCI or malaria training, supervision, and other monitoring tools were made available in soft copy (PDF or Microsoft Word format). One country (Madagascar) provided hard copies.

IMCI materials are more comprehensive than NMCP guidelines as they deal with the scripted approach to assessing, classifying, and treating/referring children for the most common childhood illnesses, not just malaria. IMCI has extensive training materials, including practice exercises for the health worker. The NMCP materials have the latest malaria guidelines, which precede the updating of the IMCI materials and have laboratory guidelines for the diagnosis of malaria.

Table 1: Tool inventory for PMI countries

	COUNTRY	IMCI and or Malaria Tools	Supervision Tools
1	Angola	No	No
2	Benin	Yes (IMCI)	No
3	Democratic Republic of Congo	Yes (IMCI/CCM – NMCP)	Yes
4	Ethiopia	Yes (IMCI/CCM – NMCP)	Yes
5	Ghana	No	No
6	Guinea	No	No
7	Kenya	Yes (IMCI)	No
8	Liberia	No	Yes
9	Madagascar	Yes (IMCI)	No
10	Malawi	Yes (IMCI)	Yes
11	Mali	Yes (IMCI)	Yes
12	Mozambique	Yes (IMCI – NMCP)	Yes
13	Nigeria	Yes (IMCI)	No
14	Rwanda	Yes (IMCI)	Yes
15	Senegal	Yes (IMCI)	No
16	Tanzania (Zanzibar)	No	Yes
17	Uganda	Yes (IMCI/CCM – NMCP)	No
18	Zambia	Yes (IMCI)	No
19	Zimbabwe	Yes (IMCI)	No
	Total Yes	13 + 1	7+1

Assessment and Classification of the Sick Child

Assessment for general danger signs

Children presenting at a primary care facility with general danger signs have a serious problem. Screening for general danger signs should thus be one of the first steps taken when a sick child presents at a health facility or reaches the health worker. Examining all children coming for a sick child visit for general danger signs is standard IMCI practice.

Most children who present with (general) danger signs will need immediate attention and urgent referral to the next level or a hospital for adequate care. In general, they will need immediate, lifesaving treatment, which may require injectable antibiotics, oxygen, or other treatments that may not be available in the first-level health facility.

General danger signs under the IMCI classification overlap with clinical signs of severe malaria (Exhibit 1).

Exhibit 1: Danger signs of severe malaria

Clinical features (danger signs) of severe malaria	IMCI general danger signs
• Failure to feed • Multiple convulsions • Impaired consciousness or unrousable coma • Prostration • Circulatory collapse or shock, with systolic blood pressure < 50 mm Hg in children • Deep breathing, respiratory distress • Clinical jaundice • Hemoglobinuria • Abnormal spontaneous bleeding	• The child is unable to drink or breastfeed • The child vomits everything • The child has had convulsions • The child is convulsing • The child is lethargic or unconscious

The correct assessment for general danger signs is of utmost importance in the identification and classification of very severe febrile disease, which in malaria-endemic areas has a high likelihood of being severe malaria. Each set of health worker training materials reviewed (from the 13 countries that shared IMCI or NMCP tools) emphasized the importance of assessing sick children for danger signs. The detection of danger signs triggers a decision-making process that, in the case of severe malaria, should lead to the classification of the child as having **very severe febrile disease**, which in turn should lead to urgent, lifesaving pre-referral treatment and referral.

Classification of children as having very severe febrile disease

According to the IMCI guidelines, a child who reaches a health worker with general danger signs, as well as all other children, should be checked for cough and fast breathing, diarrhea,

fever, ear problems, malnutrition, and anemia. If the child has fever plus any general danger sign and/or a stiff neck, the child should be classified as having "very severe febrile disease," which may include severe malaria, septicemia, meningitis, or other life-threatening disease.

Exhibit 2: IMCI definition of fever

A child will be considered as having fever if:

- The child has had any fever with the current illness
- The child feels hot
- The child has an axillary (underarm) temperature of 37.5°C (38°C rectal) or above

(high fever is defined as a temperature of 38.5°C or above)

Exhibit 3: IMCI definition of very severe febrile disease

A child will be considered as having severe febrile disease if the child has a fever:

Plus

- Any general danger sign (is unable to drink or breastfeed; vomits everything; has convulsions; is lethargic or unconscious)

And/or

- A stiff neck

Materials from 12 of the 13 countries reviewed were in line with the IMCI standard (see Exhibit 2) when defining fever. The exception was Mali, which defined fever as an axillary temperature of 38°C or more, which will make the detection/classification of fever less sensitive than the standard WHO guidelines. The majority (8/13) of the countries' materials follow the classification of very severe febrile disease mentioned above (see Exhibit 3).

From Uganda we received only the 2012 malaria guidelines (the IMCI guidelines are still under review as of January 2013). Severe malaria is defined as a positive blood smear or RDT plus any of a long list of complications, including coma; severe anemia; respiratory distress; hypoglycemia; circulatory collapse; renal failure; spontaneous bleeding; repeated convulsions; acidosis; hemoglobinuria; pulmonary edema and/or impaired consciousness; jaundice; prostration; hyperpyrexia; and hyperparasitemia. Very severe febrile disease is not well defined in the malaria guidelines, and we hope that this will be addressed in the current update of the IMCI guidelines/training materials.

The Madagascar materials we received were incomplete, but based on what we received we understand that malaria testing with an RDT is standard practice when a child has a fever. The classification for children with fever and danger signs is "very severe febrile disease and/or severe malaria." To determine severity, the health worker looks for any general danger sign, which in Madagascar includes severe anemia or a stiff neck (or bulging fontanel) or any signs of severe malaria and a positive RDT.

Mali expanded the examination of a sick child with fever to include looking for signs of severe malaria: behavioral problems; prostration (inability to sit or stand); alteration of consciousness, lethargy, or unconsciousness; convulsions and/or history of seizures; respiratory distress, chest

indrawing, or stridor; shock, rapid or weak pulse, and cold extremities; scanty urine and/or urine the color of coca cola; jaundice; spontaneous bleeding; and severe palmar pallor. The 2011 IMCI material reviewed indicates that "other signs of severe malaria can be confirmed if possible locally or at the referral health center: blood smear positive for Plasmodium falciparum, hypoglycemia, and acidosis." The NMCP guidelines updated in 2012 require that at all levels of the health system (community to hospital) suspected malaria cases should be systematically confirmed by RDT or microscopy before treatment. However, the 2011 IMCI materials reviewed do not include this requirement.

Senegal's 2012 IMCI materials also expand the examination of a sick child with fever to include looking for signs of severe malaria: impaired consciousness or coma; prostration (inability to walk or sit without assistance); inability to feed; multiple convulsions; respiratory distress; circulatory collapse or shock (blood pressure below 50 mm Hg in children); jaundice; hemoglobinuria; and abnormal bleeding. A rapid diagnostic test is suggested, but in the algorithm reviewed, the result of the test did not influence the classification of severe malaria and/or very severe febrile disease, nor was the pre-referral treatment influenced by the test. However, the training modules differentiated severe malaria (any general danger sign or any signs of severe malaria with a positive RDT) from very severe febrile disease (any general danger sign or fever and a negative RDT plus stiff neck).

Rwanda's 2012 IMCI algorithm differentiates severe malaria from severe febrile disease. The health worker is expected to perform an RDT or a thick blood smear when a child presents with fever and is directed to look and ask for signs of severe malaria: jaundice, dark urine, abnormal bleeding. A classification of severe malaria is made when the child presents with any general danger sign or stiff neck and microscopy (blood smear) and/or the RDT is positive. The child is classified as having a very severe febrile illness if the child presents with any general danger sign or a stiff neck and the blood smear and/or the RDT is/are negative.

Table 2: Classification of children with severe febrile disease

COUNTRY	Assessment of fever	Severe malaria signs included in assessment	Classification of severe febrile disease
Benin	Standard		Standard
Democratic Republic of Congo	Standard		Standard
Ethiopia	Standard		Standard
Kenya	Standard		Standard
Madagascar	Standard	Yes	+ Malaria signs + RDT
Malawi	Standard		Standard
Mali	38 °C	Yes	+ Malaria signs + RDT
Nigeria	Standard		Standard
Rwanda	Standard	Yes	+ Malaria signs + RDT
Senegal	Standard	Yes	+ Malaria signs
Uganda	Standard	Yes	+ Malaria signs + RDT
Zambia	Standard		Standard
Zimbabwe	Standard		Standard

The approach of conducting a malaria test by RDT or microscopy to classify severe febrile disease departs somewhat from the WHO guidelines, which emphasize the need for urgent treatment over diagnosis (see Exhibit 4).

Exhibit 4: WHO guidelines for parasitological/laboratory diagnosis of malaria[1]

Prompt ***parasitological confirmation*** by microscopy, or RDT, is recommended in all patients suspected of malaria, before treatment is started.

Treatment solely on the basis of clinical suspicion should only be considered when a parasitological diagnosis is not accessible or will be delayed for more than two hours.

However, patients with suspected severe malaria, and other high-risk groups, should be treated immediately on clinical grounds.

One can argue that performing a diagnostic test on a child who is severely sick and needs urgent referral to a hospital can delay pre-referral treatment and thus referral. Moreover, if there is no difference in treatment for severe febrile disease and severe malaria, a laboratory diagnosis or RDT seems unnecessary.

[1] WHO. *WHO Guidelines for the Treatment of Malaria*, 2nd edition. Geneva: WHO Press, 2010.

Adding some of the malaria-specific danger signs to the examination of the child (IMCI algorithm) will in all likelihood result in the identification of more children for urgent treatment and/or referral for appropriate care. This will save more lives.

Assessing children with fever for severe malaria-specific signs will add to the proper classification of severe febrile disease (severe malaria). However, when general danger signs are present, additional signs or clinical features of severe malaria, such as hypoglycemia, will require additional tests, which could result in some additional delays in treatment and referral. Delaying treatment needs to be avoided and testing (e.g., for hypoglycemia) will not change the standard treatment for severe malaria/severe febrile disease.

Delayed treatment

If treatment is delayed, particularly in *P. falciparum* malaria, the parasite burden continues to increase and severe malaria may ensue. It is a progression that may occur within a few hours. By this stage of the disease, the case fatality rate in people receiving treatment is typically 10–20%. However, if left untreated, severe malaria is fatal in the majority of cases.[2]

Recommendation 1: Use of RDTs when a child has general danger signs and fever

Countries need to carefully weigh the added benefits of conducting laboratory testing (microscopy, RDT, and/or testing for hypoglycemia) when a child is seen by a health worker and has already been classified as having general danger signs and fever. The RDT will lead to a more accurate diagnosis and thus reporting of severe malaria, but it will not influence the pre-referral treatment if the standard recommendations for treatment of severe febrile disease are followed. Testing will inflict minor pain/discomfort to the severely ill child and could delay treatment.

Recommendation 2: Specific signs of severe malaria when a child has general danger signs and fever

Countries should consider introducing a skip option so that the health worker is not required to assess a child for malaria-specific danger signs and laboratory tests if the child has already been identified as having general danger signs.

Classification of children as having uncomplicated malaria

According to WHO's *Guidelines for the Treatment of Malaria*, uncomplicated malaria can be defined as symptomatic malaria without clinical or laboratory signs of severity or evidence of vital organ dysfunction. However, the signs and symptoms of uncomplicated malaria are nonspecific and malaria is suspected clinically mostly on the basis of fever or a history of fever (Exhibit 5).

[2] WHO. *WHO Guidelines for the Treatment of Malaria*, 2nd edition. Geneva: WHO Press, 2010.

Exhibit 5: WHO definition of uncomplicated malaria

Uncomplicated malaria is defined as symptomatic malaria without signs of severity or evidence (clinical or laboratory) of vital organ dysfunction. The signs and symptoms of uncomplicated malaria are nonspecific. Malaria is suspected clinically mostly on the basis of fever or a history of fever.

- If risk of malaria is high: uncomplicated malaria can be diagnosed on the basis of history of fever in the previous 24 hours and/or the presence of anemia (pallor of the palms).
- If risk of malaria is low: a diagnosis can be made on the possibility of exposure to malaria and a history of fever in the previous three days with no features of other severe diseases.

Exhibit 6: IMCI definition of uncomplicated malaria

Uncomplicated malaria is diagnosed on the basis of fever with no general danger sign or stiff neck **and** a positive malaria test. If a malaria test is not available in an area where malaria risk is considered to be high or even low, a child with fever (or a history of fever) and no general danger sign or stiff neck is classified as having malaria.

The latest widely available IMCI guidelines indicate that in areas where risk of malaria is low, malaria testing should be done in children with a fever (or a history of fever) who do not have any general danger signs or a stiff neck, and who do not have another obvious cause of fever (see Exhibit 6.) A child with a fever (or a history of fever), no general danger signs or stiff neck, and a positive malaria test is classified as having malaria. Where a malaria test is not available, a child with a fever (or a history of fever), no general danger signs or stiff neck, and no other obvious cause of fever is classified as having malaria.

When malaria risk is low, a child with signs of other febrile diseases, such as fever with a runny nose, does not need a malaria test. This child's fever is probably caused by a common cold, pneumonia, or an ear infection. Children with a fever and a negative malaria test, a runny nose, measles, or another evident cause of fever can be diagnosed following these other causes, or as "fever–malaria unlikely."

In a high malaria risk area or season, a child with fever (or a history of fever) and a negative malaria test is classified as having a fever and no malaria.

In an area with no malaria risk, a child with no general danger signs, no stiff neck, and no travel to an area with malaria risk within the past two weeks is classified as having fever.

Materials from nine out of the 13 countries reviewed (Benin, Democratic Republic of Congo, Ethiopia, Kenya, Madagascar, Malawi, Rwanda, Senegal, and Zimbabwe) follows the most up-to-date IMCI guidelines for classifying malaria. The 2008 Zambia and 2011 Nigeria materials reviewed classify the child with fever and no danger signs as having uncomplicated malaria with no requirement for testing for malaria with an RDT or microscopy. Uganda is in the process of

reviewing the IMCI materials, but the materials we had for review did not include malaria testing. The Mali NMCP requires testing, but the 2011 IMCI algorithm reviewed did not include testing.

Countries that do not yet require malaria testing in their algorithm will have a higher sensitivity for malaria classification but will also overtreat, with both positive and negative consequences. In countries where the algorithm includes systematically testing for malaria, the classification will gain in specificity and thus improve patient care in parasite-positive children as well as parasite-negatives, for which another classification must be sought. The unnecessary use of antimalarial drugs will not only reduce the advent of unnecessary adverse effects, but also slow down the spread of resistance to the current first-line drugs.

Table 3: Classification of uncomplicated malaria

COUNTRY	RDT required	Uncomplicated malaria
Benin	Yes	Standard
Democratic Republic of Congo	Yes	Standard
Ethiopia	Yes	Standard
Kenya	Yes	Standard
Madagascar	Yes	Standard
Malawi	Yes	Standard
Mali	Yes NMCP; No IMCI	
Nigeria	No	
Rwanda	Yes	Standard
Senegal	Yes	Standard
Uganda	No (IMCI in process of updating)	
Zambia	No	
Zimbabwe	Yes	Standard

Recommendation 3: Use of RDTs to classify a sick child with fever

Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classification of sick children with fever should consider doing so to improve diagnosis and reporting of malaria. This will lead to improved patient care in parasite-positive children as well as parasite-negative children and will slow down the spread of resistance to the current first-line drugs.

Classification of children with anemia

Anemia may be the only clinical sign of malaria (see Exhibit 7). A child with malaria may have chronic anemia (with no fever) as the only sign of illness.

Exhibit 7: WHO Expert Committee on Malaria: diagnosis

The WHO recommendations for the clinical diagnosis of uncomplicated malaria in settings where the risk of malaria is high states that the (clinical) diagnosis should be made on the basis of a history of fever in the previous 24 hours and/or the presence of anemia, for which pallor of the palms appears to be the most reliable sign in young children.[3]

IMCI materials from the 13 countries under review included the identification of anemia by looking for palmar pallor. A child is classified as having anemia or severe anemia based on how pale the palm of the child's hand is.

With the exception of Benin and Zambia, IMCI materials reviewed do not include instructions to perform an RDT. The classification of anemia does not systematically lead to revising the classification of malaria.

Table 4: Classification of anemia and testing for malaria

COUNTRY	Anemia (palmar pallor)	RDT
Benin	Yes	Yes
Democratic Republic of Congo	Yes	
Ethiopia	Yes	
Kenya	Yes	
Madagascar	Yes	
Malawi	Yes	
Mali	Yes	
Nigeria	Yes	
Rwanda	Yes	
Senegal	Yes	
Uganda	Yes	
Zambia	Yes	Yes
Zimbabwe	Yes	

Recommendation 4: Use of RDTs and anemia

Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classifying sick children with anemia should consider doing so to improve diagnosis and reporting of malaria. This will lead also to improved patient care in parasite-positive children.

[3] WHO Expert Committee on Malaria. Twentieth Report. WHO Technical Report Series, No. 892. Geneva: WHO, 2000.

Parasitological/Laboratory Diagnosis

As stated above, prompt parasitological confirmation by microscopy or RDT is recommended for children suspected of uncomplicated malaria, before treatment is administered. Training materials from only four of the nine countries that have introduced testing in their algorithm (Benin, Democratic Republic of Congo, Ethiopia, and Uganda) have step-by-step instructions on how to conduct a rapid diagnostic test or microscopy. It is not clear how health care workers in the other five countries where testing is part of the assessment and classification of malaria will be trained in performing the RDT so that they can become competent and confident in testing sick children. The training materials we received from Rwanda and Mali, two countries that require a positive malaria test before a child is classified and treated for uncomplicated or severe malaria, lack teaching/instructions on how to properly conduct these tests.

Recommendation 5: Specific instructions for use of malaria tests

Countries that have not yet developed or do not include teaching or training materials on the proper use of microscopy or RDTs in their IMCI training materials should consider doing so when they next update their IMCI materials. Doing so will improve diagnosis and reporting of malaria.

Identifying the Necessary Treatments

Severe febrile disease

The standard IMCI treatment for severe febrile disease indicates that the health worker should give the first dose of an appropriate antibiotic for meningitis or other severe bacterial infection. In areas with malaria risk the child should also receive a dose of an antimalarial. In addition, the health worker should treat the child to prevent low blood sugar and give paracetamol if the child has a high fever (Exhibit 8.) The child should then urgently be referred to a hospital for further treatment.

Exhibit 8: Standard treatment for severe febrile disease

- Give first dose of quinine or artesunate for severe malaria
- Give first dose of an appropriate antibiotic
- Treat the child to prevent low blood sugar
- Give one dose of paracetamol in clinic for high fever (38.5°C or above)
- Refer urgently to hospital

Eleven of the 13 countries reviewed follow the standard IMCI guidelines for the treatment of severe febrile disease. Materials reviewed for the Democratic Republic of the Congo and Uganda are the NMCP guidelines for treatment of severe malaria, and these guidelines do not include the administration of an antibiotic.

Table 5: Drug of first choice for pre-referral treatment of severe febrile disease

IMCI guidelines	Pre-referral treatments of choice: artesunate or quinine
Benin	Artesunate suppository
Democratic Republic of Congo	Artesunate suppository
Ethiopia	Artesunate suppository
Kenya	Quinine or parenteral artesunate or artemether
Madagascar	Quinine
Malawi	Quinine
Mali	IMCI: quinine; NMCP: artemether or artesunate or quinine
Nigeria	Quinine
Rwanda	Artemether
Senegal	Quinine
Uganda	Artesunate or quinine or artemether
Zambia	Quinine
Zimbabwe	Quinine

Six countries (Madagascar, Malawi, Nigeria, Senegal, Zambia, and Zimbabwe) have parenteral quinine as the drug of first choice for pre-referral treatment of severe febrile disease. Three countries (Benin, Democratic Republic of Congo, and Ethiopia) have artesunate as the drug of first choice for pre-referral treatment, and three countries (Kenya, Mali, and Uganda) have both quinine and artesunate listed as drug of first choice. In the case of Mali, quinine is cited in the IMCI guidelines and artesunate in the NMCP guidelines. The Rwanda IMCI guidelines list intra-muscular (IM) artemether as the drug of first choice for severe malaria (Table 5).

The most recent WHO recommendations for the treatment of severe (*P. falciparum*) malaria advocate for the use of artesunate rather than quinine as the first-line drug for the treatment of severe malaria (see Exhibit 9). Intramuscular quinine injections can be very painful and cause side effects such as focal necrosis and in some cases abscess formation.

Exhibit 9: WHO recommendation: artesunate treatment for severe *P. falciparum* malaria in children

Artesunate is preferred over quinine for the treatment of severe *P. falciparum* malaria in children.

- Intravenous or intramuscular artesunate has been shown to reduce significantly the risk of death from severe malaria compared to intravenous quinine. Intravenous artesunate is associated with a lower risk of hypoglycemia.

Recommendation 6: Use of quinine in the treatment of severe malaria

Since it has been shown that artesunate has significant advantages over quinine in the treatment of severe malaria in children, countries that have not yet done so should consider changing their first-line treatment for severe febrile disease to rectal or parenteral artesunate in children between two months and five years old.

Supportive treatment

Convulsions: Convulsions are frequently associated with severe febrile disease or severe malaria and should be treated promptly. However no prophylactic treatment should be given.

Exhibit 10: IMCI guidelines for treatment of convulsions

- Give (rectal) diazepam to the child to stop convulsions.
- Turn the child to his/her side and clear the airway. Avoid putting things in the mouth.
- Check for low blood sugar; then treat or prevent.
- Give oxygen and refer the child,
- If convulsions have not stopped after 10 minutes, repeat the diazepam dose.

We obtained materials from 10 countries (Benin, Democratic Republic of Congo, Kenya, Malawi, Mali, Rwanda, Senegal, Uganda, Zambia, and Zimbabwe), from which we were able to verify country-specific treatment guidelines. With the exception of the Democratic Republic of Congo, from which we received only the NMCP guidelines, these countries had clear guidelines on how to treat convulsions, and their guidelines were in line with the IMCI guidelines (Exhibit 10).

Prevention of hypoglycemia: Severe malaria is often accompanied by hypoglycemia, which in itself can be life-threatening in children. Hypoglycemia should be prevented and/or urgently treated in children with severe febrile disease/severe malaria.

Exhibit 11: IMCI guidelines for the prevention of hypoglycemia

- If the young infant is able to breastfeed, ask the mother to breastfeed the young infant.
- If the young infant is not able to breastfeed but is able to swallow, give the infant expressed breast milk before departure for the hospital.
- If it is not possible to give expressed breast milk, give the young infant sugar water.
- If the young infant is not able to swallow, give expressed breast milk or sugar water by nasogastric tube.

We obtained materials from 10 countries (Benin, Democratic Republic of Congo, Ethiopia, Kenya, Malawi, Mali, Rwanda, Senegal, Zambia, and Zimbabwe), from which we were able to verify country-specific guidelines for the prevention of hypoglycemia. With the exception of the Democratic Republic of Congo, from which we received only the NMCP guidelines, all countries had clear guidelines on how to treat hypoglycemia, and the guidelines were in line with the IMCI guidelines (Exhibit 11).

Table 6: Supportive treatment for severe febrile disease

COUNTRY	Convulsions	Hypoglycemia
Benin	Yes	Yes
Democratic Republic of Congo	No	No
Ethiopia	N/A	N/A
Kenya	Yes	Yes
Madagascar	N/A	N/A
Malawi	Yes	Yes
Mali	Yes	Yes
Nigeria	N/A	N/A
Rwanda	Yes	Yes
Senegal	Yes	Yes
Uganda	Yes	Yes
Zambia	Yes	Yes
Zimbabwe	Yes	Yes

Recommendation 7: Prevention of hypoglycemia and treatment of convulsions

Severe malaria is often accompanied by hypoglycemia and/or convulsions. If not properly treated, these conditions can be life-threatening in children. Countries should thus consider including treatment and prevention guidelines for hypoglycemia and treatment guidelines for convulsions in their standard guidelines for the treatment of severe malaria.

Uncomplicated malaria

The standard IMCI treatment for a child classified as having uncomplicated malaria is to give an oral antimalarial. The health worker should also give paracetamol to a child with a high fever (axillary temperature of 38.5°C or above). Further, the health worker should advise the caretaker to return for follow-up in three days, if the fever persists. If the child's fever has persisted every day for more than seven days, the child should be referred for additional assessment (see Exhibit 12).

Exhibit 12: IMCI guidelines for standard treatment for malaria

- Give recommended first-line oral antimalarial
- Give one dose of paracetamol in clinic for high fever (38.5°C or above)
- Advise mother when to return immediately
- Follow-up in three days if fever persists
- If fever is present every day for more than seven days, refer for assessment

Treatment for uncomplicated malaria was very much in line with IMCI standards and current WHO recommendations. Materials from all countries reviewed had ACT as the first-line oral antimalarial drug. All of the countries' materials included paracetamol for high fever. However, aspirin or acetylsalicylic acid (ASA) was an alternative to paracetamol in the Senegal and Benin IMCI materials and in the Mali NMCP guidelines. In several countries (Benin, Ethiopia, Kenya,

Madagascar, Mali, Zambia, and Zimbabwe), mothers are advised to return to the facility if the child's fever persists for two days rather than for three days.

Anemia

Severe anemia: The most recent standard IMCI guidelines indicate that children with severe palmar pallor (those classified as having severe anemia) should be referred urgently to a hospital for a blood transfusion.

IMCI and NMCP materials from 12 of the countries under review indicated that a child with severe anemia needs urgent referral to a hospital for a blood transfusion. The NMCP materials from the Democratic Republic of the Congo mentions little about anemia and has no guidance on how to deal with children with severe anemia.

Anemia: Those with some palmar pallor or anemia should be treated with iron supplements, with an oral antimalarial, if the malaria risk is high, and with mebendazole, if the child is one year old or older and has not had a dose of mebendazole in the previous six months. The child should be seen again after 14 days, at which time the child should be re-examined and the caretaker should be given additional iron for the child and should be advised to return in another 14 days for more iron. The health worker should continue to give the mother iron every 14 days for up to two months. If the child still has palmar pallor after two months, the child should be referred to the hospital.

Although the Senegal IMCI materials contained no mention of malaria or treatment for malaria in the anemia section, the IMCI materials from the other nine countries included treatment for malaria. Materials from all ten countries had iron supplements or a combination of iron and folic acid and mebendazole or albendazole treatment in their treatment protocol. Caretakers are advised to come back for a check-up and additional Iron supplementation within 14 days. Only one country's guidelines (Zambia) advised the use of RDT or microscopy before treatment for cases of anemia.

Table 7: Uncomplicated malaria and anemia

COUNTRY	ACT	Paracetamol	Severe Anemia	Anemia and malaria treatment
Benin	Yes	Yes + ASA	Transfusion	Yes
Democratic Republic of Congo	Yes	Yes	no	N/A
Ethiopia	Yes	Yes	Transfusion	N/A
Kenya	Yes	Yes	Transfusion	Yes
Madagascar	Yes	Yes	Transfusion	Yes
Malawi	Yes	Yes	Transfusion	Yes
Mali	Yes	Yes + ASA	Transfusion	Yes
Nigeria	Yes	Yes	Transfusion	N/A
Rwanda	Yes	Yes	Transfusion	Yes
Senegal	Yes	Yes +ASA	Transfusion	no
Uganda	Yes	Yes	Transfusion	Yes
Zambia	Yes	Yes	Transfusion	Yes
Zimbabwe	Yes	Yes	Transfusion	Yes

Malawi stands out in the instructions for severe malaria: the algorithm states to refer the child urgently to the hospital *with a blood donor.* This advice can be a lifesaving if the referral hospital doesn't have a reliable blood source and a family member is willing to donate blood.

Recommendation 8: Use of acetylsalicylic acid

Some countries still list acetylsalicylic acid (aspirin) as an alternative drug for acetaminophen (paracetamol). Aspirin should not be used in children because of the risk of Reye's syndrome.

Recommendation 9: Presumptive treatment of malaria in anemic children

Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classifying sick children with anemia and do not routinely provide presumptive malaria treatment for anemia should consider doing so, especially in high-risk malaria areas.

Treatment failure

Exhibit 13: IMCI guidelines for treatment failure

If fever persists after two days or the child returns within 14 days:

- Do a full reassessment of the child.
- If the child has any general danger signs or stiff neck: treat for very severe febrile disease and refer to hospital.
- If the child has any cause of fever other than malaria: provide treatment for that cause.
- If the fever has been present for seven days: refer for assessment.
- If there is no other apparent cause of fever **and the child was classified as having malaria:**
  - Do a microscopy. If parasites are present and the child has finished a full course of the first-line antimalarial, give the second-line antimalarial, if available, or refer the child to a hospital.
  - If you do not have a microscope to check for parasites, refer the child to a hospital.
  - Do not repeat the rapid diagnostic test **if it was positive on the initial visit.**
- If there is no other apparent cause of fever **and the child was classified as not having malaria:**
  - Repeat the malaria test.
  - If a child has a positive malaria test, give first-line oral antimalarial. Advise the mother to return in three days if the fever persists.

Wherever possible, treatment failure must be confirmed parasitologically, preferably by blood slide examination, as RDTs may remain positive for weeks after the initial infection. This may require referring the patient to a facility with microscopy. Referral might also be necessary for further assessment and treatment.[4]

Eleven countries (Benin, Democratic Republic of Congo, Kenya, Madagascar, Malawi, Mali, Rwanda, Senegal, Uganda, Zambia, and Zimbabwe) provided materials dealing with treatment failure. Malawi follows the most recent IMCI guidelines (see Exhibit 13), but almost half of the other countries (Benin, Rwanda, Senegal, Uganda, and Zambia) have retesting with an RDT in the protocol, while another five countries (Democratic Republic of Congo, Kenya, Madagascar, Mali, and Zimbabwe) use a clinical diagnosis without microscopy or RDT to reclassify the child as having malaria before administering a second-line drug.

Otherwise, the general IMCI guidelines for reassessing the child and looking for danger signs and other causes of fever are well followed.

[4] WHO. *WHO Guidelines for the Treatment of Malaria,* 2nd edition. Geneva: WHO Press, 2010.

Table 8: Treatment failure

COUNTRY	Reclassifying malaria
Benin	RDT
Democratic Republic of Congo	Clinical
Ethiopia	N/A
Kenya	Clinical
Madagascar	Clinical
Malawi	Microscopy
Mali	Clinical
Nigeria	N/A
Rwanda	RDT
Senegal	RDT
Uganda	RDT
Zambia	RDT
Zimbabwe	Clinical

Recommendation 10: Use of microscopy in treatment failure

Countries should consider introducing the use of microscopy to reclassify malaria after treatment failure. This will improve the diagnosis of treatment failure and ensure better patient care, especially in false positives when RDT are used. Microscopy will also improve the monitoring of resistance development to the first-line antimalarial drugs in use.

Assessment of Supervision Materials

As mentioned above (Table 1), we were only able to obtain supervision materials from eight countries (Democratic Republic of Congo, Ethiopia, Liberia, Mali, Malawi, Mozambique, Rwanda, and Tanzania). Materials from Mozambique were not reviewed since they were in Portuguese. The Malawi tool is for supervision of Health Surveillance Assistants (HSA) but seemed relevant to this review. We will thus present our findings from materials received from the Democratic Republic of Congo, Ethiopia, Liberia, Malawi, Mali, Rwanda, and Tanzania.

The fact that we received supervision materials from less than half of the PMI countries we contacted might indicate that supervision is not a priority in most countries, but we do not feel that we can draw this conclusion.

Observation of the health worker

We assessed the IMCI supervision checklists of the seven countries for the following items of particular interest to this review:

Assessment, classification, and treatment of the sick child:

- Health workers assesses for all four general danger signs
- Health worker asks about and assess for the presence of all main symptoms (cough, diarrhea, **fever,** ear problem)
- Assess for anemia; look for palmar pallor
- Child classified as severe and needing referral is referred
- Child classified as severe receives first dose of antibiotic before referral
- Child classified with severe malaria receives IM quinine/rectal ACT/artesunate before referral
- Child needing an oral antimalarial is prescribed correctly
- Child classified as having malaria receives a full course of antimalarial drug at the facility

Caretaker counseling:

- Children, not referred, advised on giving extra fluid and continue feeding
- Caretakers are advised on at least two signs that indicate need to seek care/come back
- Health worker explains how to administer oral treatment
- Health worker demonstrates how to administer the oral treatment

No supervision material reviewed contained all the categories mentioned above. Supervision materials from four out of the seven countries (Democratic Republic of Congo, Liberia, Malawi, and Rwanda) included an adequate number of observation checks related to the health worker while assessing, classifying, treating, and counseling (Table 9).

The DRC materials included five of the 12 items mentioned above and were weak in the counseling part and the aspects related to severe febrile disease/severe malaria. The Liberia checklist included eight items covering all aspects except classification of severe cases. The Malawi tool covered six items, but covered all aspects of assessing, classifying, treatment, and counseling. The Rwanda material covered eight items but had no checks for correct treatment of uncomplicated malaria.

The Mali supervision tool focused on the correct use of RDT and had no clinical observations. The Tanzania (Zanzibar) tool was vague and had very general terms. The health worker was checked on the assessment of fever, danger signs, and whether a correct classification of malaria was made and a correct treatment prescribed, but it was not clear which observations were used to determine "adequate." The Ethiopia tool was for integrated supervision of the community health worker and focused on the interview of the health worker with a record review. Observations focused on general counseling and treatment skills but without a specific checklist.

Caretaker interviews

None of the supervision tools reviewed included a caretaker interview.

Table 9: Content of supervision checklists: assessment, classification, treatment, and counseling

	Assess for/Ask for			Classify	Treat pre-referral		Oral antimalarial		Counseling			
	Danger signs	Anemia	Main symptoms	Severe	Antibiotic	Antimalarial	Prescribed correctly	Full course	General	Fluid and feeding	When to seek care/come back	Demonstrates treatment
Democratic Republic of Congo	Yes	Yes	Yes	-	-	-	Yes	-	Yes	-	-	-
Liberia	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	-	Yes	-
Malawi	Yes	-	-	Yes	Yes	-	Yes	-	Yes	-	Yes	-
Rwanda	Yes	Yes	Yes	Yes	Yes	Yes	-	-	Yes	-	Yes	-

Table 10: Content of supervision checklists: facility support

	Availability of a malaria case management guide	Availability of recommended antimalarial	Availability of RDTs or a functional microscope
Democratic Republic of Congo	-	Yes	Yes
Ethiopia	Yes	Yes	Yes
Liberia	Yes	Yes	-
Malawi	-	Yes	-
Mali	-	-	Yes
Rwanda	-	Yes	-
Tanzania	Yes	Yes	Yes

Review of facility supports

We reviewed checklists for items aimed at appraising the condition and organization of services at the facility related to the treatment of malaria:

- Availability of a malaria case management guide
- Availability of recommended antimalarial (first-line, second–line, and injectable or rectal)
- Availability of RDTs or a functional microscope and materials (reagents, supplies)

The supervision tools from Tanzania (Zanzibar) and Ethiopia included all three categories, while the materials from the Democratic Republic of the Congo had only antimalarial drugs and diagnostics on the checklists. The checklists from Liberia included only guidelines and antimalarial drugs. Materials for Malawi and Rwanda had only the availability of antimalarial drugs on their checklists, and the Mali checklist focused only on RDTs (Table 10.)

Feedback to the health worker

We looked to see if feedback on the following items was provided to the health worker at the end of the supervision visit:

- Strengths and problems that were identified during the visit
- Actions taken to solve problems at the facility during the visit
- Future actions needed to solve problems during the next supervisory visit, or at the district level or another level of the health system

Feedback and how it is given is very important. While it is not possible to judge how feedback is given from the supervision forms we reviewed, we noted that the supervision tools do not always stress the importance of summarizing the findings jointly with the facility staff. The Liberia, Mali, and Zanzibar forms reviewed do not indicate how the supervision findings are summarized or how feedback is conducted (Table 11.)

No supervision forms clearly summarized which actions have been taken the day of the visit, and we are under the impression that the supervisors leave action plans rather than try to solve problems during the visit.

Table 11: Supervision feedback

	Strengths and problems	Actions taken	Future actions
Democratic Republic of Congo	Yes	-	Yes
Ethiopia	Yes	-	Yes
Liberia	-	-	-
Malawi	-	-	Yes
Mali	-	-	-
Rwanda	Yes	-	Yes
Tanzania	-	-	-

Recommendation 11: Caretaker interviews during supervision visits

Countries should consider adding to their supervision routine and checklists a short but structured interview with caretakers. This should focus on the caretaker's knowledge of how antimalarial treatment should be given to children (i.e., check if the caretaker knows how much to give, how many times per day, number of days, and how to administer the treatment). The interviewer should also ask if the caretaker knows when to come back with the child.

Recommendation 12: Supervision of the health system

To assess health system weaknesses/strengths, checklists should include items regarding the availability of materials needed to correctly assess, classify, and treat children with malaria (e.g., presence of a malaria case management guide; recommended first-line, second–line, and injectable or rectal antimalarial drugs; and RDTs or a functional microscope and materials/supplies).

Summary of Key Issues and Recommendations, in Order of Priority

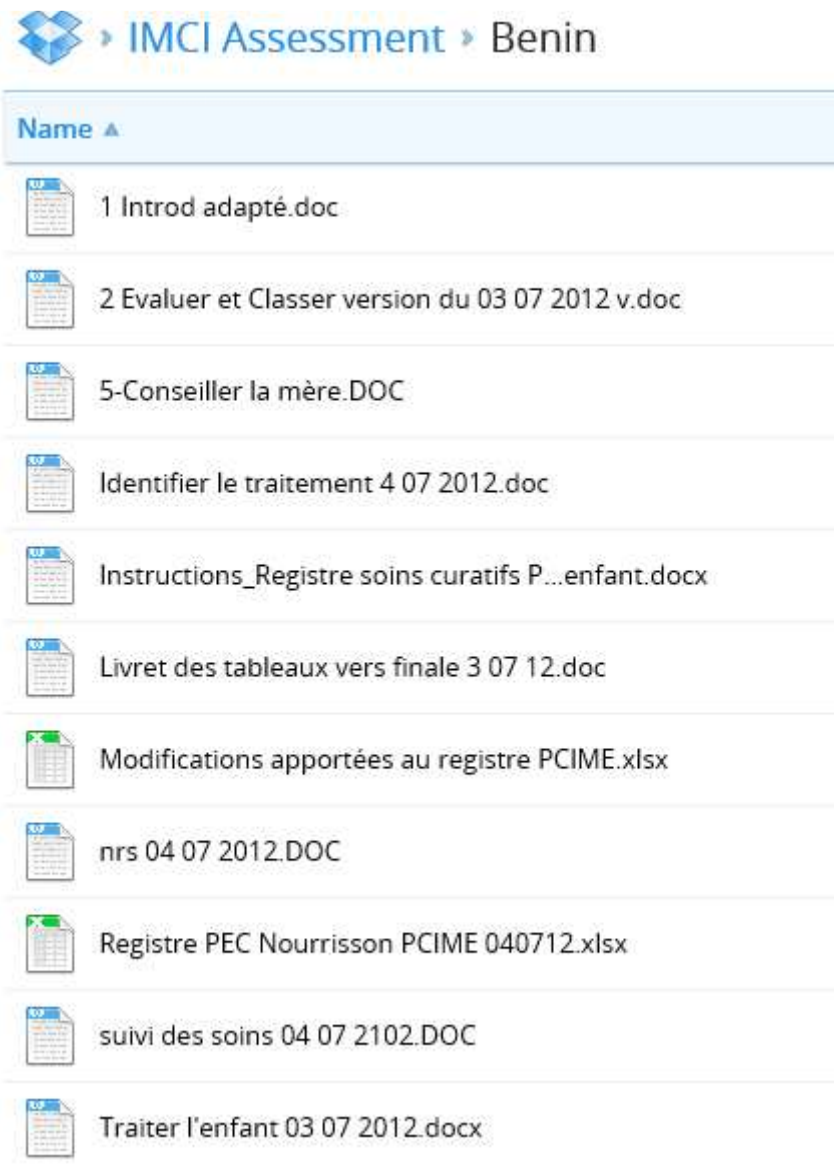
KEY ISSUES	RECOMMENDATIONS
Treatment	
Use of quinine in the treatment of severe malaria: Six countries (out of twelve reviewed) still have parenteral quinine as the drug of first choice for pre-referral treatment of severe febrile disease. In one country (Mali), quinine figures in the IMCI guidelines and artesunate in the NMCP guidelines.	Since it has been shown that artesunate has significant advantages over quinine in the treatment of severe malaria in children, countries that have not yet done so should consider changing their first-line treatment for severe febrile disease to rectal or parenteral artesunate in children between two months and five years old.
Prevention of hypoglycemia and treatment of convulsions: Nine countries (out of 10 reviewed) had clear guidelines on how to treat hypoglycemia that were in line with the IMCI guidelines. The Democratic Republic of Congo NMCP guidelines do not address treatment of hypoglycemia.	Severe malaria is often accompanied by hypoglycemia and/or convulsions. If not properly treated, these conditions can be life-threatening in children. Countries should thus consider including treatment and prevention guidelines for hypoglycemia and treatment guidelines for convulsions in their standard guidelines for the treatment of severe malaria.
Presumptive treatment of malaria in anemic children: Only one country (Zambia) had guidelines that included the use of RDT or microscopy before treatment for cases of anemia.	Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classification of sick children with anemia and that do not routinely provide presumptive malaria treatment for anemia should consider doing so, especially in high-risk malaria areas.
Use of acetylsalicylic acid to treat fever: In three countries (out of 13 reviewed), aspirin or acetylsalicylic acid (aspirin) was an alternative to paracetamol.	Some countries still list acetylsalicylic acid (aspirin) as an alternative to paracetamol (acetaminophen). Aspirin should not be used in children because of the risk of Reye's syndrome.
Classification and diagnostics	
Use of RDTs to classify sick children with fever: Training materials in three countries (out of 13 reviewed) do not require testing for malaria with an RDT or microscopy to classify a child with fever and no danger signs as having uncomplicated malaria. In	Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classifying sick children with fever should consider doing so to improve diagnosis and reporting of malaria. This will lead also to improved patient care in parasite-positive as well as parasite-negative children and will slow down the spread of resistance to the current first-

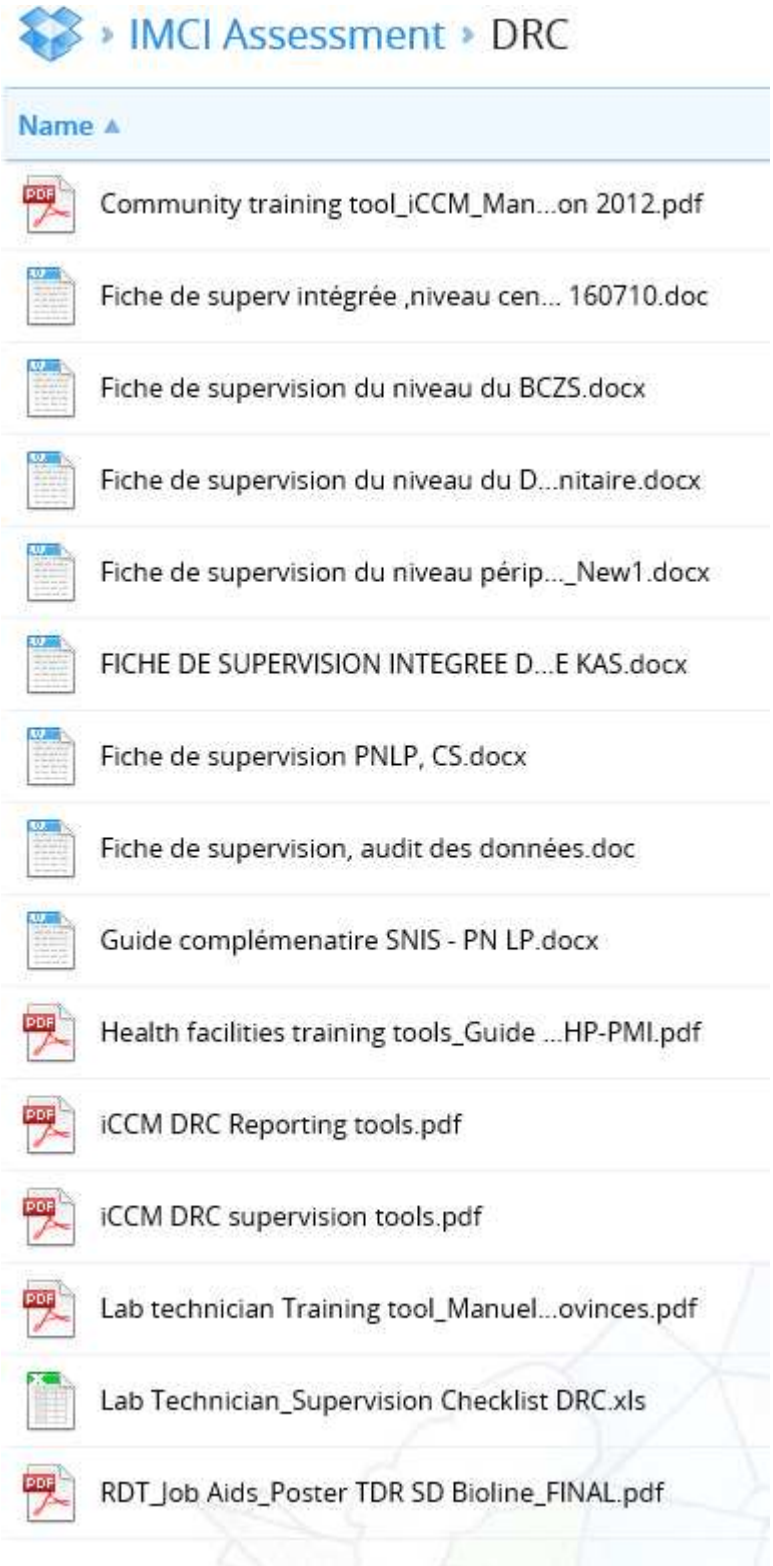
one country (Mali), the NMCP requires testing while the IMCI guidelines do not.	line drugs.
Specific instructions for malaria tests: Training materials from only four countries (out of nine that have introduced testing in their algorithm) have step-by-step instructions on how to conduct a rapid diagnostic test or microscopy.	Countries that have not yet developed or do not include teaching or training materials on the proper use of microscopy or RDTs in their IMCI training materials should consider doing so when they next update their IMCI materials. Doing so will improve diagnosis and reporting of malaria.
Use of RDTs and anemia: With the exception of Benin and Zambia, the IMCI materials reviewed did not include instruction to perform an RDT. The classification of anemia does not systematically lead to revising the classification of malaria.	Countries that have not yet introduced the use of the RDT or microscopy as a standard in the process of classifying sick children with anemia should consider doing so to improve diagnosis and reporting of malaria. This will lead also to improved patient care in parasite-positive children.
Use of microscopy in treatment failure: Five countries (out of 11 reviewed) have guidelines for retesting with an RDT to reclassify the child before administering a second-line drug if the first-line treatment has failed. Five other use a clinical diagnosis without microscopy or RDT. Only Malawi confirms malaria infection by blood slide examination.	Countries should consider introducing the use of microscopy to reclassify malaria after treatment failure. This will improve the diagnosis of treatment failure and ensure better patient care, especially in false positives when RDTs are used. Microscopy will also improve the monitoring of resistance to the first-line antimalarial drugs in use.
Use of RDTs when a child has general danger signs and fever: The approach of conducting a malaria test by RDT or microscopy to classify severe febrile disease departs somewhat from the WHO guidelines, which emphasize the need for urgent treatment over diagnosis	Countries need to carefully weigh the added benefits of conducting laboratory testing (microscopy, RDT, and/or testing for hypoglycemia) when a child is seen by a health worker and has already been classified as having general danger signs and fever. The RDT will lead to a more accurate diagnosis and thus reporting of severe malaria but will not influence the pre-referral treatment if the standard recommendations for treatment of severe febrile disease are followed. Testing will inflict minor pain/discomfort to the severely ill child and could delay treatment.
Specific signs of severe malaria when a child has general danger signs and fever: When general danger signs are present, additional signs or clinical features of severe malaria, such as hypoglycemia, will require additional tests, which could result	Assessing children with fever for severe malaria-specific signs will add to the proper classification of severe febrile disease (severe malaria). Countries should consider introducing a skip option so that the health worker is not required to assess a child for malaria-specific danger signs and laboratory tests if the child

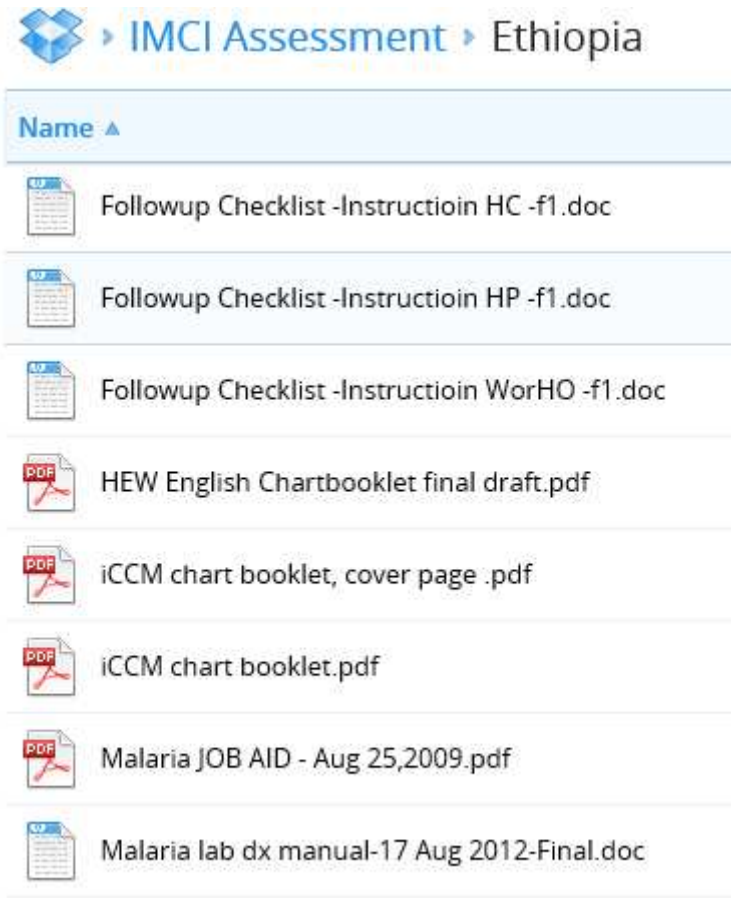
in some additional delays in treatment and referral.	has already been identified as having general danger signs.
Supervision	
Caretaker interviews during supervision visits: None of the seven supervision tools reviewed included a caretaker interview.	Countries should consider adding to their supervision routine and checklists a short, structured interview with caretakers. The interview should focus on the caretaker's knowledge of how antimalarial treatment should be given to the child (i.e., check if the caretaker knows how much to give, how many times per day, and number of days, and how to administer the treatment). The interviewer should also ask if the caretaker knows when to come back with the child.
Supervision of the health system: The supervision tools from only two countries (out of seven reviewed) included all of the following items: (a) availability of a malaria case management guide, (b) availability of recommended antimalarial, and (c) availability of RDTs or a functional microscope and materials.	To assess health system weaknesses/strengths, checklists should include items regarding the availability of materials needed to correctly assess, classify, and treat children with malaria (e.g., presence of malaria case management guide; recommended first-line, second-line, and injectable or rectal antimalarial drugs; and RDTs or a functional microscope and materials/supplies).

Appendixes

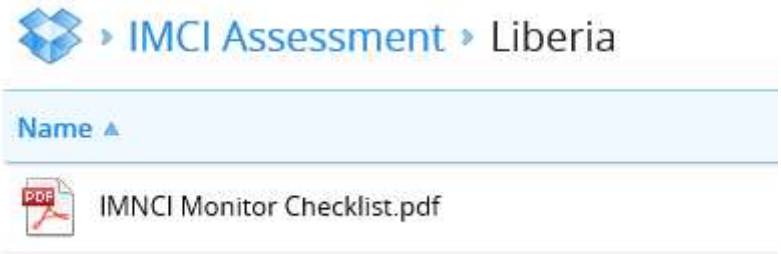
Appendix A: List of Documents Received

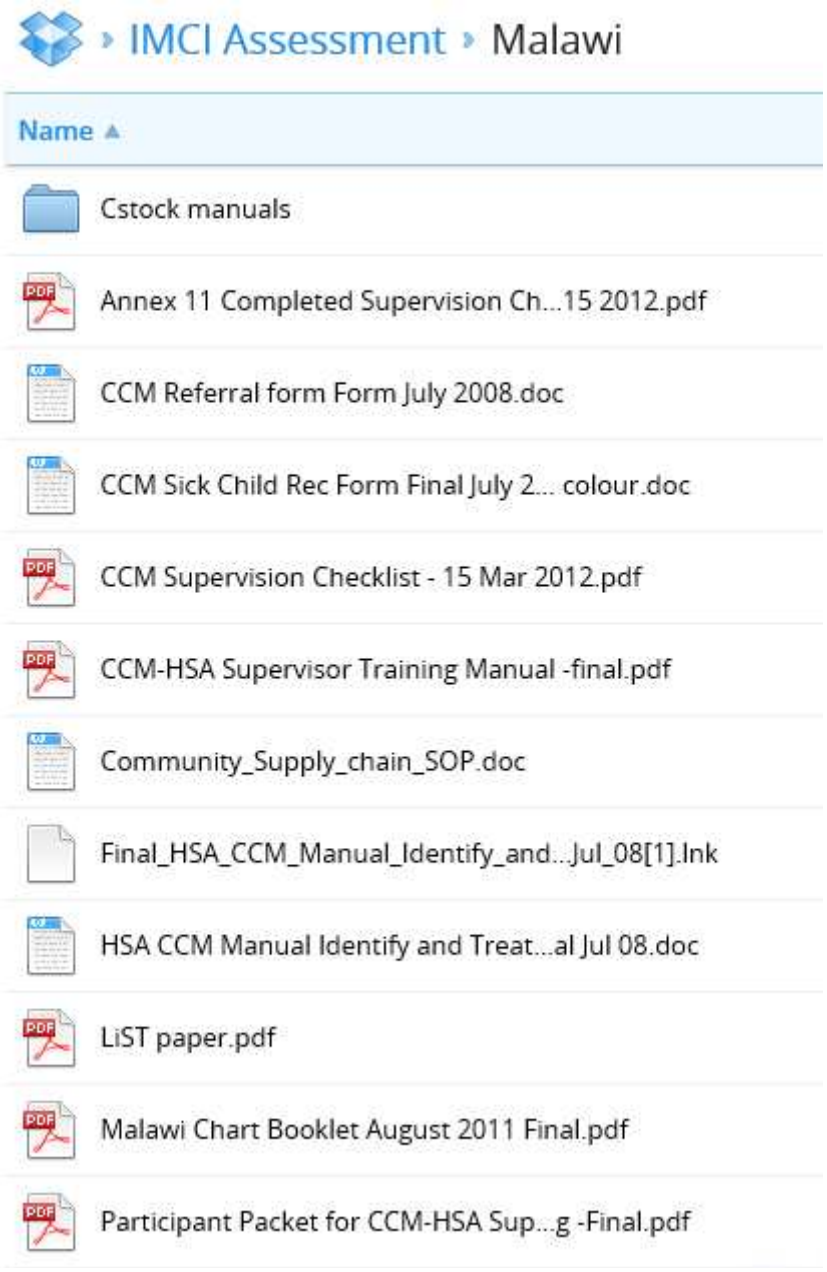


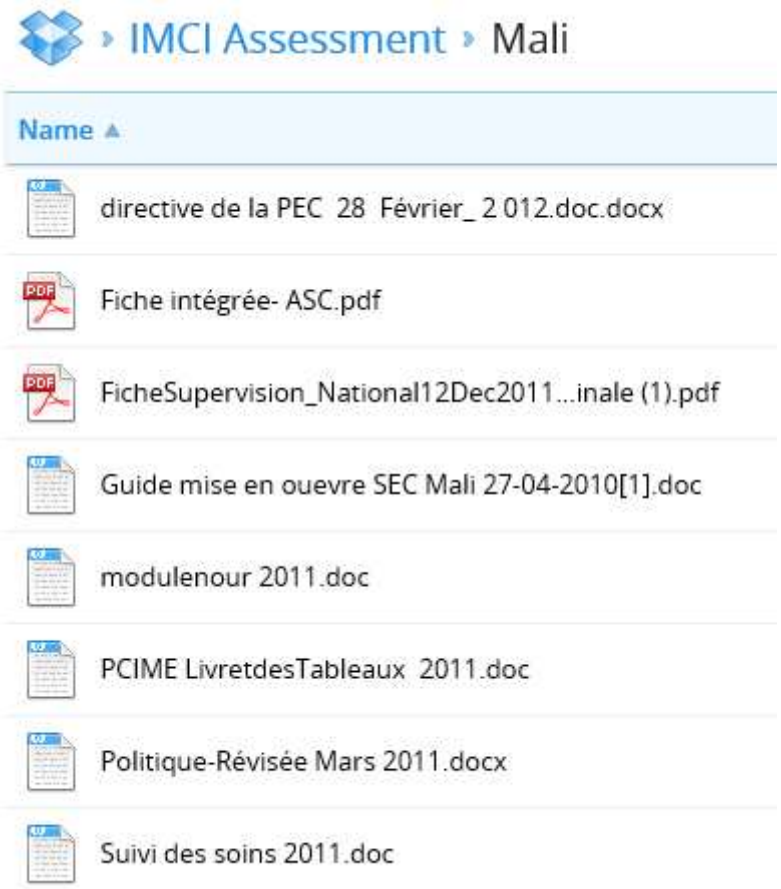

IMCI Assessment › DRC
Name
Community training tool_iCCM_Man...on 2012.pdf
Fiche de superv intégrée ,niveau cen... 160710.doc
Fiche de supervision du niveau du BCZS.docx
Fiche de supervision du niveau du D...nitaire.docx
Fiche de supervision du niveau périp..._New1.docx
FICHE DE SUPERVISION INTEGREE D...E KAS.docx
Fiche de supervision PNLP, CS.docx
Fiche de supervision, audit des données.doc
Guide complémenatire SNIS - PN LP.docx
Health facilities training tools_Guide ...HP-PMI.pdf
iCCM DRC Reporting tools.pdf
iCCM DRC supervision tools.pdf
Lab technician Training tool_Manuel...ovinces.pdf
Lab Technician_Supervision Checklist DRC.xls
RDT_Job Aids_Poster TDR SD Bioline_FINAL.pdf


IMCI Assessment
Ethiopia
Name
Followup Checklist -Instructioin HC -f1.doc
Followup Checklist -Instructioin HP -f1.doc
Followup Checklist -Instructioin WorHO -f1.doc
HEW English Chartbooklet final draft.pdf
iCCM chart booklet, cover page .pdf
iCCM chart booklet.pdf
Malaria JOB AID - Aug 25,2009.pdf
Malaria lab dx manual-17 Aug 2012-Final.doc

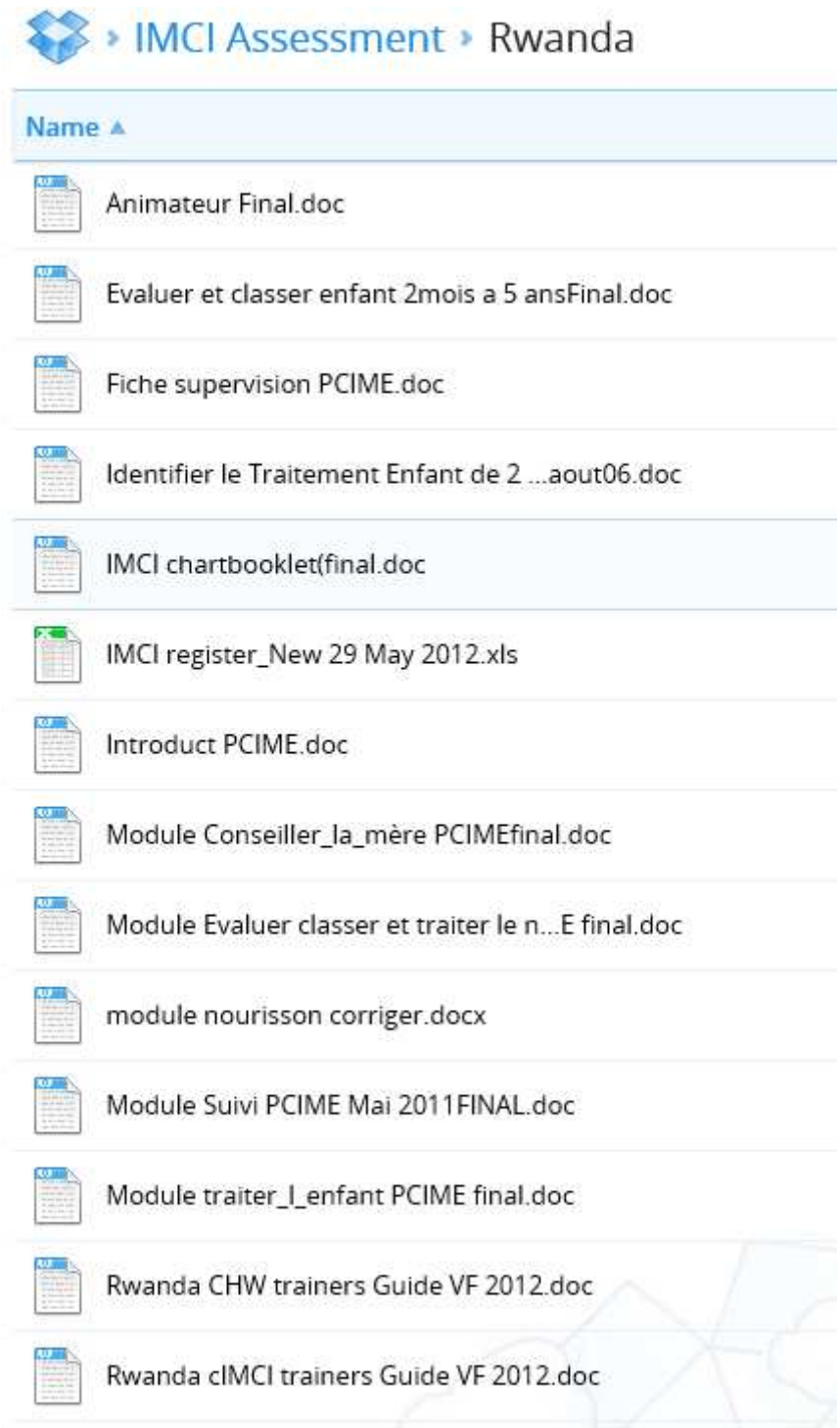

IMCI Assessment › Kenya
Name
COUNSEL THE MOTHER.ppt
FACILITATOR GUIDE FOR IDENIFY AN...rd Doc.doc
Group 2_IMCI adaptation_Identify tr...he child.ppt
IMCd booklt 26TH JUNE 2012.pdf
IMCI Training materials_Assess and classify.ppt
MANAGEMENT OF THE SICK CHILDR... FORMS.pdf
Managing a young infant.ppt

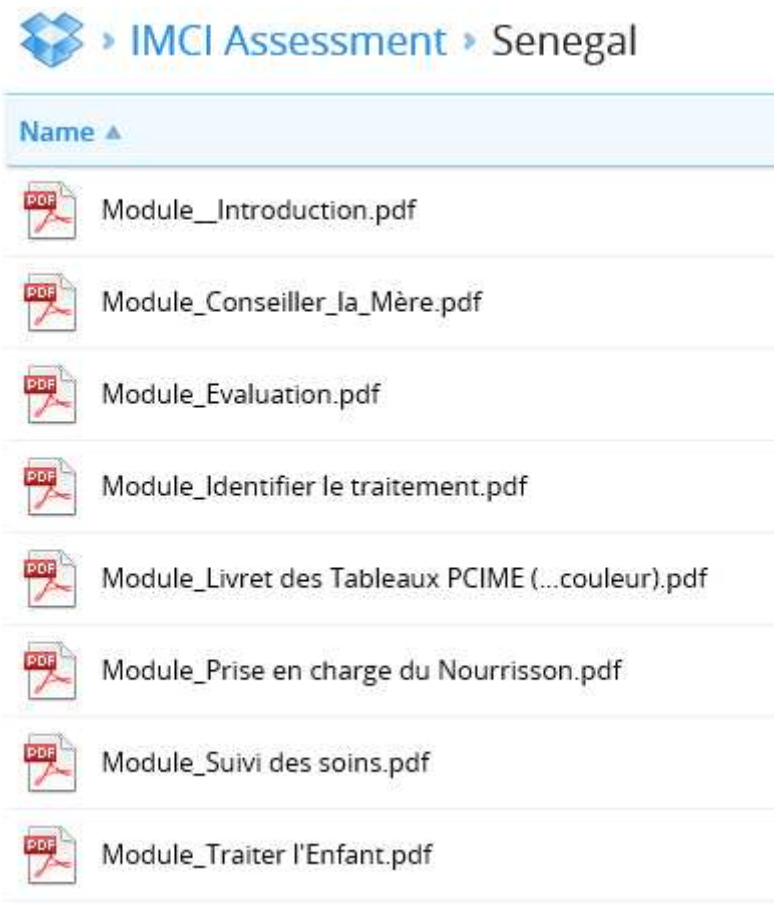

IMCI Assessment › Liberia
Name
IMNCI Monitor Checklist.pdf

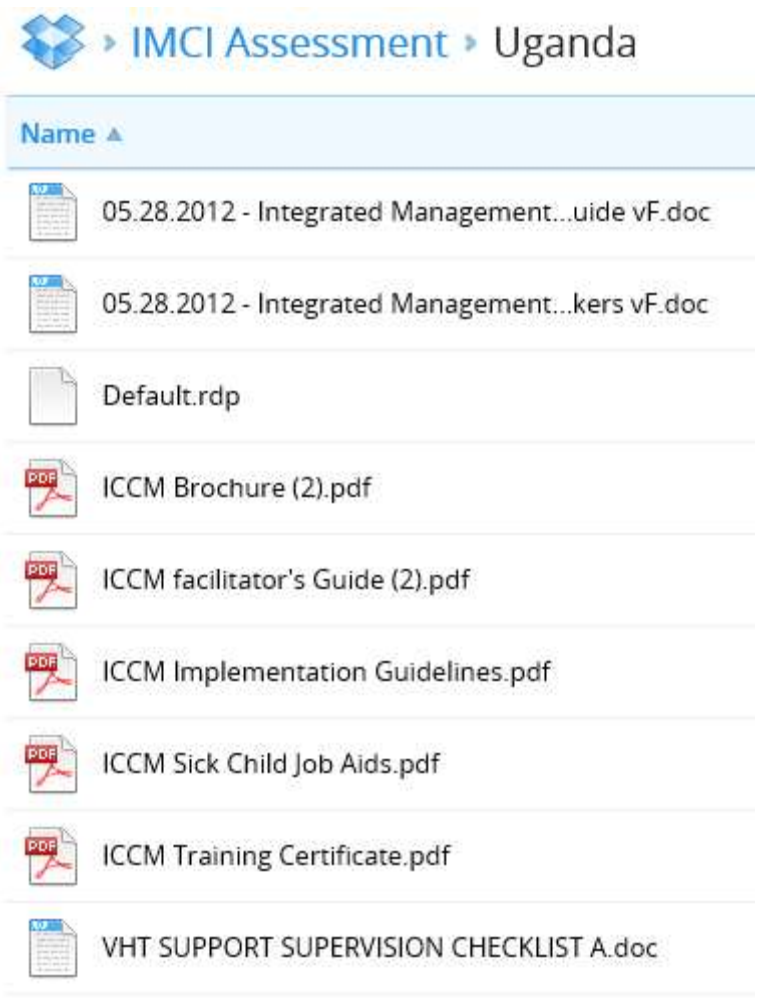

IMCI Assessment
Malawi
Name
Cstock manuals
Annex 11 Completed Supervision Ch...15 2012.pdf
CCM Referral form Form July 2008.doc
CCM Sick Child Rec Form Final July 2... colour.doc
CCM Supervision Checklist - 15 Mar 2012.pdf
CCM-HSA Supervisor Training Manual -final.pdf
Community_Supply_chain_SOP.doc
Final_HSA_CCM_Manual_Identify_and...Jul_08[1].lnk
HSA CCM Manual Identify and Treat...al Jul 08.doc
LiST paper.pdf
Malawi Chart Booklet August 2011 Final.pdf
Participant Packet for CCM-HSA Sup...g -Final.pdf

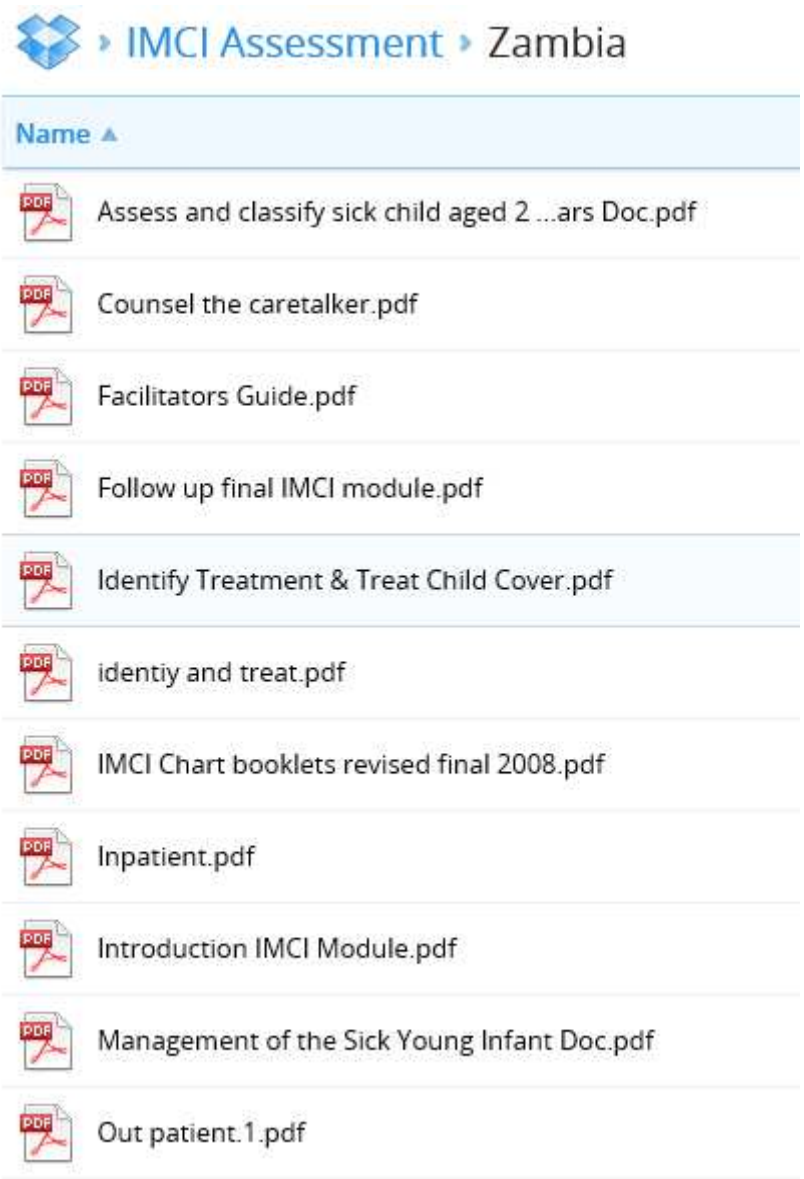

IMCI Assessment › Mali
Name
directive de la PEC 28 Février_ 2 012.doc.docx
Fiche intégrée- ASC.pdf
FicheSupervision_National12Dec2011...inale (1).pdf
Guide mise en ouevre SEC Mali 27-04-2010[1].doc
modulenour 2011.doc
PCIME LivretdesTableaux 2011.doc
Politique-Révisée Mars 2011.docx
Suivi des soins 2011.doc

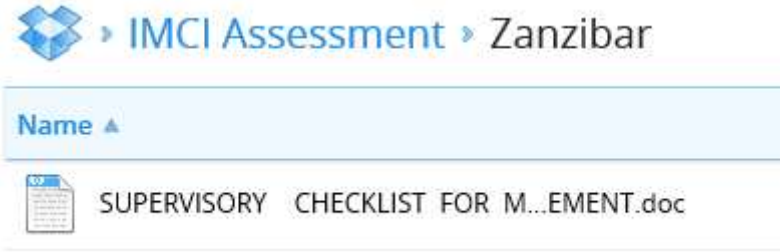

IMCI Assessment › Nigeria
Name
Assess_Module_March 2011 Revision.doc
COUNSEL MODULE- March 2011 Revision.docx
FOLLOW-UP Module - March 2011 Revision.doc
IDENTIFY RX MODULE 10 03 2012.doc
YOUNG INFANT_Module_March 2011...evision.doc

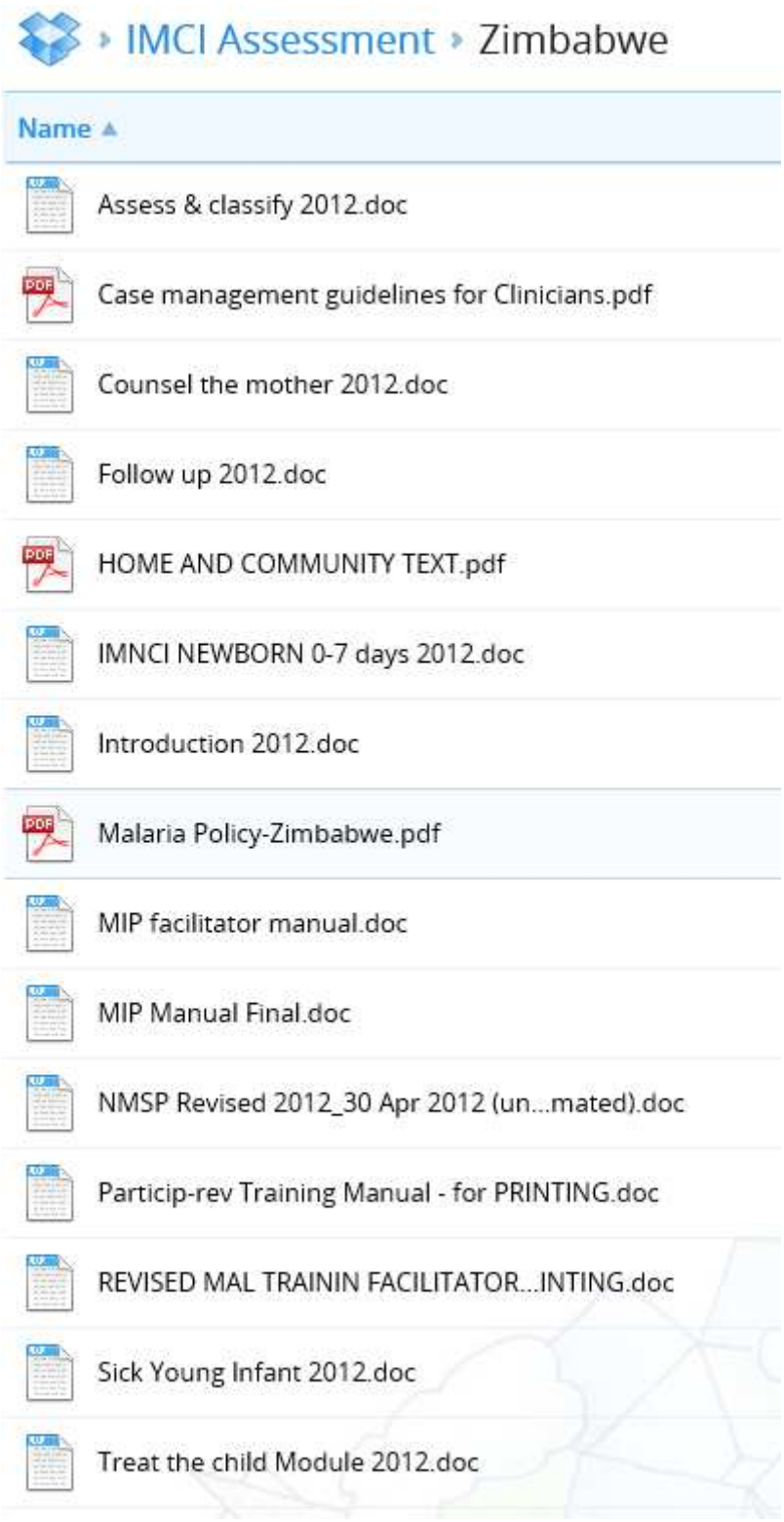

IMCI Assessment › Rwanda
Name ▲
Animateur Final.doc
Evaluer et classer enfant 2mois a 5 ansFinal.doc
Fiche supervision PCIME.doc
Identifier le Traitement Enfant de 2 ...aout06.doc
IMCI chartbooklet(final.doc
IMCI register_New 29 May 2012.xls
Introduct PCIME.doc
Module Conseiller_la_mère PCIMEfinal.doc
Module Evaluer classer et traiter le n...E final.doc
module nourisson corriger.docx
Module Suivi PCIME Mai 2011FINAL.doc
Module traiter_l_enfant PCIME final.doc
Rwanda CHW trainers Guide VF 2012.doc
Rwanda cIMCI trainers Guide VF 2012.doc


IMCI Assessment
Senegal
Name
Module__Introduction.pdf
Module_Conseiller_la_Mère.pdf
Module_Evaluation.pdf
Module_Identifier le traitement.pdf
Module_Livret des Tableaux PCIME (...couleur).pdf
Module_Prise en charge du Nourrisson.pdf
Module_Suivi des soins.pdf
Module_Traiter l'Enfant.pdf


IMCI Assessment
Uganda
Name
05.28.2012 - Integrated Management...uide vF.doc
05.28.2012 - Integrated Management...kers vF.doc
Default.rdp
ICCM Brochure (2).pdf
ICCM facilitator's Guide (2).pdf
ICCM Implementation Guidelines.pdf
ICCM Sick Child Job Aids.pdf
ICCM Training Certificate.pdf
VHT SUPPORT SUPERVISION CHECKLIST A.doc


IMCI Assessment › Zambia
Name
Assess and classify sick child aged 2 ...ars Doc.pdf
Counsel the caretalker.pdf
Facilitators Guide.pdf
Follow up final IMCI module.pdf
Identify Treatment & Treat Child Cover.pdf
identiy and treat.pdf
IMCI Chart booklets revised final 2008.pdf
Inpatient.pdf
Introduction IMCI Module.pdf
Management of the Sick Young Infant Doc.pdf
Out patient.1.pdf


IMCI Assessment › Zanzibar
Name
SUPERVISORY CHECKLIST FOR M...EMENT.doc


IMCI Assessment
Zimbabwe
Name
Assess & classify 2012.doc
Case management guidelines for Clinicians.pdf
Counsel the mother 2012.doc
Follow up 2012.doc
HOME AND COMMUNITY TEXT.pdf
IMNCI NEWBORN 0-7 days 2012.doc
Introduction 2012.doc
Malaria Policy-Zimbabwe.pdf
MIP facilitator manual.doc
MIP Manual Final.doc
NMSP Revised 2012_30 Apr 2012 (un...mated).doc
Particip-rev Training Manual - for PRINTING.doc
REVISED MAL TRAININ FACILITATOR...INTING.doc
Sick Young Infant 2012.doc
Treat the child Module 2012.doc

Appendix B: Data Extraction Tool

A Microsoft Excel spreadsheet was created to compare the country tools against the WHO standards, including the technical content of the training. Findings were color-coded to indicate how country materials measured up against the standards. Relevant parts of the spreadsheet are copied below. For the ease of reading and printing we have changed some colors in the examples.

Standards for assessing and classifying sick children

		Assess and classify				
		Assess for danger signs	**Fever**	**Very severe febrile disease**	**Malaria**	**Anemia**
IMCI for High HIV Settings: Chart Booklet (WHO 2008)	http://www.who.int/child_adolescent_health/documents/9789241597388/en/index.html	**ASK:** Is the child able to drink or breastfeed? Does the child vomit everything? Has the child had convulsions? **LOOK:** See if the child is lethargic or unconscious. Is the child convulsing now? (Ask about cough or difficult breathing, diarrhea)	**ASK:** Does the child have fever? **CHECK:** Does the child feel hot or have a temperature of 37.5°C or above?	Fever plus any general danger sign and/or stiff neck	**Low-risk area:** Fever with: • NO runny nose and • NO measles and • NO other cause of fever **High-risk area:** Any fever (by history or feels hot or temperature 37.5°C or above)	Severe palmar pallor = severe anemia Some palmar pallor = anemia
ICATT IMCI Computerized Adaptation and Training Tool, WHO and Novartis, 2007	http://www.icatt-training.org/	**ASK:** Is the child able to drink or breastfeed? Has the child had convulsions during the present illness? Does the child vomit everything? **LOOK:** Is the child having convulsions now? Is the child is unconscious or lethargic?	• The child has a history of fever • The child feels hot • The child has an axillary (underarm) temperature of 37.5°C (38°C rectal) or above	Fever and any general danger sign or stiff neck	A child with a fever (or a history of fever), no general danger sign or stiff neck, and a positive malaria test is classified as having malaria.[5] **If malaria test is not available,** a child with a fever (or a history of fever) and no general danger sign or stiff neck is classified as having malaria.	A child with malaria may have chronic anemia (with no fever) as the only sign of illness. Look for palmar pallor. Severe palmar pallor = severe anemia Some palmar pallor = anemia
		Clinical assessment/differential diagnosis				
		Assess for danger signs	**Severe malaria**		**Uncomplicated malaria**	
WHO *Guidelines for the Treatment of Malaria*, 2nd edition (WHO, 2010)	http://www.who.int/malaria/publications/atoz/9789241547925/en/	• Impaired consciousness or unrousable coma • Prostration (i.e., generalized weakness so that the patient is unable walk or sit up without assistance) • Failure to feed • Multiple convulsions (more than two episodes in 24 hours) • Deep breathing, respiratory distress (acidotic breathing) • Circulatory collapse or shock, systolic blood pressure < 50 mm Hg in children • Clinical jaundice plus evidence of other vital organ dysfunction • Hemoglobinuria • Abnormal spontaneous bleeding	Defined by clinical features		Symptomatic malaria without signs of severity or evidence (clinical or laboratory) of vital organ dysfunction. Malaria is suspected clinically mostly on the basis of fever or a history of fever. **If risk of malaria is high:** History of fever in the previous 24 hours and/or the presence of anemia (pallor of the palms) **If risk of malaria is low:** Possibility of exposure to malaria and a history of fever in the previous three days with no features of other severe diseases	

[5] In low-risk malaria areas malaria testing is done in children with a fever (or a history of fever) who do not have any general danger signs or stiff neck, and do not have any other obvious cause of fever. Where a malaria test is not available, a child with a fever (or a history of fever), no general danger sign or stiff neck, and no other obvious cause of fever is classified as having malaria. When malaria risk is low, a child with a fever and a runny nose does not need a malaria test. This child's fever is probably caused by a common cold, pneumonia, or an ear infection.

		• Pulmonary edema (radiological) NOTE: No "clinical" signs of anemia		

Some country examples: Assessment and classification of sick children

(For a complete list, see Excel spreadsheet.)

		Assess and classify				
		Assess for danger signs	**Fever**	**Very severe febrile disease**	**Malaria**	**Anemia**
Standard		**ASK:** Is the child able to drink or breastfeed? Has the child had convulsions during the present illness? Does the child vomit everything? **LOOK:** Is the child having convulsions now? Is the child is unconscious or lethargic?	• The child has a history of fever • The child feels hot • The child has an axillary (underarm) temperature of 37.5°C (38°C rectal) or above	Fever and any general danger sign or stiff neck	A child with fever (or a history of fever), no general danger sign or stiff neck, and a positive malaria test is classified as having malaria.[6] **If malaria test is not available,** a child with fever (or a history of fever) and no any general danger sign or stiff neck is classified as having malaria.	A child with malaria may have chronic anemia (with no fever) as the only sign of illness. Look for palmar pallor. Severe palmar pallor = severe anemia Some palmar pallor = anemia
Ethiopia	ICCM	• Is the child able to drink or breastfeed? • Does the child vomit everything? • Has the child had convulsions? • See if the child is lethargic or unconscious. • See if the child is convulsing now.	By history or feels hot or has axillary temperature of 37.5°C or above	Fever plus any general danger sign or stiff neck or **bulged fontanel**	RDT positive or, if RDT not available, fever (by history or feels hot or temperature 37.5°C or above)	Severe palmar pallor or some palmar pallor
Kenya	2012 IMCI guide	• Is the child able to drink or breastfeed? • Does the child vomit everything? • Has the child had convulsions? • See if the child is lethargic or unconscious. • Is the child convulsing now?	By history or feels hot or temperature (axillary) 37.5°C or above	Fever plus any general danger sign or stiff neck	Malaria test positive If no malaria test available: Low malaria risk and no obvious cause of fever, classify as malaria	Look for palmar pallor. Severe palmar pallor = severe anemia Some palmar pallor = anemia No palmar pallor = no anemia

[6] In low-risk malaria areas malaria testing is done in children with a fever (or a history of fever) who do not have any general danger signs or stiff neck, and do not have any other obvious cause of fever. Where a malaria test is not available, a child with a fever (or a history of fever), no general danger sign or stiff neck, and no other obvious cause of fever is classified as having malaria. When malaria risk is low, a child with a fever and a runny nose does not need a malaria test. This child's fever is probably caused by a common cold, pneumonia, or an ear infection.

		Assess and classify				
		Assess for danger signs	**Fever**	**Very severe febrile disease**	**Malaria**	**Anemia**
Standard		**ASK:** Is the child able to drink or breastfeed? Has the child had convulsions during the present illness? Does the child vomit everything? **LOOK:** Is the child having convulsions now? Is the child is unconscious or lethargic?	• The child has a history of fever • The child feels hot • The child has an axillary (underarm) temperature of 37.5°C (38°C rectal) or above	Fever and any general danger sign or stiff neck	A child with fever (or a history of fever), no general danger sign or stiff neck, and a positive malaria test is classified as having malaria.[6] **If malaria test is not available,** a child with fever (or a history of fever) and no any general danger sign or stiff neck is classified as having malaria.	A child with malaria may have chronic anemia (with no fever) as the only sign of illness. Look for palmar pallor. Severe palmar pallor = severe anemia Some palmar pallor = anemia
Zambia	IMCI ABRIDGED COURSE FOR HEALTH WORKERS	Check for general danger signs: • Not able to drink or breastfeed? • Lethargic or unconscious? • Vomits everything? • Convulsing everything? • History of convulsion during this illness?	By history: The child feels hot; the child has a temperature 37.5° C or above ***Also*** ask for how long the child had fever? • Check for stiff neck • Check for measles	Fever plus general danger sign or stiff neck	Any fever (by history or feels hot or temperature 37.5° C or above) (no RDT)	Look for palmar pallor: • severe palmar pallor • some palmar pallor
DRC	Health facilities training tools_Guide technique Paludisme PNLP Centre Version 2012_IHP-PMI iCCM tools	Signs of severity: • Difficulty to speak, sit, stand or walk (extreme fatigue) • Inability to eat or drink • History of seizures or convulsing • Bleeding from the gums, nose, or skin • Urinating small amounts and dark coca cola or coffee-colored • Behavioral problems (restlessness, logorrhea, mutism, confusion, aggression, euphoria) • Loss of consciousness or coma • Jaundice and / or pallor • Abnormal or unusual breathing • Cold extremities • Recurrent vomiting	The presence of fever or a history of fever for 48 hours	**ICCM**: Classic danger signs and referral **NMCP:** Clear guide for severe malaria: fever plus danger signs plus parasitological diagnosis but weak on severe febrile disease **(Note: "Severe malaria may exist without fever.")**	ICCM: Fever and positive RDT; any case of fever with or without headache, feeling cold, aches, tremors, nuchalgies, fatigue, chills, sweating, nausea, without signs of severity and confirmed by laboratory diagnosis (RDT/thick film)	Anemia is not mentioned in NMCP materials, but is mentioned in the ICCM guide as a danger sign.
Rwanda	2012 IMCI training material	A general danger sign is present if: • The child is unable to drink or breastfeed • The child vomits everything he consumes • The child had convulsions or is convulsing now • The child is lethargic or unconscious **LOOK and ASK for signs of severe malaria: jaundice, dark urine, and abnormal bleeding.**	A child has fever as main symptom if the child: • has a history of fever or • is hot to the touch or • has a rectal temperature of 37.5ºC or more	IMCI: differentiates severe malaria from severe febrile malaria **Severe malaria** = any general danger sign or stiff neck **and** microscopy + and/or positive RDT **Very serious febrile disease** = any general	Fever (by history or feels hot or temperature 37.5°C or more) and microscopy and/or positive RDT	Look for palmar pallor. Is it: • Severe? • Light? • Absent (no pallor)? The child with malaria may have chronic anemia (without fever) as the only sign of the

		Assess and classify				
		Assess for danger signs	**Fever**	**Very severe febrile disease**	**Malaria**	**Anemia**
Standard		**ASK:** Is the child able to drink or breastfeed? Has the child had convulsions during the present illness? Does the child vomit everything? **LOOK:** Is the child having convulsions now? Is the child is unconscious or lethargic?	• The child has a history of fever • The child feels hot • The child has an axillary (underarm) temperature of 37.5°C (38°C rectal) or above	Fever and any general danger sign or stiff neck	A child with fever (or a history of fever), no general danger sign or stiff neck, and a positive malaria test is classified as having malaria.[6] **If malaria test is not available,** a child with fever (or a history of fever) and no any general danger sign or stiff neck is classified as having malaria.	A child with malaria may have chronic anemia (with no fever) as the only sign of illness. Look for palmar pallor. Severe palmar pallor = severe anemia Some palmar pallor = anemia
				danger sign or microscopy AND stiff neck and/or negative RDT		disease.
Uganda	2010 CCM and 2012 malaria guidelines; IMCI being updated	**CCM:** There are five general danger signs: • Vomiting everything • Chest In-drawing • Convulsions • Not able to breastfeed or drink • Very sleepy/unconscious / difficult to wake **Malaria guidelines:** Assess for danger signs • Convulsions or fits within the last two days or at present • Not able to drink or breastfeed • Vomiting everything • Altered mental state (lethargy, drowsiness, unconsciousness or confusion) • Prostration or extreme weakness (unable to stand or sit without support) • Severe respiratory distress (difficult breathing) • Severe pallor • Severe dehydration	History: Axillary temperature more than 37.5°C; **the body feels very hot**	**Severe malaria:** • Blood smear or RDT positive plus coma • Severe anemia • Respiratory distress • Hypoglycemia • Circulatory collapse • Renal failure • Spontaneous bleeding • Repeated convulsions • Acidosis • Hemoglobinuria • Pulmonary edema and/or impaired consciousness • Jaundice • Prostration • Hyperpyrexia • Hyperparasitemia Note: Very severe disease not well defined	**CCM (no testing):** A child of age four months to five years who has fever for less than seven days with no danger sign should be treated for malaria. **Malaria guidelines (positive malaria test):** Uncomplicated malaria: generally presents with constitutional symptoms like simple fever, headache, dizziness, and myalgia, which are not life-threatening.	Severe anemia : • Severe pallor • Low hemoglobin (Hb) level of less than 5g/dl or a hematocrit of less than 15%

		Assess and classify				
		Assess for danger signs	**Fever**	**Very severe febrile disease**	**Malaria**	**Anemia**
Standard		**ASK:** Is the child able to drink or breastfeed? Has the child had convulsions during the present illness? Does the child vomit everything? **LOOK:** Is the child having convulsions now? Is the child is unconscious or lethargic?	• The child has a history of fever • The child feels hot • The child has an axillary (underarm) temperature of 37.5°C (38°C rectal) or above	Fever and any general danger sign or stiff neck	A child with fever (or a history of fever), no general danger sign or stiff neck, and a positive malaria test is classified as having malaria.[6] **If malaria test is not available,** a child with fever (or a history of fever) and no any general danger sign or stiff neck is classified as having malaria.	A child with malaria may have chronic anemia (with no fever) as the only sign of illness. Look for palmar pallor. Severe palmar pallor = severe anemia Some palmar pallor = anemia

Supervision tool: Findings (all countries)

SUPERVISION		Introduce supervision	Observe case management, interview caretaker, reinforce skills, and summarize information collected	
Standards		Meet "in charge" and meet/greet with relevant staff. Explain the purpose of the visit and explain what routine supervision (e.g., HFA). Identify the health worker(s) in charge of malaria and or IMCH/sick child care. Arrange for observations.	**Select a sick child** preferably of age two months to five years. **Observe** the health worker managing the child, using ***checklist,*** and review patient recording forms. **Checklist items:** • Assess for all four general **danger signs** • Ask and assess for the presence of all main symptoms (cough, diarrhea, fever, ear problem) • Assess for anemia; look for palmar pallor • Correctly check weight • Cases classified as **severe** (needing referral) are referred • Severe cases receive first dose of antibiotic before referral • Severe cases of malaria receive IM quinine/rectal ACT before referral • Cases needing an oral antimalarial are prescribed correctly • Identified cases receive a full course of antimalarial at the facility **Caretaker counseling:** If children are not referred: • Advise on giving extra fluid and continue feeding • Advise on at least two signs for when to seek care/come back • Explain how to administer oral treatment • Demonstrate how to administer the oral treatment	**Interview the caretaker using the caretaker interview form.** **Check on:** If given an antimalarial drug, does the caretaker know: • How much to give, how many times per day, and number of days • How to give treatment Does the caretaker know when to come back? Examples of questions about antimalarials, if prescribed: • How much will you give <CHILD> each time? • How many times will you give it to <CHILD> each day? • How many days will you give the medicine to <CHILD>?
Democratic Republic of Congo	**PNLP:** FICHE DE SUPERVISION INTEGREE DES ACTIVITES DE LUTTE CONTRE LE PALUDISME NIVEAU PERIPHERIQUE: CS	No standard intro	During the consultation: 1. Is a comprehensive exam of the patient performed? 2. In case of fever, is an RDT used to confirm malaria? 3. In case of a positive RDT, is an antimalarial drug prescribed? 4. If so, is it consistent with national policy? 5. In case of a negative RDT, is an antimalarial drug still prescribed? 6. When prescribing ACT, does the nurse explain how to take the ACT at home and possible side effects (nausea, vomiting, diarrhea, fatigue)? **Record review:** Review 25 records of simple malaria cases selected at random, and calculate the proportion of prescriptions in accordance with the NMCP guidelines	No interview of caretaker
Ethiopia	INTEGRATED FAMILY HEALTH PROGRAM FOLLOW-UP CHECKLIST Follow-up Checklist -Instruction HC -f1	Supervision checklist: "Name of the person who is in charge of the Health Center during the visit"	Are there IMNCI services? Check registry and verify that the health center provides IMNCI. Do health workers in the health center adhere to service delivery standards (general observation)? Ask to observe health workers provide appropriate services to patients/clients. To do so, conduct case observations on IMNC, EPI, FP, and/or other services provided in the health center. Observe and verify that health workers: • Provide proper counseling and treatment during FP, sick mother, and child services, • Greet clients in a friendly manner, handle clients with respect and dignity, talk to clients in a low speaking voice that maintains privacy of conversation, and • Provide health education on infant feeding and proper hygiene practices to mothers of children less than one year. Are there up-to-date MNCH registers Request to see IMNCI register. Is there an up-to-date outpatient/clinical register (only scored for "are available").	No caretaker interview
Ethiopia	Follow-up Checklist -Instruction HP -f1.doc	No standard intro	Are there IMNCI services? Check registry and verify that the health center provides IMNCI. If service is provided, score '1.' Does the health center provide give malaria treatment? If yes, see the registration book to verify the proper management of cases by asking some questions. Do HEWs in the HF adhere to service delivery standards (general observation)? Ask to observe HEWs provide services to patients/clients. To do so, conduct case observation on IMNC, EPI, FP, and/or other services provided in the HF. Observe and verify that HEWs: • Provide proper counseling and treatment during FP and sick mother and child services; • Greet clients in a friendly manner, handle clients with respect and dignity, talk to clients in a low speaking voice that maintains privacy of conversation; and • Provide health education on infant feeding and proper hygiene	

			practices to mothers of children less than one year. If you find any wrong procedure, score '0'and give comments	
Liberia	SUPERVISORY CHECKLIST FOR MONITORING/SUPERVISION OF IMNCI ACTIVITIES	No standard intro	**Assessment of skills of the health worker:** When assessing children < 5, does the health worker check/ask about at least three of the following general danger signs: a. Ability to drink or breastfeed b. Vomits everything c. History of convulsion d. Lethargic or unconscious Health worker checks the child for cough, diarrhea, and malaria and uses chart booklet to classify and treat children < 5. Child anemia status is correctly assessed, and appropriate feeding advice given (checks the palm or sole of the child). Health worker correctly treats the child and, if appropriate, gives first dose of antibiotic/antimalarial and advises ORS accordingly. Child needing referral is referred and given appropriate pre-referral treatment and a referral note at the facility. Child nutritional status is correctly assessed. Correct home advice on treatment and follow-up is given to caregiver/mother (education on danger signs, feeding, etc.).	No caretaker interview
Malawi	COMMUNITY CASE MANAGEMENT; H.S.A SUPERVISION CHECKLIST	No info	Observe the HSA managing a sick child, or use a case scenario from your supervision materials. Check here __ if you observed a sick child or here __ if you used a case scenario. • Assesses for all danger signs correctly (anemia not included in HSA assessment form) • Refers if child has danger sign or condition he/she cannot treat • Facilitates referral (provides referral slip and first dose) Information-Decision-Treatment Consistency (Review the five most recent cases in the register.) • Gives correct treatment • Demonstrates how to administer treatment correctly • Counsels (correct messages on feeding, increased fluids, and when to return) • Explains how to administer drugs correctly • Asks mother to repeat back how to administer • Asks caregiver to return for follow-up visit	No caretaker interview
Mali	FICHES DE SUPERVISION DES ACTIVITES DE SURVEILLANCE DU PALUDISME AU NIVEAU DES ETABLISSEMENTS DE SANTE AU MALI	N/A	Observation of the correct use of RDT No clinical observations	No caretaker interview
Rwanda	2012 IMCI training material	N/A	**Supervision form:** Evaluate the case management of five children, including three who are between two months and five years old. Noted the current complaints **Looked for the general danger signs** Evaluated cough or difficulty breathing Evaluated current diarrhea Evaluated diarrhea in the last three months **Evaluated fever** Looked for an ear problem today Looked for an ear problem in the past **Looked for anemia** **Rated malnutrition** Looked for signs of HIV infection Verified vaccination status Evaluated nutrition of the child Evaluated other problems **Correctly classified illnesses** **Made referrals** **Gave the first dose of antibiotic** **Gave artemether IM** Gave the mother a date for the follow-up visit Explained to the mother when to return immediately	No interview of caretaker

Tanzania	Zanzibar checklist	N/A	Clinician performance (listen and observe): Fever or history of fever during history taking Danger signs: Vomiting everything, unable to drink/ suck/eat; lethargic or unconscious; convulsions now or history of convulsion Clinician's management and prescription if malaria diagnosed during supervision: correct or not correct	No caretaker interview

SUPERVISION		Review facility supports and summarize information collected		Complete a summary report of visit and give feedback
Standards		Use the Checklist of Facility Supports to review conditions and organization of services at the facility. • How many days per week is the facility open? • Source of safe water • Is there a malaria case management guide? Does the facility have the following drugs available the day of visit: Recommended antimalarial: • First line • Second line • Injectable or rectal Does the facility have the following available the day of visit: • RDTs • Functional microscope and materials (reagents, supplies)	• Review problems noted • Ask the staff what problems they have found • Discuss possible solutions to problems For each problem, ask about possible solutions, summarize decisions made, and discuss practical solutions.	Strengths and problems identified during the visit; actions taken during the visit to solve problems at the facility; future actions needed to solve problems during the next supervisory visit, or at the district level or another level of the health system
Democratic Republic of Congo	**PNLP:** FICHE DE SUPERVISION INTEGREE DES ACTIVITES DE LUTTE CONTRE LE PALUDISME NIVEAU PERIPHERIQUE: CS	No questions on availability the day of visit • Is there a malaria case management guide? • Is the health center stocked with ACT? • Is the health center stocked with quinine? • Is the health center stocked with RDT?		CONCLUSION • Strengths • Weaknesses • Corrective Actions RECOMMENDATIONS
Ethiopia	INTEGRATED FAMILY HEALTH PROGRAM FOLLOW-UP CHECKLIST; Follow-up Checklist - Instruction HC - f1	• Are there IMNCI chart booklet and/or manuals? • Is there a malaria case management guide? • Does the HC have water supplies? Check stock for antimalarial drugs and RDT. Ask them about the availability of drugs and RDT. If not available, advise them to acquire. **Are all necessary logistics available for IMNCI?** Ask the service provider(s), and if they complain about the absence of any essential drugs/supplies, pre-referral injections, and/or supplies at the time of visit, score '0' and provide the necessary support to avail them. If they say that they have all the necessary logistics, score '1.' Note: Essential drugs/supplies include pre-referral injections (chloramphenical, ampicillin, gentamycin, crystalline penicillin, **diazepam**, vitamin K prophylaxis, **quinine)** and supplies (syringe and needle, functional adult and infant weighing scale*, MUAC tape*, **IMNCI registration book*)** (*Please check if the health worker is using these item during examination.) Are the following tracer drugs available on all days of the past month? arthemisin; lumphantrine		General Observation and comments Provide your general observation: key issues, challenges and comments as appropriate At the end of the visit: 1. Hold brief meeting with HC personnel and reflect on key findings 2. Identify things that need to be followed by HC, WHO, and IFHP/RHB 3. Develop action plan
Ethiopia	Follow-up Checklist - Instruction HP - f1.doc	Is there a malaria case management guide? Verify if the guide is available; If available score a '1.' Are all necessary logistics available for IMNCI? Ask the service provider(s), and if they complain about the absence of any essential drugs/supplies, pre-referral injections, and/or supplies at the time of visit, score '0' and provide the necessary support to avail them. If they say that they have all the necessary logistics, score '1.' **Are essential drugs available and in use?** Ask the HEWs about their perception of the availability of essential drugs. Essential drugs at the HP level include the following: ORS, coartem, paracetamol, chloroquine, mebendazole/albendazole, vitamin A, capsule, iron/folate, zinc tablet, vitamin K, ergometrine, first aid supplies)		General observation and comments: Provide your general observations on key issues, challenges, and comments as appropriate At the end of the visit: 1. Hold brief meeting with HC personnel and reflect on key findings 2. Identify things that need to be followed by HC, WHO, and IFHP/RHB 3. Develop action plan

		Is there an up-to-date logistics/drug consumption register with data entered correctly? Ask for any document used to track daily consumption of drugs. Were the following tracer drugs available on all days in the past month? arthemisin; lumphantrine		
Liberia	SUPERVISORY CHECKLIST FOR MONITORING/SUPERVISION OF IMNCI ACTIVITIES	**Assessment of Health Systems Support** • Essential IMNCI drugs available and valid (not expired) in stock: ORS packets, septrin/amoxil, cipro, ACT, vitamin A, iron, etc. • IMNCI drugs and supplies available and valid (not expired) in stock: quinine, artemether, zinc, diazepam, mebendazole, folic acid, paracetamol • IMNCI chart booklet, laminated recording form and other • IMNCI modules available on desk		
Malawi	COMMUNITY CASE MANAGEMENT H.S.A SUPERVISION CHECKLIST	**Logistics** (observe drug box and medicines): Drugs stored in a two-lock system drug box All drugs are valid (unexpired) **Availability of drugs** (observe medicines and ask about availability) Cotrimoxazole (approximately 60 tablets): Did you have cotrimoxazole every day last month? If no, for about how many days were you without cotrimoxazole? LA 1X6 (at least 36 tablets = 6 blister packs) LA 2X6 (at least 48 tablets = 4 blister packs): Did you have LA everyday last month? If no, for about how many days were you without LA last month? Paracetamol (approximately 36 tablets): Did you have a continuous supply of LA, Cotrimoxazole, and ORS for the last 3 months without any stock-out of those products?		What were the HSA's most important concerns (and your responses)? Number by priority. Observations and recommendations? Also record in supervision log book at village clinic
Mali	FICHES DE SUPERVISION DES ACTIVITES DE SURVEILLANCE DU PALUDISME AU NIVEAU DES ETABLISSEMENTS DE SANTE AU MALI	• Observation of the use of the RDT • Management of ACTs, RDT, and other antimalarial products • Management of the "warehouse": storage location and • management tools • Supervision of the drug depot: How many treatment doses of ACTs are available today? Are RDTs available on the day of supervision?		NOTE: Supervision tool focuses on data quality
Rwanda	2012 IMCI training material	Availability of drugs, equipment, and materials: • Coartem ® • Artemether IM ® • AB recommended for pneumonia • Diazepam injection • Phenobarbital injection • Paracetamol syrup (125 mg / C.M) • Ringer's lactate • Infusion Kit • Catheters for children • Nasogastric tube for children • Tabl paracetamol 100 mg • Thermometer • Water available RDT not on list		• Feedback • Health officer/supervisor • Strengths to maintain • Weaknesses to improve • Proposed solutions/follow-up on proposed solutions The feedback is designed to be a highly interactive process. The health worker and supervisor have the opportunity to make a joint analysis of the situation to identify the strengths and weaknesses of the two parties (health center and district) to achieve the objectives. The health worker is informed on what (s)he does well and should keep and what must improve. The supervisor also listens to positive assessments of health workers: the need to maintain positive feedback and complaints which must be addressed. Only a few key points should be made. These points will lead to some concrete and relevant recommendations that will be implemented to achieve the objectives. The feedback must take place in a relaxed and constructive exchange.

Tanzania	Zanzibar checklist	• Presence of malaria treatment guidelines • Presence of ACTs during supervision • Stock-out of ACTs continuously for one week during the last three months • Presence of quinine for pre-referral treatment during supervision • Methods of diagnosing malaria: Microscope/RDT/Clinical		