

Adherence to Integrated Management of Childhood Illnesses in Malawi



Photo: Lindsay Mgbor

The Integrated Management of Childhood Illness (IMCI) protocol was developed to improve the quality of child health care and reduce under-5 mortality. Malawi adopted IMCI in 1999, but little is known about how well providers follow the protocol, especially in the private sector. To examine gaps in adherence to the IMCI protocol, this brief analyzes data from the [2013–14 Malawi Service Provision Assessment](#) (SPA) of public and private health facilities to provide critical information to improve the quality of sick child care in Malawi.

Key Findings

- The largest gaps in adherence to the IMCI protocol are in asking about maternal HIV status (7% of sick children), assessing for acute malnutrition (4% of sick children), and screening for general danger signs (3% of sick children).
- Relative successes include checking the immunization status of 78% of sick children.
- Less than half of children with reported symptoms of fever (43%), cough or difficult breathing (37%), diarrhea (18%) were assessed, diagnosed, and managed according to the IMCI protocol.
- Children seen in private facilities were more likely to be correctly checked for anemia, HIV infection, and immunization status, and correctly assessed, diagnosed, and managed for cough or difficult breathing than children seen in public facilities.
- Zero percent of sick children who were examined in this analysis of SPA data were assessed for all eight modules of the IMCI protocol.

The World Health Organization introduced IMCI guidelines to improve the integration and quality of health care services at community and health facility levels with the goal of enhancing case management, detecting risk factors associated with severe outcomes, and improving childhood survival. Since 1996, more than 100 countries have adopted IMCI. The government of Malawi adopted these guidelines in 1999 and began training providers throughout the country the following year. Despite long and widespread use of IMCI, there is limited evidence on how well providers follow the protocol, particularly in the private health sector, which is an important source of sick child care in Malawi.¹ Understanding how well public and private facilities and providers adhere to the IMCI protocol for sick children and identifying gaps in adherence is critical to improving the quality of sick child care and reducing childhood morbidity and mortality in Malawi.

IMCI modules examined in this analysis using SPA data

1. Check for general danger signs
2. Does the child have cough or difficult breathing?
 - a. If yes, assess, diagnose, and manage
3. Does the child have diarrhea?
 - a. If yes, assess, diagnose, and manage
4. Does the child have fever?
 - a. If yes, assess, diagnose, and manage
5. Then check for acute malnutrition
6. Then check for anemia
7. Then check for HIV infection
8. Then check the child's immunization status

Methods

The Sustaining Health Outcomes through the Private Sector (SHOPS) Plus project analyzed data from the Malawi SPA, a census of functioning public and private health facilities in Malawi collected between July 2013 and February 2014. In the SPA, trained data collectors observed consultations with sick children and their caregivers in 748 facilities and recorded the providers' actions (Table 1). SHOPS Plus analyzed all data collected from consultations with sick children 2–59 months old.²

¹ Sarah E.K. Bradley, L. Rosapep, and T. Shiras, "Where Do Caregivers Take Their Sick Children for Care? An Analysis of Care Seeking and Equity in 24 USAID Priority Countries," *Global Health: Science and Practice* 8, no. 3 (2020): 518–533.

² Children <2 months were excluded because a different IMCI protocol is followed for young infants.

SHOPS Plus compared provider actions recorded in the SPA to eight modules of the World Health Organization’s 2014 IMCI Chart Booklet.^{3,4} Examination of the complete IMCI protocol was not feasible, as the SPA tool does not collect all indicators included in the IMCI guidelines. In accordance with the IMCI protocol, the provider should follow the chart booklet’s step-by-step instructions for each module for every sick child, with the exception of modules 2a, 3a, and 4a, which are relevant only to children with reported symptoms of cough or difficult breathing, diarrhea, and/or fever, respectively. These children are assessed, diagnosed, and managed separately for those specific symptoms. For the three modules on cough or difficult breathing, diarrhea, and/or fever, each child was classified as either being correctly or incorrectly assessed, diagnosed, and managed by the provider based on the IMCI steps and the data available from the SPA tool (see section below for additional detail). The project compared results from Malawi to average pooled results across seven SPA surveys (Afghanistan 2018–19, Democratic Republic of Congo 2017–18, Haiti 2017–18, Nepal 2015, Tanzania 2014–15, Senegal 2018–19), including Malawi’s. SHOPS Plus used logistic regression to determine if adherence varied by sectors and only commented on differences that are statistically significant at the $p < 0.05$ level.

Table 1. Number of health facilities and sick child observations included in the analysis by sector

Sector	Number of facilities	Number of sick child observations
Public facilities: hospitals, health posts and centers, dispensaries, and clinics	416	2,072
Private facilities: Christian Health Association of Malawi (CHAM) facilities, private for-profit institutions, companies, and other NGOs	332	1,050
Total	748	3,122

Data on cough, diarrhea, and fever

SPA data are limited in that they only include diagnoses and provider prescriptions for three symptoms included in the IMCI protocol: cough, diarrhea, and fever. For these three symptoms, there are no data on if the sick child receives treatment. Thus, the analysis for these symptoms includes 1) if the provider assessed the child correctly, and 2) if the provider correctly managed the child based on the diagnosis made. Assessment, diagnosis, and management is still categorized as correct if

³ In consultation with USAID medical experts, the project excluded IMCI module on ear problems, deworming, and vitamin A from the analysis.

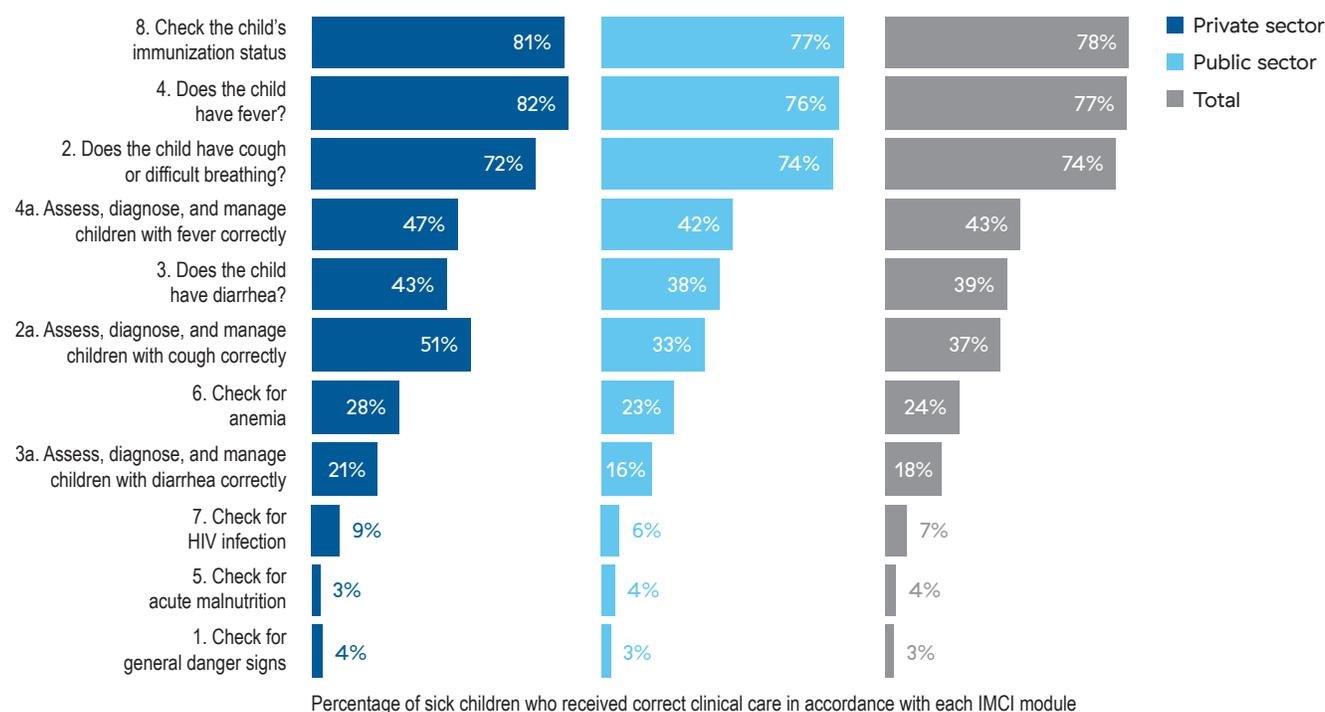
⁴ The SPA questions used to measure adherence to modules 1–4 on checking children for danger signs, cough, diarrhea, or fever ask whether the “provider asked or caretaker mentioned” the symptom, hereafter referred to as “screening.” “Correct” adherence for these modules could therefore be the result of caretaker actions, so while the percentage of children screened correctly can be accurately measured, correct screening cannot be attributed to the provider for these modules.

the provider correctly assessed the child and determined the child did not have an ailment (e.g., diarrhea) and therefore no further management was needed. Finally, the SPA tool does not include information on how a provider confirmed a malaria diagnosis. Therefore, the results include provider diagnosis of malaria, but this is a syndromic diagnosis based on the presence of fever and not confirmed with a rapid diagnostic test result.

Adherence to IMCI

Figure 1 summarizes the adherence to the IMCI protocol by providers in private, public, and all facilities. Zero percent of children were assessed for all eight IMCI modules included in the SPA tool and in the project’s analysis.⁵ This finding is consistent across the seven countries analyzed, indicating that providers are not adhering to the IMCI protocol in any country or sector. Across the eight IMCI modules examined, providers in Malawi demonstrated the highest level of adherence to guidelines for checking the child’s immunization status (78 percent) and lowest for screening for potential danger signs (3 percent), acute malnutrition (4 percent), and maternal HIV status (7 percent).

Figure 1. Children were least likely to be assessed for danger signs, acute malnutrition, and HIV infection⁵

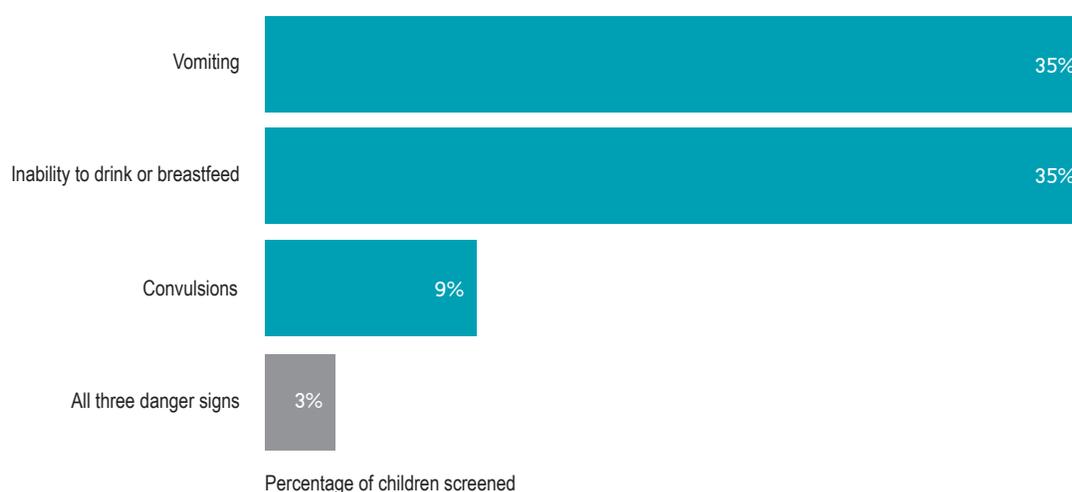


⁵ This does not include children assessed separately under modules 2a, 3a, and 4a since only symptomatic children received assessments, diagnoses, and management for cough or difficult breathing, diarrhea, and/or fever.

General Danger Signs

The first step of the IMCI protocol requires providers to check for three general danger signs that would require immediate urgent referral. In 35 percent of sick child consultations, providers asked or were told by the caregiver about vomiting or the inability to drink or breastfeed (Figure 2). However, far fewer children were screened for convulsions (9 percent). Overall, just 3 percent of sick children were screened for all three danger signs.

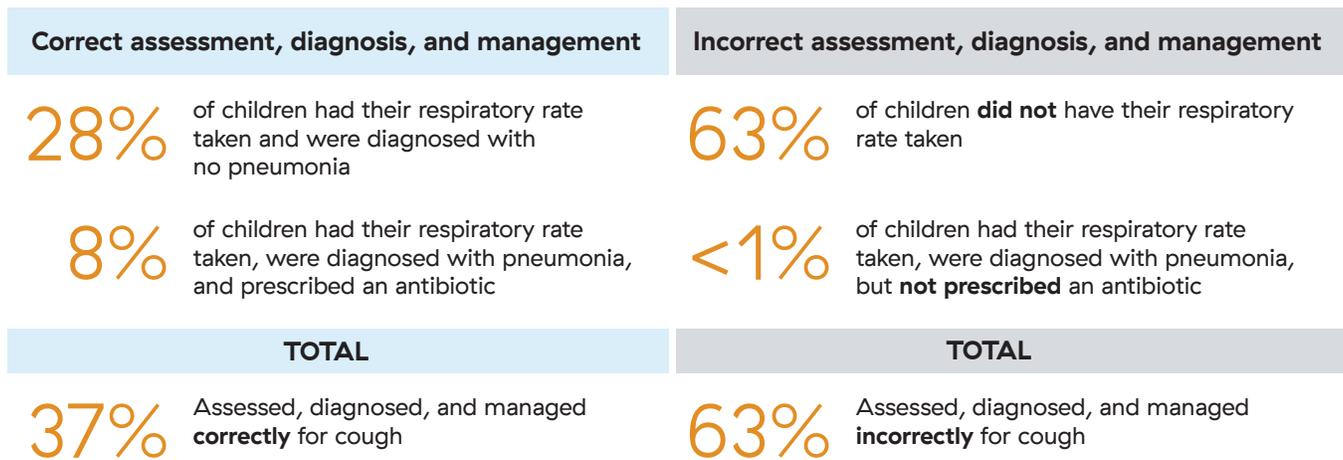
Figure 2. Only 3 percent of children were screened for all three danger signs



Cough: Assessment, Diagnosis, and Management

After checking for general danger signs, a child should be screened for cough or difficulty breathing either by the provider asking the caregiver or the caregiver mentioning it. Almost three-quarters (74 percent) of children in Malawi were screened for cough or difficulty breathing. The results in Figure 3 focus on assessment, diagnosis, and management among the subset of children with reported cough.

Figure 3. Assessment, diagnosis, and management of sick children with reported cough



Note: Numbers may not add due to rounding.

Among children with reported cough or difficult breathing, slightly more than a third (37 percent) were assessed, diagnosed, and managed correctly in Malawi (Figure 3). This includes 28 percent of children who had their breaths counted (respiratory rate taken) and the provider did not diagnose them with pneumonia, and 8 percent who had their breaths counted, were diagnosed with pneumonia, and were prescribed an antibiotic. Most children were assessed incorrectly because the provider did not count their breaths (63 percent). Counting breaths can be done without any special equipment and is the crucial first step in determining how to manage a child with cough.

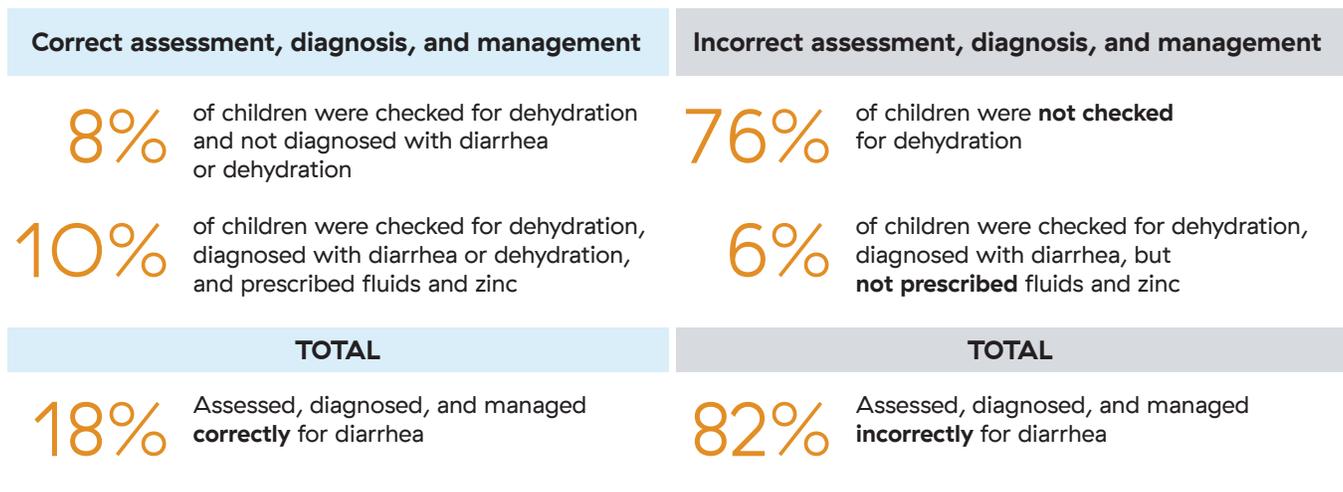
Less than **2** out of every **5** children
sick with cough and/or difficult breathing
were assessed, diagnosed, and managed correctly



Diarrhea: Assessment, Diagnosis, and Management

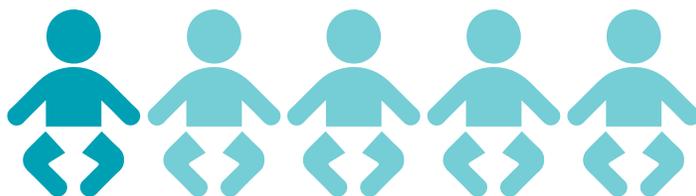
A provider should then screen the child for diarrhea. In only 39 percent of sick child consultations in Malawi did providers ask about or caregivers mention diarrhea. The results in Figure 4 focus on assessment, diagnosis, and management among the subset of children with reported diarrhea.

Figure 4. Assessment, diagnosis, and management of sick children with reported diarrhea



Among children for whom diarrhea was reported, only 18 percent were correctly assessed, diagnosed, and managed (Figure 4).⁶ Correct assessment, diagnosis, and management includes two scenarios: 1) children were checked for dehydration and not diagnosed with diarrhea or dehydration (8 percent) or 2) children were checked for dehydration, diagnosed with diarrhea or dehydration, and prescribed the appropriate fluids and zinc (10 percent). The majority of children were assessed, diagnosed, and managed incorrectly (82 percent), with more than three-quarters (76 percent) not checked for dehydration even though no equipment is needed to pinch the skin to check for turgor.

Less than **1** out of every **5** children sick with diarrhea were assessed, diagnosed, and managed correctly

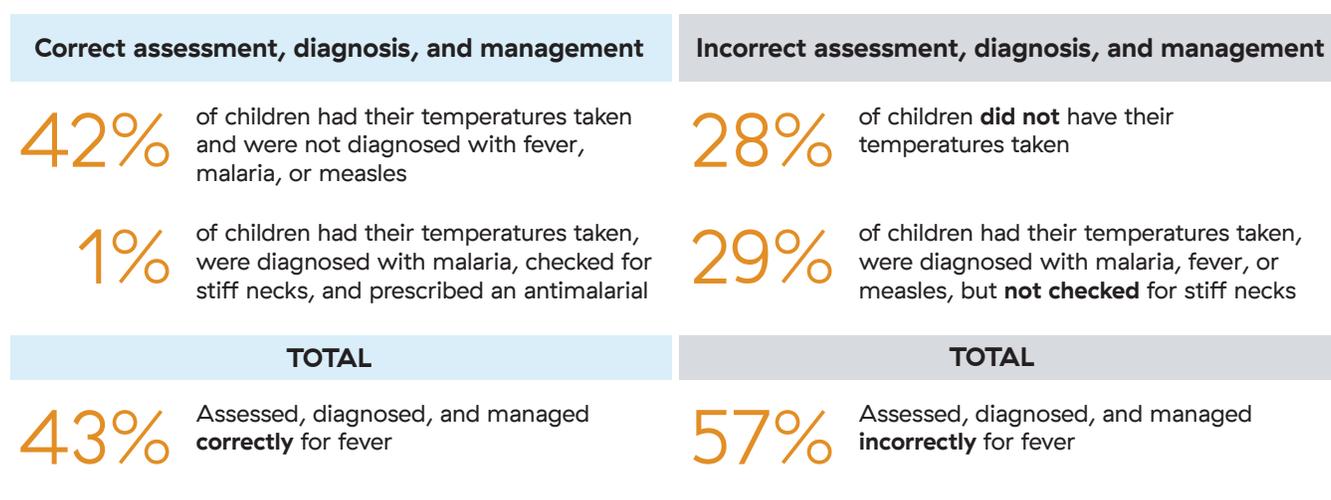


⁶ According to the IMCI Chart Booklet, a provider should check the child for dehydration by pinching their skin to check for turgor, diagnose them with dehydration or dysentery, and prescribe fluids and zinc for diarrhea or dehydration or antibiotics for dysentery.

Fever: Assessment, Diagnosis, and Management

More than three-quarters of sick children were screened (provider asked or caregiver mentioned) for fever (77 percent). The results in Figure 5 focus on assessment, diagnosis, and management among the subset of children with reported fever.

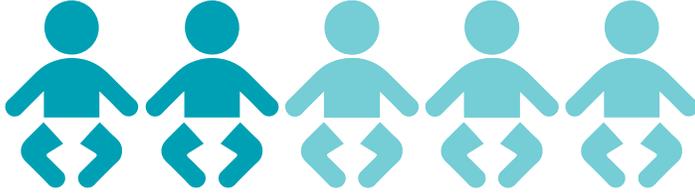
Figure 5. Assessment, diagnosis, and management of sick children with reported fever



Among children with reported fever, 43 percent were assessed, diagnosed, and managed correctly. Most of these children were assessed correctly because the provider determined that the child did not, in fact, have a fever, malaria, or measles after checking the child's temperature (42 percent).⁷ Only 1 percent of children with reported fever had their temperature taken, were diagnosed with malaria, had their neck checked for stiffness, and were prescribed an antimalarial. More than half of children with reported fever were assessed, diagnosed, and managed incorrectly (57 percent). This included two characterizations: 1) children who did not have their temperature taken (28 percent), and 2) children who were diagnosed with malaria, fever, or measles but not checked for a stiff neck (29 percent). Temperature taking is also a step that does not require specialized equipment because the IMCI protocol allows providers to simply feel for body hotness.

⁷ According to the IMCI Chart Booklet, a provider should take the child's temperature, check for a stiff neck, determine the diagnosis, and prescribe an antimalarial if diagnosed with malaria.

Less than 2 out of every 5 children
sick with fever were assessed, diagnosed, and managed correctly



Acute Malnutrition

To check for acute malnutrition, IMCI guidelines require providers to press both feet to check for edema and weigh and measure the child. While 49 percent of children in Malawi were weighed, only 8 percent were assessed for edema and even fewer for both (4 percent).

Figure 6. Levels of adherence were low for checking for acute malnutrition because most children were not checked for edema



Percentage of sick children weighed, checked for edema, and correctly assessed for acute malnutrition

Anemia, HIV, and Immunization

Providers should examine all children's palms for pallor to check for anemia; 24 percent of children received this examination. To rule out HIV, the IMCI protocol requires providers to ask about maternal HIV status. This question was asked in 7 percent of consultations. Finally, providers are required to check the status of the child's immunization history. This module had the highest level of adherence: the provider asked about or checked the child's vaccination or health card in 78 percent of sick child consultations.



24%
of children
were examined
for anemia



7%
of children
were screened
for HIV

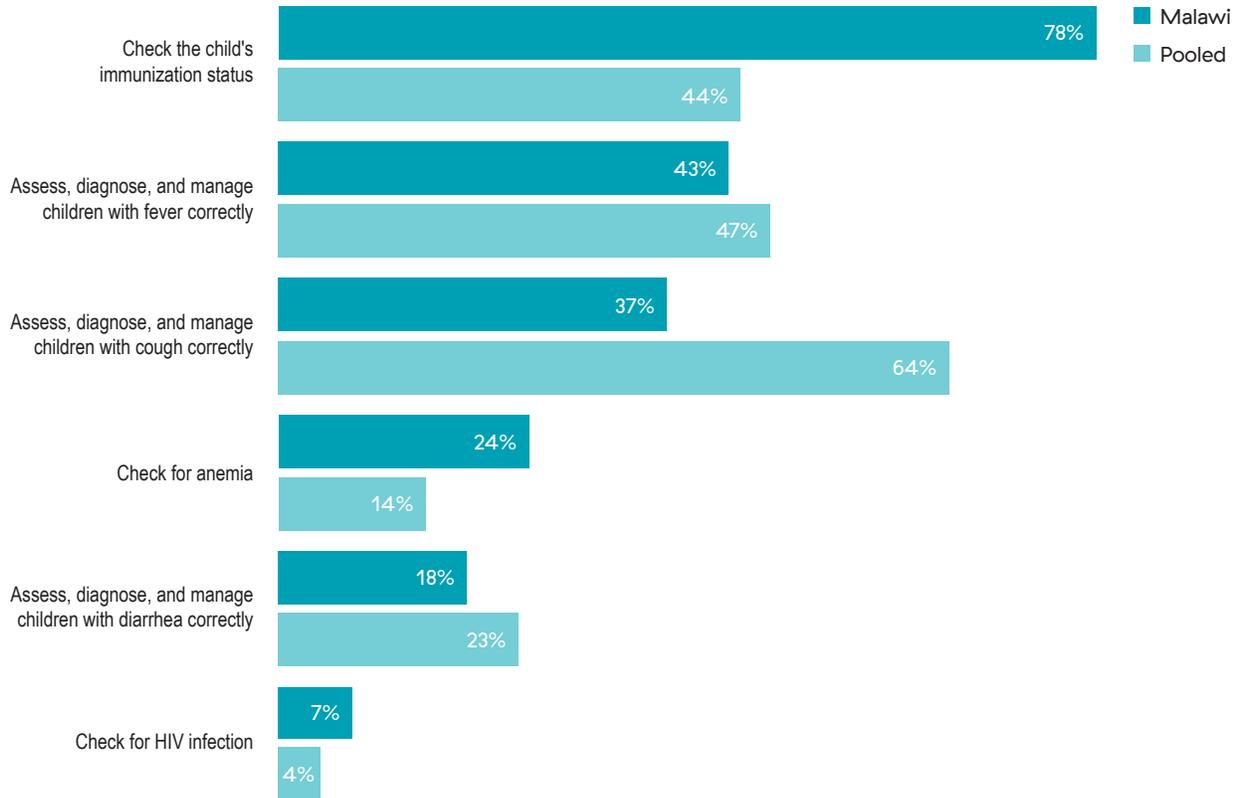


78%
of children
were screened for
immunization status

Malawi in Context

Children in Malawi were far more likely to have their immunization status checked than children in any other country: 78 percent in Malawi versus 44 percent in the pooled analysis across countries (Figure 7). Malawian children were also more likely to be assessed for anemia (24 versus 14 percent) and HIV (7 versus 4 percent), though these differences are smaller. While there were higher levels of adherence across the pooled countries than in Malawi for the assessment, diagnosis, and management of cough (64 versus 37 percent), diarrhea (23 versus 18 percent), and fever (47 versus 43 percent), most providers across countries also failed to count breaths for children with cough and check for dehydration in children with diarrhea in consultations where the child was incorrectly assessed, as was the case in Malawi. Low adherence to screening for all three danger signs was seen across other countries as well (3 percent for both Malawi and pooled data), which is important to note considering that a child who exhibits any of the danger signs should be referred immediately for urgent care.

Figure 7. Children in Malawi were more likely to be assessed for their immunization history status, anemia, and maternal HIV status than children across the countries reviewed

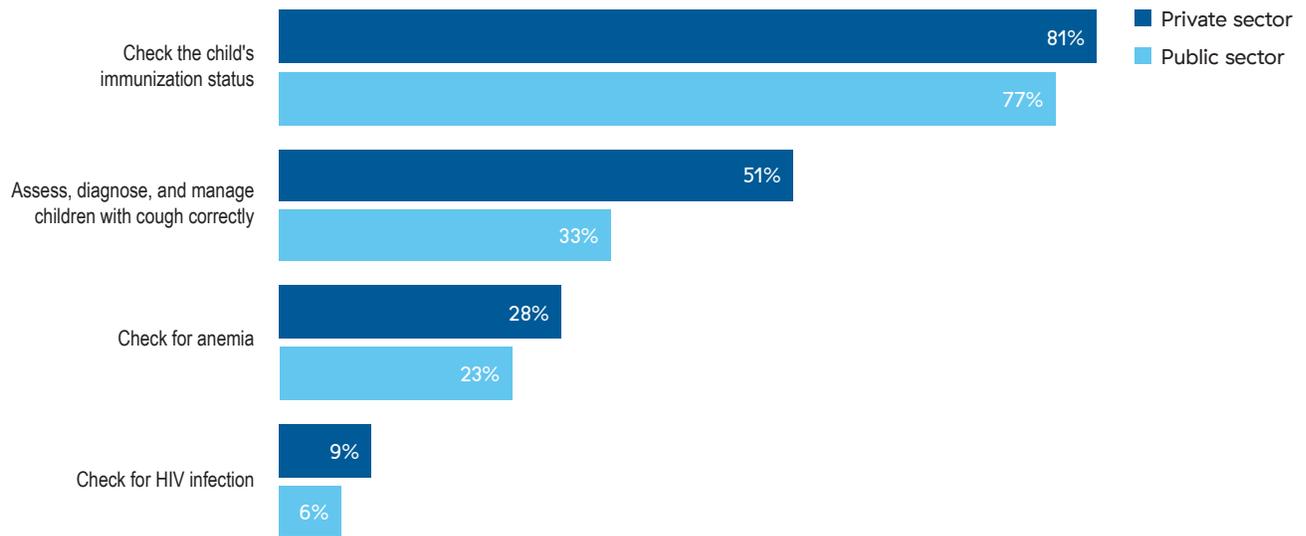


Percentage of sick children in Malawi, and in pooled analysis across the seven countries, who were correctly assessed according to the IMCI protocol

Differences in the Public and Private Sectors

Malawi's public and private sectors are both important sources of sick child care.¹ Compared to children seen in public facilities, sick children seen in Malawi's private sector were more likely to have their immunization status checked (81 private versus 77 percent public), be correctly assessed, diagnosed, and managed for cough or difficult breathing (51 versus 33 percent), and be assessed for anemia (28 versus 23 percent) (Figure 8). Children seen in the private sector were also more likely to have the provider ask about maternal HIV status than in the public sector, though adherence levels were universally low (9 versus 6 percent).

Figure 8. The private sector had higher levels of adherence to IMCI in four components



Percentage of sick children in public and private sectors who were correctly assessed according to the IMCI protocol

Implications

Overall, in Malawi, zero percent of sick children were assessed in accordance with all eight analyzed modules of the IMCI protocol. Furthermore, in assessing sick children with cough/difficult breathing, diarrhea, or fever, providers often missed the first critical steps required to correctly diagnose children, including not taking a respiratory rate, checking for dehydration, or taking their temperatures. These crucial steps do not require any specialized equipment, medicine, or advanced training. This raises important questions on why providers are not following these basic measures to correctly assess sick children. Although there are several areas where the private sector performed better, such as in the assessment, diagnosis, and management of cough and checking for anemia, adherence to all modules needs to be improved across both sectors.

In Malawi, **ZERO** percent of sick children were assessed for all eight IMCI modules analyzed, indicating that no providers are caring for children in accordance with the IMCI protocol.

Moving Forward

SHOPS Plus examined these findings with stakeholders from the Ministry of Health, the United States Agency for International Development, and implementing partners in Malawi and discussed potential strategies to improve IMCI adherence and the quality of care for sick children. It is important to recognize and build on Malawi's successes, including achieving the highest level of checking child immunization status of any country analyzed. However, stakeholders agreed on the need for significant improvement. Since the government adopted IMCI in 1999, there has been a greater focus on iCCM (integrated community case management) and an overall lack of investment in IMCI at the clinical level. Stakeholders also explained that while most providers throughout the country were introduced to IMCI during pre-service training, there have been few refresher trainings and inadequate supervision visits conducted to ensure providers' knowledge and skills are current. Furthermore, a shortage of human resources for health is exacerbated by high patient caseloads, particularly in the public sector, and by facilities experiencing supply chain challenges and lack of proper equipment.

Solutions identified to improve the quality of care for sick children and provider adherence to IMCI guidelines include:

- Further investment in capacity-development programs to improve pre-service training and conduct refresher trainings.
- Supervision visits, orientations on IMCI, and mentorship to support providers in understanding and following each module of the protocol.
- Development of standardized tools, including a digital version of the IMCI protocol, that are user-friendly so that the process of following the steps in the protocol is more streamlined and can easily be referred to during consultations.
- Adaptation of the sick child recording forms used by health surveillance assistants for IMCI at the facility level to encourage providers to document the steps they take, thereby improving adherence to each module.

Conclusions

The IMCI guidelines were developed to improve the quality of care for sick children, but based on this analysis of available SPA data, no provider in Malawi adhered to every module of the protocol. As discussed with stakeholders from Malawi, increased efforts are needed in implementing IMCI to improve adherence and therefore reduce under-5 morbidity and mortality. Strengthening provider capacity through improved and more frequent trainings and adequate supervision, and addressing the barriers experienced by providers in following IMCI guidelines, could close gaps in adherence and ensure that all children receive the quality of care they deserve.

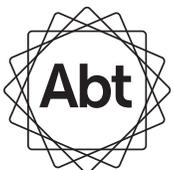
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