Medecins Sans Frontieres

VACCINE-PREVENTABLE DISEASE OUTBREAKS IN DARFUR

FINDINGS FROM MSF-SUPPORTED HEALTH FACILITIES (JANUARY 2024-APRIL 2026)



PHOTO:
Measles outbreak in Rokero, Central Darfur.

CENTRAL DARFUR © THIBAULT FENDLER/MSF

September 2026

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ACKNOWLEDGEMENT

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We thank everyone whose dedication, collaboration, and commitment contribute to the delivery of essential healthcare and humanitarian assistance to the communities in Darfur.



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BACKGROUND

Since April 2023, Sudan has faced one of the world's most severe humanitarian crises. The ongoing conflict has displaced millions of people, decimated civilian infrastructure, disrupted essential services, and significantly restricted humanitarian access. Across the country, recurrent violence, disease outbreaks, food insecurity, and the collapse of public services continue to drive widespread humanitarian needs.

The health system has been particularly hard hit. Many health facilities have been damaged, destroyed, looted or forced to close, while large numbers of health workers have been displaced. Supply chains have been disrupted and key public health programmes, such as immunisation, disease surveillance, outbreak response and laboratory services, have been substantially weakened.

These challenges have been particularly acute in Darfur, Sudan´s western region, where persistent conflict, insecurity, repeated population displacement and fragmented governance have severely disrupted health service delivery. In many areas, the routine planning, supervision and implementation of immunisation activities have been significantly constrained. As a result, humanitarian organisations, community networks, UN agencies and local implementing partners have become essential in maintaining health services.

These challenges have been particularly acute in Darfur, Sudan´s western region, where persistent conflict, insecurity, repeated population displacement and fragmented governance have severely disrupted health service delivery

National immunisation coverage data indicate a significant decline since the onset of the Sudan conflict in April 2023. According to WHO and UNICEF estimates, coverage of the first dose of measles-containing vaccine (MCV1) fell from 80% in 2022 to 51% in 2023 and 46% in 2024. Coverage of the first dose of diphtheria-tetanus-pertussis, containing vaccine (DPT1), also declined from 93% in 2022 to 57% in 2023 and 48% in 2024.[1] These declines indicate that an increasing number of children have not accessed routine vaccination, thereby raising the risk of vaccine-preventable disease outbreaks. At the national level, WHO and UNICEF's 2025 revision reports a marked rebound: MCV1 coverage rose to 68%, a 22-percentage-point increase, and DPT1 coverage rose to 83%, a 35-percentage-point increase.[2]

These figures should, however, be interpreted with caution. While the number of children reported as vaccinated is drawn from service delivery data and considered reasonably reliable, the denominator used to calculate coverage, which is the estimated number of children who should have been reached, is not, given the absence of a recent census and reliable population figures (for example, the number of children under one) amid ongoing war and mass displacement. WHO has also assigned these 2025 estimates its lowest confidence grade (D-), and no household survey has been conducted across the five most recent annual birth cohorts to validate them. These national estimates also do not disaggregate to the subnational level, and WHO/UNICEF does not currently share Darfur-specific coverage data. It therefore cannot be concluded that the reported national-level

1 WHO/UNICEF Estimates of National Immunisation Coverage, 2024 revision.

2 See WHO, Diphtheria Tetanus Toxoid and Pertussis (DTP) vaccination coverage ; Measles vaccination coverage.

improvement is reflected in Darfur, where the access constraints, insecurity and health system disruptions described in this report persist. As the findings below show, significant gaps in routine immunisation coverage and outbreak risk remain in Darfur regardless of the national trend.

Findings from the WHO's Health Resources and Services Availability Monitoring System (HeRAMS) Sudan Baseline Assessment 2025[3] provide further insight into the operational challenges affecting immunisation services across Darfur. Health facility functionality varied significantly by state, with North Darfur being the most affected, with fewer than half of the assessed facilities found to be operational. Although South and East Darfur reported higher levels of functioning facilities, HeRAMS also identified critical gaps in cold chain capacity, suggesting that operational health facilities may still not be able to reliably deliver routine immunisation services.

Significant gaps in routine immunisation coverage and outbreak risk remain in Darfur

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SCOPE OF THE REPORT

In addition to specific response barriers, there are significant This report does not aim to provide a national overview of immunisation coverage or vaccine-preventable disease outbreaks in Sudan. Instead, it describes MSF's operational experience in responding to outbreaks across West, Central, North and South Darfur between January 2024 and April 2026, drawing on epidemiological data from MSF-supported facilities, outbreak investigations, field observations, discussions with Ministry of Health officials and community interviews. While cases of diphtheria and meningitis were also reported during this period, this analysis focuses on measles and pertussis, which accounted for the large majority of vaccine-preventable disease cases managed by MSF and form the basis for the operational findings and recommendations that follow.

Within this scope, the analysis focuses on outbreak trends, the vaccination status of affected patients, and the operational barriers to routine immunisation in conflict-affected settings. It examines why outbreaks continue to recur despite repeated reactive vaccination campaigns and identifies operational priorities for strengthening routine immunisation and enhance outbreak preparedness.

The findings should be interpreted within the context of ongoing conflict, repeated displacement, restricted humanitarian access, and weakened health services. While not representative of the entire country, they offer valuable operational insights and key recommendations for sustaining routine immunisation and responding to vaccine-preventable disease outbreaks across Darfur.

3 The HeRAMS system aims to provide decision-makers and health stakeholders at large with vital and up-to-date information on the availability of essential health resources and services, help them identify gaps, and determine priorities for intervention. HeRAMS has been deployed in Sudan since June 2023, allowing for the assessment of 4363 Health Service Delivery Units (HSDUs) across the country. See latest HeRAMS Sudan baseline report 2025: Operational status of the health system.

3

METHODOLOGY

This document presents a mixed methods analysis combining routine programmatic qualitative and quantitative data collected through conversations with programme implementors from MSF and State MOH, as well as patients from MSF supported hospitals.

Quantitative data was collected retrospectively from all MSF projects that supported activities in Darfur states between 1st January 2024 to 30th April 2026. The data represents 21 reporting locations from 13 localities and four different states. Information was collected from the various outbreak responses undertaken and includes total case numbers, age distribution, and vaccination status. Due to the lack of a centralised database for disease surveillance, information was often received in differing formats and required standardisation before a comparative analysis could be done. Case counts were analysed by time and place using Microsoft Excel.



Qualitative data was collected in two phases, between May and August 2026. In the first phase, interviews were conducted with patients using a pre-defined short questionnaire. If patients consented to participate, they were asked questions about the barriers they faced when trying to obtain routine vaccination in their community of usual residence. When patients were under 18 years of age, which was often the case, their caregiver was interviewed instead. Patients were conveniently sampled by MSF staff either from the isolation room, from the EPI/vaccination room, and from IDP camps. Interviews took place in El Geneina Teaching Hospital and Forberanga Rural Hospital (West Darfur), in Al Hasahisa IDP camp and Tayba camp (Zalingei, Central Darfur), and Mukjar Rural Hospital (Central Darfur). In West and Central Darfur (Zalingei), interviews were conducted individually or in pairs with patients or caregivers. In Mukjar, testimony was collected through a group session with 30 women and should be read as reflecting shared community experience rather than individually attributable responses. Interviews were also planned in other locations but could not be completed due to operational constraints and insecurity. For the second phase, interviews were conducted with SMoH officials in charge of managing EPI. Conversations were intentionally open-ended and revolved around their experiences with implementing the various components of the program and any barriers they faced in meeting needs and overcoming gaps. The trends identified from these conversations were summarised in the section on perspectives from SMOH.

PHOTO:

Treating patients in Kalma 1 women clinic

DARFUR
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KEY FINDINGS

1. Recurrent outbreaks reflect widening immunity gaps

Between January 2024 and April 2026, MSF managed thousands of cases of vaccine-preventable diseases across Darfur, spread across several outbreaks. During this period, MSF teams responded to several outbreaks of measles and pertussis, and also reported a suspected diphtheria outbreak, often within the same areas. Outbreaks largely affected individuals who were missing their vaccinations and often under the age of five, underscoring substantial immunity gaps, especially among young children.

2. Outbreaks repeatedly occur in the same locations

MSF observed recurrent outbreaks along the same transmission corridors, including Tawila, El Geneina, Rokero, Zalingei, Nyala and East Jebel Marra. Several localities experienced transmission over consecutive years, suggesting that outbreaks were not fully contained and that immunity gaps persisted despite repeated outbreak response activities.

Outbreaks largely affected individuals who were missing their vaccinations and often under the age of five, underscoring substantial immunity gaps, especially among young children

3. Measles transmission intensified and accelerated during 2025 and early 2026

The measles burden increased substantially throughout 2025 and continued to rise during the first four months of 2026. In South Darfur alone, more than 10,600 suspected measles cases had already been reported by the end of April 2026, surpassing the total number reported for the entire previous year. This trend indicates the widening of the immunity gap in several parts of Darfur despite repeated outbreak response efforts.

4. Reactive vaccination campaigns remain essential yet do not replace routine immunisation

MSF supported multiple reactive vaccination campaigns across Darfur, several of which achieved high administrative coverage. These campaigns contributed to outbreak control and reduced immediate transmission risk.

However, outbreaks continued to re-emerge in the same localities, and large numbers of unvaccinated children continued to present at MSF-supported health facilities. These findings indicate that reactive campaigns, while essential, cannot compensate for prolonged disruptions to routine immunisation services.

5. Routine immunisation remains operationally constrained

Conversations with MSF teams and SMoH officials, together with findings from the 2025 WHO HeRAMS assessment report, highlight the operational challenges affecting routine immunisation across Darfur. At the national level, measles vaccination coverage is reported to have improved between 2023 and 2025, though these estimates carry low confidence and Darfur-specific data is not available. MSF's own findings show that coverage in the localities where it operates remained well below the levels required to prevent outbreaks. At the same time,

limited cold chain capacity, disruptions in vaccine supply, and reduced service readiness continued to constrain vaccine delivery.

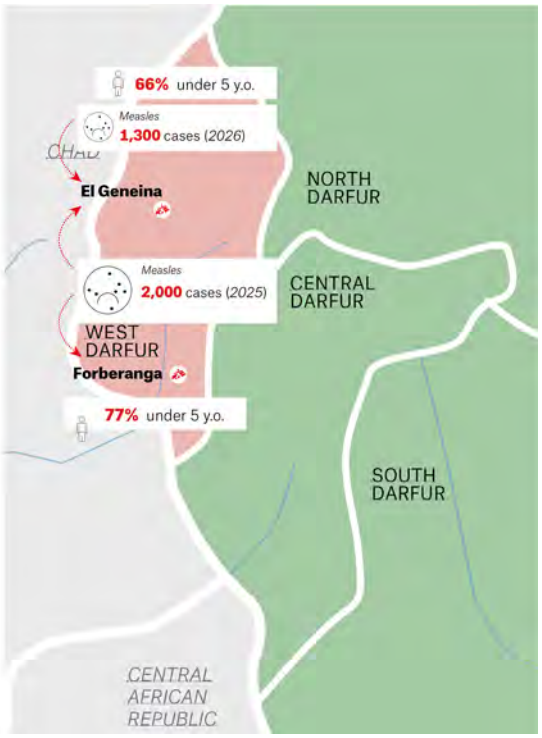
Key Message: Recurrent measles and pertussis outbreaks in Darfur are not isolated events, but the predictable result of persistent immunity gaps in a health system weakened by conflict. These gaps recur in the same localities despite repeated reactive vaccination campaigns, and reflect operational barriers, such as weak routine immunisation services, fragile vaccine supply, and constrained access, that MSF, Ministry of Health officials and communities consistently identify as the underlying cause.

5

OVERVIEW OF MSF´S RESPONSE TO OUTBREAKS IN DARFUR STATES

Recurrent measles and pertussis outbreaks in Darfur are not isolated events, but the predictable result of persistent immunity gaps in a health system weakened by conflict

Between January 2024 and April 2026, MSF was operational in multiple localities across West, Central, North and South Darfur, responding to several outbreaks of vaccine preventable diseases.



Pertussis cases were far fewer in number but often with lower vaccination rates and wider age distribution. Other suspected vaccine preventable diseases including diphtheria and meningitis were also reported during this period, but MSF was not directly involved in the response.

Major clusters of cases reported by MSF teams are described below.



Measles

2024 — Sharg Aj Jabal locality in Dirbat
+2,000 cases

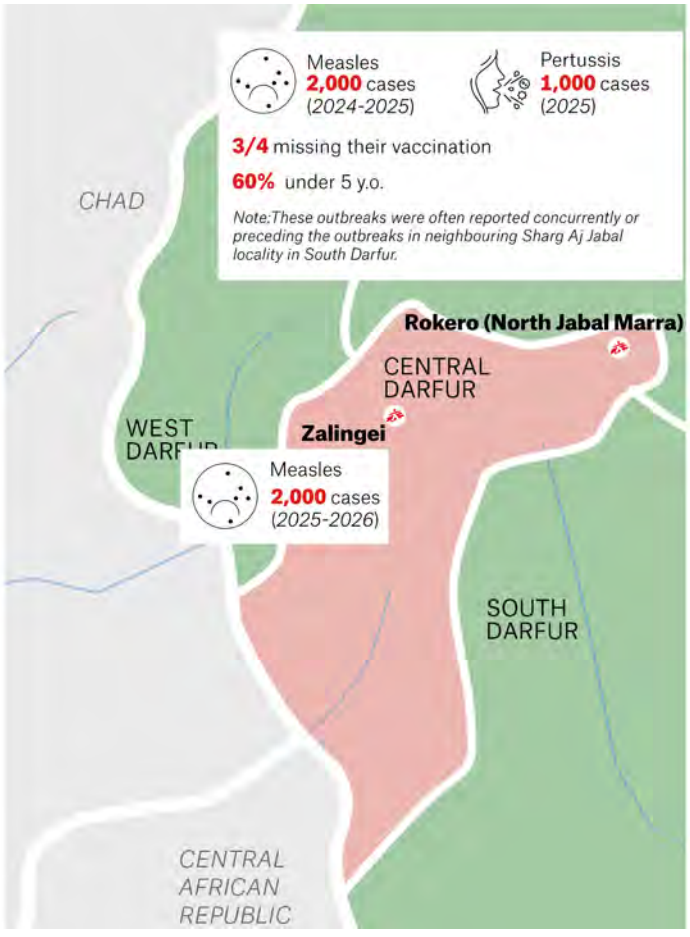
2025
3,500 cases

2026 — Nyala, Beliel, Buran, and Rehaid al Birdi
7,500 cases

South Darfur

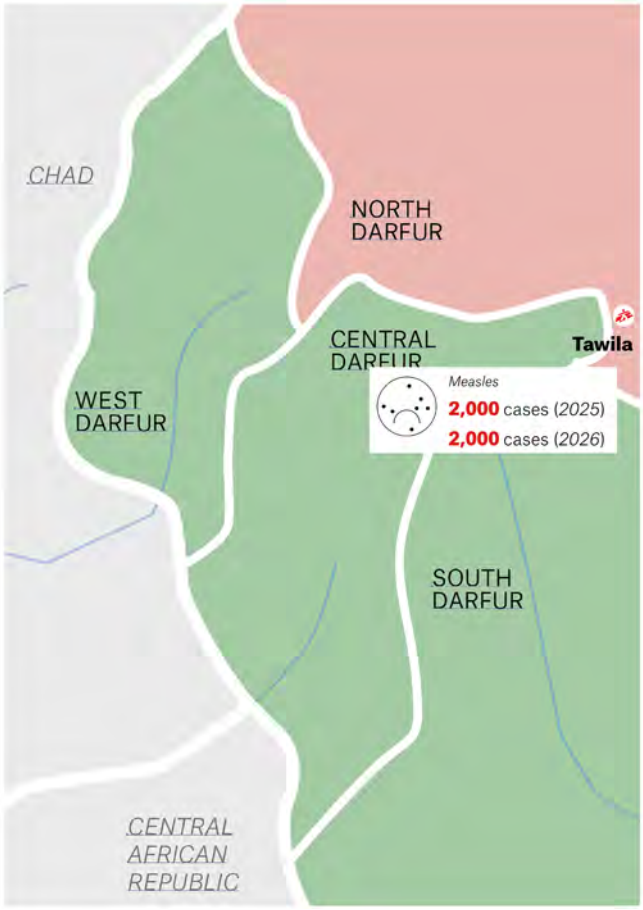
The highest burden of vaccine-preventable disease cases was reported by MSF from Dirbat, Nyala, Kas, Toron Tonga and surrounding localities. This was also partly because MSF supported several facilities as part of the measles outbreak response. In 2025, cases first peaked in Sharg Aj Jabal locality in Dirbat and surrounding areas with over 2,000 recorded in 2024 alone and an additional 3,500 recorded in 2025. In the following year, outbreaks were reported from localities in the southern and western parts of the state including Nyala, Beliel, Buran, and Rehaid al Birdi with total reported cases crossing 7,500. MSF also recorded pertussis cases in South Darfur in Kas, Dirbat, Nyala and surrounding areas. The pattern of spread was similar here although absolute case numbers were fewer than those of measles. In 2025, cases first peaked in Kas followed by smaller outbreaks in Dirbat and Nyala peaking in 2026.

Central Darfur



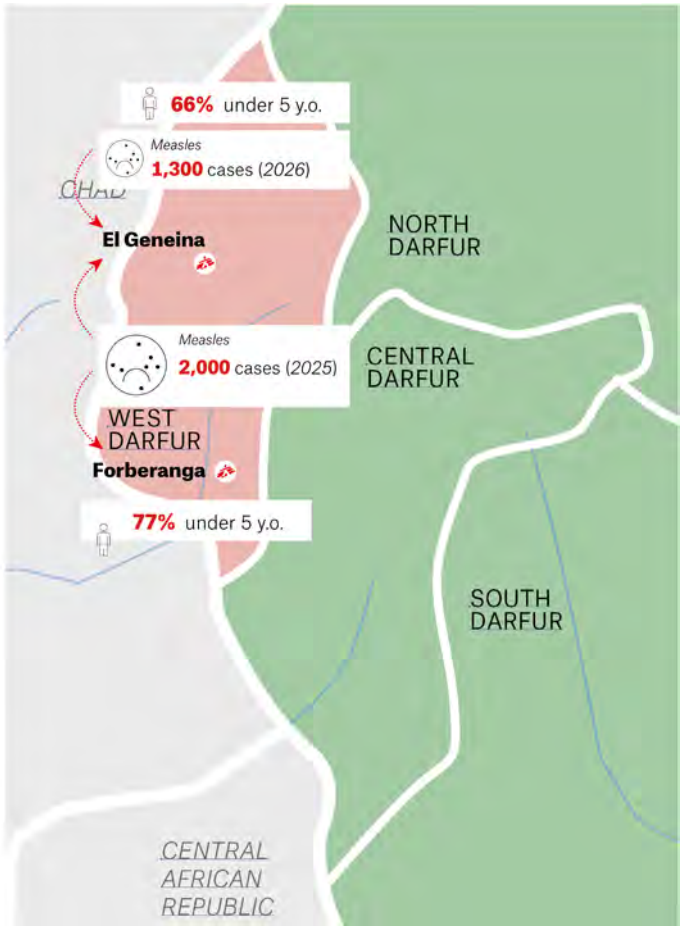
In Central Darfur, measles and pertussis outbreaks were reported from both localities where MSF was supporting facilities. In Rokero, located in North Jabal Marra locality, nearly 1,000 cases of measles were reported in 2024 and 2025 respectively. Additionally in 2025, the largest outbreak of pertussis during the observation period, with over 1,000 cases, was also recorded in Rokero in 2025. These outbreaks were often reported concurrently or preceding the outbreaks in neighbouring Sharg Aj Jabal locality in South Darfur. Three out of every four cases were missing their vaccination and more than 60% of all cases were less than five years old. A large outbreak of measles with nearly 2,000 cases was also reported from Zalingei locality between 2025 and 2026. In Zalingei, MSF supports a Teaching Hospital, a referral facility that receives cases from all around Zalingei and surrounding localities in Central, West, and North Darfur states.

North Darfur



MSF recorded nearly 2,000 cases of measles in 2025 from Tawila town and neighbouring villages. The following year, 2,000 cases were reported within the first four months alone. Tawila locality also neighbours the North Jabal Marra locality in Central Darfur state and this measles outbreak was immediately preceded by the outbreak in Rokero. Cases of pertussis were also reported from the region, but they were few and sporadic in nature. Additionally, MSF also indirectly supported a suspected diphtheria outbreak in Korma, located in El Fasher locality to the north of Tawila in early 2026. This was linked to the large-scale displacement of populations following the escalations in El Fasher in late 2025.

West Darfur



Few cases of pertussis were also reported in both 2025 and 2026 mainly from El Geneina. Interviews with 13 patients (or their caregivers) in both hospitals revealed the challenges usually felt by the community. Some of them were displaced to El Geneina during the conflict but still live in areas too far from the main city to easily access the hospital. Others, although not displaced, had to travel several hours to make it to the EPI service, often across state lines. Despite wide acceptance of vaccines, few avenues existed for them to receive them outside of hospitals far from home.

Cross-Cutting Patterns Across Darfur

Even though many of these outbreaks occurred in different states, several of the aforementioned localities neighboured each other. One such hotspot was the region around the Jabal Marra mountain range where North (Tawila locality), South (Kas and Sharg Aj Jabal localities), and Central Darfur (Shamal Jabal Marra locality) states meet. Several important trade and transportation routes pass through this region, likely driving both voluntary and forced displacement and contributing to the spread of outbreaks beyond state lines. Poor routine immunisation coverage meant that few barriers existed to limit this spread.

Tawila, El Geneina, Rokero, and Zalingei reported repeated transmission despite reactive vaccination campaigns. This suggests that transmission was not fully interrupted, and that routine immunisation remained insufficient to prevent new outbreaks. It also likely meant that the same barriers that limited the accessibility of routine immunisations also affected the true coverage of reactive vaccination campaigns. This is corroborated by community testimony from Mukjar, Central Darfur: since the war began in 2023, only two reactive campaigns reportedly reached the area, one in 2025 and one in April 2026, with the 2026 campaign running for just three days before ending, despite high demand and needs: "*I went and waited for hours, and then they stopped and left*" -community testimony

Most cases occurred among unvaccinated children in locations where routine immunisation services were disrupted due to commonly reported operational barriers including facility closures, insufficient staffing level with inadequate training, unpredictable supply shortages, and insecure conditions

The occurrence of pertussis outbreaks in Rokero, Nyala, Kas, and Dirbat, where measles outbreaks were also encountered, indicate immunity gaps for multiple antigens. Outbreaks were detected in the same locations over consecutive years, likely also due to MSF´s presence and a functional surveillance and response system, albeit with some weaknesses. Many other areas with limited or no presence of actors, for example East Darfur and parts of North Darfur, remain "silent", i.e. there is a lack of reliable and regular data, due to non-operational facilities, insufficient staffing, and overall insecurity. Ultimately, these gaps in data lead to delayed outbreak detection and subsequently inadequate outbreak response. A 2026 evaluation report on the Early Warning Alert and Response System (EWARS) Mobile surveillance system by WHO indicated that of the 539 registered facilities in Darfur states, fewer than 40% reported data regularly. Additionally, there existed many gaps in coverage in some states affecting the representativeness of this data.

While the scale of the outbreaks varied between localities, a consistent pattern was observed. Most cases occurred among unvaccinated children in locations where routine immunisation services were disrupted due to commonly reported operational barriers including facility closures, insufficient staffing level with inadequate training, unpredictable supply shortages, and insecure conditions. While these observations are limited to areas where MSF teams were operational, the significant burden of disease and broad geographical spread underscore the systemic challenges that interfere with routine immunisation uptake.

Together, these findings point to widespread challenges across Darfur that spread beyond MSF's operational presence and continue to drive recurrent outbreaks, ultimately leading to preventable morbidity and mortality in some of the most vulnerable communities.

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KEY BARRIERS TO ACCESSING IMMUNISATION IN DARFUR

1. MSF Perspective

MSF teams reported operational barriers across different states, including weak routine immunisation services, inadequate vaccination supply (resulting in repeated vaccine stock ruptures), limited cold chain capacity, shortages of trained vaccinators, delays in outbreak response, insecurity and population displacement. Ministry of Health officials and community members reported similar challenges, confirming that these barriers continue to affect routine immunisation across Darfur. MSF is unable to import vaccines for either routine immunisation or emergency response nationally, constraining medical-humanitarian actors from ensuring supply even where existing systems cannot meet needs. While importation by humanitarian actors is not a long-term solution, persistent lack of adequate supply impedes effective emergency response and leads to preventable morbidity and mortality. The scale of unmet needs in Sudan urgently requires solutions to supply gaps, including third-party importation, particularly for emergencies.

In 2025, South Darfur experienced more than six months of measles vaccine shortages, further disrupting routine immunisation activities

South Darfur

South Darfur recorded the highest burden of vaccine-preventable disease cases managed by MSF during the reporting period, driven by large and recurrent outbreaks. Routine immunisation services were severely constrained by inadequate cold chain infrastructure, insecurity, poor accessibility of communities, and community concerns regarding vaccine hesitancy among some members of the community. In some areas, nearly all vaccination sites lacked refrigeration, forcing vaccination teams to rely on improvised but ineffective solutions such as ice blocks to maintain the cold chain.

These observations are consistent with findings from the WHO HeRAMS Sudan Baseline Assessment 2025, which reported that in South Darfur only 42 facilities (28%) had fully available cold chain capacity, while 96 facilities (63%) reported only partial cold chain availability. These findings highlight that immunisation readiness remained substantially weaker than overall health facility functionality and limited the capacity of health services to ensure reliable vaccine storage and distribution.

In 2025, South Darfur experienced more than six months of measles vaccine shortages, further disrupting routine immunisation activities. MSF teams estimated that approximately 95% of vaccination sites lacked freezing or refrigeration capacity, creating additional challenges for maintaining the cold chain under conditions with high ambient temperatures and fragile logistics.

During 2026, measles-rubella vaccination campaigns reached more than one million children aged 9 months to 15 years. Between 2024 and 2025, MSF also supported five Periodic Intensification of Routine Immunisation (PIRI) campaigns,

reaching 111,896 children aged 0–23 months with routine immunisation services. However, measles vaccination uptake remained suboptimal, with only 22,064 children receiving the first dose of measles-containing vaccine (MCV1) and 17,991 children receiving the second dose (MCV2), representing an 18.5% dropout rate between the two doses.

Despite repeated vaccination efforts, measles transmission continued, including among children with a reported history of vaccination. In Nyala, approximately 30% of measles cases had previously received a measles vaccine. This finding warrants further combined analysis of vaccination history, completion of the recommended schedule, timing of vaccination, documentation practices and cold chain performance to better understand the quality and effectiveness of activities and the factors contributing to continued susceptibility.

Population displacement, overcrowding in IDP camps and urban communities and continuous population movement across localities further increased the risk of measles transmission while complicating target population estimations and routine immunisation service delivery.

Many children remained unreached by routine immunisation services even after multiple vaccination campaigns

MSF teams also reported community concerns and uncertainty regarding vaccination activities in some locations. In other areas, communities emphasised the importance of using locally trusted vaccination teams to improve acceptance and participation. Overall, MSF observations suggest that barriers to vaccination in South Darfur were driven primarily by operational and access constraints rather than widespread vaccine hesitancy or refusal.

Central Darfur

Parts of Central Darfur experienced recurrent measles and pertussis outbreaks for consecutive years, indicating persistent immunity gaps despite repeated vaccination activities. High proportions of unvaccinated children continued to be identified during outbreaks, demonstrating that many children remained unreached by routine immunisation services even after multiple vaccination campaigns.

MSF teams reported that delays in vaccine arrival, administrative approvals and vaccine mobilisation significantly slowed outbreak response activities. These delays limited the timely implementation of reactive vaccination campaigns and reduced the ability to rapidly contain outbreaks.



In Mukjar, Central Darfur, caregivers described a recurring cycle of being turned away from vaccination sites and told to "***come back next week***", due to stock rupture. Since the only organisation reportedly providing vaccination in the area began services in July 2026, most women reported being turned away on multiple occasions, one as many as ten times, and only one child among a group of 30 women interviewed in the Rural Hospital had been vaccinated since.

Routine immunisation services were further constrained by shortages of trained vaccination personnel, limited outreach activities and weak cold chain capacity. In several areas, vaccination services relied largely on volunteers because of the absence of permanent EPI staffing structures, affecting the continuity and sustainability of routine immunisation activities.

For example, in Zalingei, the vaccination response was delayed for several months in 2025. MSF field teams reported that "vaccines and consumables take a long time to arrive, sometimes months", while "approval for vaccine mobilisation further delays the response." Community testimony from Zalingei also corroborated these accounts: in Tayba camp, caregivers described being asked for informal payments toward vaccinators' transport and food, reportedly because the vaccination team no longer receives a salary and now works on a volunteer basis. These operational challenges reduced the timeliness of outbreak response and increased the risk of continued transmission within affected communities.

In North Darfur, particularly in Tawila, measles transmission continued for consecutive years, showing that outbreaks were not fully interrupted

North Darfur

In North Darfur, particularly in Tawila, measles transmission continued for consecutive years, showing that outbreaks were not fully interrupted. During the reporting period, Tawila became one of the largest displacement hubs in Darfur, hosting an estimated 600,000 - 800,000 IDPs following successive waves of conflict and displacement, particularly from El Fasher and Zamzam camp. The rapid influx of displaced people placed additional pressure on already fragile health services and routine immunisation activities while increasing the number of vulnerable children living in overcrowded settings. The large number of displaced people, together with limited access to surrounding villages, made it difficult to implement vaccination campaigns on time and reach all affected communities. Delays in laboratory confirmation further slowed outbreak response activities.

These operational challenges were further compounded by severe disruption of health services. According to the WHO HeRAMS Sudan Baseline Assessment 2025,

These findings show that routine immunisation services and vaccine delivery systems were likely disrupted across North Darfur, making it more difficult to reach children with routine vaccination.

MSF teams also reported shortages of trained vaccinators, difficulties transporting vaccines to Tawila and major access constraints affecting surrounding villages. In addition, some communities expressed the belief that "measles should be treated at home rather than through health facilities," contributing to delays in care-seeking and case detection. Together, these operational challenges further limited routine immunisation activities and delayed outbreak response.

Laboratory capacity to confirm suspected measles cases was almost non-existent in North Darfur. MSF teams in Tawila reported that authorities often required laboratory confirmation before authorising vaccination activities despite the absence of local testing capacity. As one field team explained, "authorities

wanted to confirm measles before providing the vaccine, but laboratory testing was not available in Tawila." This requirement resulted in critical delays, likely allowing the outbreak to spread further before response activities could begin.

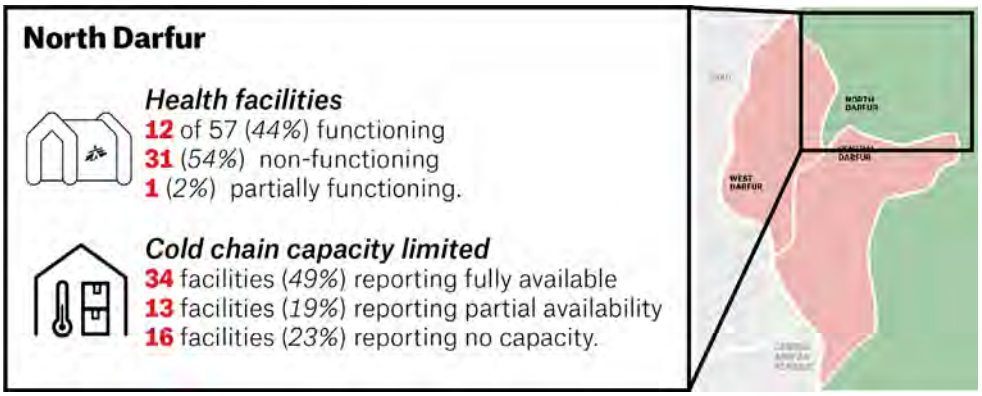
Overall, insecurity, large-scale population displacement, limited access, disruption of health services, weak cold chain capacity, shortages of trained vaccinators and delays in outbreak confirmation created conditions that may have allowed measles transmission to continue despite repeated vaccination activities.

West Darfur

In West Darfur, repeated vaccine stock ruptures and limited cold chain capacity were the main barriers to routine immunisation service delivery. MSF teams reported recurrent vaccine shortages, with complete stock ruptures of specific antigens occurring every few months. Even when vaccines were available, limited cold chain capacity affected the storage and delivery of routine immunisation services, particularly in peripheral areas without reliable electricity.

Some villages were not reached by routine immunisation activities at all

Caregiver interviews conducted in El Geneina and Forberanga supported these observations. Caregivers consistently reported irregular vaccine availability as one of the main barriers to accessing vaccination services. Caregivers from remote communities also explained that some villages were not reached by routine immunisation activities at all.



In El Geneina, MSF teams also reported transport disruptions that resulted in shortages of vaccines, syringes and cold chain equipment, further disrupting routine immunisation.

Overall, MSF´s observations show that routine immunisation services in parts of West Darfur continue to face major operational challenges. Recurrent vaccine stock ruptures, limited cold chain capacity, transport constraints and weak monitoring systems disrupted the continuity of vaccination services and made it more difficult to reach children with routine immunisation.

2. State MOH (EPI) Perspective

Discussions with SMoH EPI officials from West and Central Darfur highlighted that routine immunisation services continue to face major challenges despite some improvements in vaccine availability and cold chain infrastructure since 2025. Overall, the challenges reported by MoH officials were consistent with MSF observations, suggesting that these barriers affect routine immunisation services across Darfur and are not limited to individual projects areas or localities.

MoH EPI officials in West Darfur reported that the programme continues to be affected by protracted conflict, reduced health service delivery, limited operational capacity and insufficient partner support at field level. A major challenge remains the shortage of permanent immunisation staff. Vaccination activities are largely carried out by volunteers receiving limited incentives, affecting continuity of services and staff motivation.

MoH officials also highlighted the absence of fully functional state-level EPI offices, weak supervision and monitoring systems, and limited mobile outreach and catch-up vaccination activities, particularly in remote and conflict-affected areas. These limitations further reduce the ability to monitor vaccination coverage estimates, identify communities with low vaccination coverage, track vaccine stock levels and rapidly respond to outbreaks of vaccine-preventable diseases.

MoH officials highlighted the absence of fully functional state-level EPI offices, weak supervision and monitoring systems, and limited mobile outreach and catch-up vaccination activities, particularly in remote and conflict-affected areas

Operational gaps also affected continuity of care. MoH EPI focal points in Rokero reported shortages of vaccination cards and registration books, making it more difficult to track children and ensure completion of vaccination schedules. Officials also noted that actual immunisation coverage is likely to be lower than administrative coverage estimates.

Although vaccine availability improved compared with 2023 and 2024, MoH officials described the vaccine supply chain as fragile. Vaccines continue to follow a long supply route from Port Sudan through Adré to El Geneina before onward distribution to health facilities across Darfur. This creates repeated logistical bottlenecks, increases the risk of delays in vaccine delivery and makes the supply chain vulnerable to insecurity and transport disruptions. MoH officials also identified the non-functional cold chain in Zalingei, state capital of Central Darfur, as a major limitation for vaccine storage and redistribution across the rest of the state.

MoH officials further reported that delays in the delivery of consumables disrupted planned EPI activities, including the Big Catch-Up (BCU) and Measles-Rubella campaigns. [4] Last-mile distribution remained heavily dependent on humanitarian partners for transport and cold chain support. For example, in El Geneina, the cold chain system remained vulnerable because it relied on a single generator without backup capacity. MoH officials also reported interruptions in external funding during 2025, reducing operational capacity.

Overall, MoH officials reported that the main barriers to routine

4 The Big Catch-Up is a WHO/UNICEF/Gavi-led initiative targeting children who missed routine vaccine doses, primarily those aged 12–59 months, while the Measles-Rubella campaign aims to close immunity gaps against measles and rubella.

immunisation were related to shortages of trained staff, limited outreach capacity, weak programme management, fragile logistics and cold chain limitations. Their observations closely matched those reported by MSF teams, showing that recurrent outbreaks are linked to continued weaknesses in routine immunisation services. Strengthening routine immunisation will require continued support for improvements in vaccine supply, cold chain capacity, workforce, outreach and programme management.

3. Community Perspective

Interviews with caregivers and patients in El Geneina, Forberanga, Zalingei and Mukjar showed that the main barriers to vaccination were related to access and service availability rather than vaccine refusal. Community perspectives closely matched the observations reported by MSF teams and Ministry of Health (MoH) officials, showing that most families continue to face practical challenges in accessing routine immunisation services, though testimony from Zalingei also pointed to improvement where vaccination services have become more consistently available within the community itself.

The main barriers to vaccination were related to access and service availability

Caregivers repeatedly described long travel distances and transport costs as major barriers to vaccination.



"every two months there is a rupture of vaccines,"

"sometimes we face a complete shortage of specific vaccines."

MSF teams in Forberanga

In Al Hasahisa IDP camp, Zalingei, caregivers described travelling by motorbike at a cost of 4,000 SDG round trip, as walking was not feasible given distance and heat. In Mukjar, caregivers cited a one-hour walk each way as a barrier to reaching the nearest centre for those living in town. Families on the outskirts described journeys of several hours on foot, or by donkey where one was available, though many could not afford to hire one. Several interviewees also described the indirect economic burden of seeking vaccination, including the loss of daily income. One caregiver reported that her husband "stopped his work to take me and our child to vaccination."

Although vaccine acceptance was generally high across the interviewed communities, awareness gaps remained in some areas. In Forberanga, one adult patient stated, "*I didn't know the importance of vaccine*," while another explained that communities generally accepted vaccination but "*do not know vaccine and its*

importance." These interviews suggest that improving access alone will not be enough. Continued community engagement and health promotion are also needed to improve awareness of the importance of routine immunisation.

Conflict-related disruption was another common theme. One caregiver in El Geneina explained that "*since the war, they have never heard about vaccination*," reflecting the interruption of outreach activities and reduced access to routine immunisation services in some locations. In Mukjar, a group testimony with 30 women, mothers to over 100 children between them, described losing access since 2023 despite strong awareness of vaccine-preventable diseases. All 30 participants said vaccination was very important and were informed of specific diseases. Two women described their children contracting measles while unvaccinated, suffering for two to three months with high fever, and recovering without access to medication or any health service. Since the only organisation reportedly providing vaccination in the area began services in July 2026, most women reported being repeatedly turned away for lack of stock, one as many as ten times, and only one child among the group had been vaccinated since.

***"Since the war, they have never heard about vaccination"* - Caregiver. El Geneina**

Most respondents recommended increasing vaccination services and bringing them closer to communities through expanded outreach activities, decentralised vaccination points and improved transport access. Overall, community perspectives support the findings from both MSF teams and MoH officials that the main barriers to routine immunisation are operational. Across all three perspectives, MSF field teams, MoH officials and community members, similar barriers were consistently identified. Communities expressed a willingness to vaccinate their children but identified distance, transport costs, availability of staff, services, stock and limited outreach as the main impediments to accessing vaccination. Testimonies from Zalingei also illustrated how increased organisational presence within the communities can improve access: caregivers described conditions improving markedly since 2026, attributing this to vaccination centres opening inside the camps and to a growing number of organisations providing services in the area.



7

CONCLUSION

The findings from MSF supported facilities across Darfur show a clear and consistent pattern. Measles and pertussis outbreaks have recurred repeatedly in the same localities, including Tawila, El Geneina, Rokero, Zalingei and Nyala, often across consecutive years. This recurrence indicates that transmission was never fully interrupted and that immunity gaps have persisted despite repeated response efforts. The children most affected continue to be those under five who were unvaccinated or of unknown vaccination status, confirming that outbreaks are concentrated among the population that routine immunisation is meant to protect.

Reactive vaccination campaigns have proven effective at controlling transmission once an outbreak is declared, including large scale efforts such as the 2026 measles rubella campaign in South Darfur. However, the fact that outbreaks continue to reappear in the same places shows that campaigns alone cannot substitute for functioning routine immunisation services. Each campaign closes an immunity gap temporarily, but without reliable routine delivery behind it, that gap tends to reopen.

The children most affected continue to be those under five who were unvaccinated or of unknown vaccination status, confirming that outbreaks are concentrated among the population that routine immunisation is meant to protect

Three separate sources of evidence converge on the same explanation for why this keeps happening. MSF field teams, MoH EPI officials and community members all pointed to the same operational barriers, including shortages of trained vaccinators, recurrent vaccine stock ruptures, fragile supply routes, insecurity and long distances between communities and vaccination services. Caregiver interviews, conducted in West Darfur and, more recently, in Zalingei and Mukjar, Central Darfur, further suggest that these are barriers of access rather than refusal, compounded in some areas by a limited presence of health services and prolonged vaccine stock shortages. Families described being repeatedly turned away when stock was unavailable, and children suffering for months with vaccine-preventable illness because vaccination had not reached them in time. Families were generally willing to vaccinate their children but were often unable to reach a service that could do so. This consistency across independent sources strengthens the case that the barriers identified are structural and widespread rather than specific to any single location.

Taken together, these findings suggest that recurrent outbreaks in Darfur are not isolated events but a predictable consequence of routine immunisation services that have not been adapted to sustained conflict and displacement. Reducing the frequency and scale of future outbreaks will depend less on the speed of emergency response and more on whether routine immunisation can be sustained continuously between outbreaks, particularly in remote, displaced and insecure communities. Without this shift, the same localities documented in this report are likely to appear again in future outbreak responses.

8

RECOMMENDATIONS

"***They could make it available in their area, so [families] don't have to come all the way here***." a caregiver interviewed El Geneina, West Darfur, May 2026



PHOTO:

Treating patients in Kalma 1 women clinic

DARFUR
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Recommendations for Strengthening Routine Immunisation in Darfur

Ongoing conflict, repeated displacement, insecurity, destruction of health infrastructure and fragmented governance have severely disrupted routine immunisation services and weakened the capacity of the health system to prevent and respond to vaccine-preventable disease outbreaks.

In many parts of Darfur, government-led service delivery for routine immunisation is severely limited. Access constraints, insecurity, interruptions to vaccine supply, shortages of health workers and reduced functionality of health facilities require more flexible operational approaches adapted to the realities of conflict.

While national health authorities should continue to lead EPI, maintaining routine immunisation services in Darfur will continue to require close collaboration between health authorities, humanitarian organisations, UN agencies, donors, local implementing partners and communities.

Prerequisite Conditions

The operational recommendations below are contingent on parties to the conflict upholding their obligations under international humanitarian law. MSF calls on all parties to the conflict to:

- Protect civilians and civilian infrastructure, including healthcare facilities, personnel and patients, from attack, and refrain from any interference that endangers the delivery or continuity of health services.
- Remove impediments to the delivery of humanitarian relief, including immunisation supplies and personnel, and ensure safe, sustained and unhindered humanitarian access across Darfur.

Without these baseline protections, even well-adapted immunisation strategies will continue to be undermined by insecurity and access denial.

Operational Recommendations

The recommendations below are based on the operational barriers identified by MSF teams during its outbreak response

and routine immunisation activities between January 2024 and April 2026 and should be considered in the context of the operational realities across Darfur.

1. Adapt Routine Immunisation strategies to the Realities of Conflict in Darfur

The recurrence of outbreaks in the same localities shows that current routine immunisation strategies are not reaching many children living in conflict-affected, displaced and hard-to-reach communities. In the current context, fixed-site vaccination alone is not enough to reach these populations.

Routine immunisation strategies should be adapted to the realities of conflict and population movement by combining fixed services with outreach, mobile vaccination teams and catch-up vaccination activities. Where government implementation is limited, humanitarian organisations and local implementing partners should be supported (by donors, international actors) to complement routine immunisation in coordination with health authorities.

Routine immunisation strategies should be adapted to the realities of conflict and population movement

Priority actions include:

- Prioritise routine immunisation in localities repeatedly affected by outbreaks, including Tawila, El Geneina, Rokero, Zalingei, Nyala and East Jebel Marra.
- Expand mobile and outreach vaccination services for displaced populations, remote and hard to reach communities and insecure areas.
- Integrate catch-up vaccination into routine immunisation to reduce the number of unvaccinated and under-immunised children.
- Adapt vaccination plans and response to evolving population movement and access constraints.
- Strengthen coordination between health authorities, humanitarian organisations and local implementing partners delivering immunisation services.
- Address supply shortages, including by enabling the importation of vaccines for both routine immunisation activities and emergency responses by international NGOs

2. Adapt Operational Support for Routine Immunisation to Conflict Settings

The current immunisation programme in Sudan was largely designed for a relatively stable health systems. Across Darfur, conflict, displacement and limited government capacity have changed how routine immunisation is delivered. Humanitarian organisations have become key operational partners supporting vaccine delivery, outbreak response, cold chain, logistics and disease surveillance.

Operational support should better reflect these realities. Greater flexibility is needed to ensure the continuation of routine immunisation where government implementation is limited by insecurity, access constraints, bureaucratic impediments, or reduced operational capacity.

Priority actions include:

- Expand flexible funding mechanisms that support routine immunisation in conflict-affected areas.
- Enable humanitarian organisations and local implementing partners to support vaccine delivery and activities where government implementation is limited or constrained.
- Ensure funding covers outreach activities, transport, cold chain maintenance and other operational costs.
- Adapt programme targets and implementation plans to evolving population movement/displacement and access.
- Strengthen coordination between health authorities, humanitarian organisations, UN agencies and donors to address operational barriers affecting vaccine delivery.

Greater flexibility is needed to ensure the continuation of routine immunisation

3. Strengthen Vaccine Supply and Cold Chain Capacity

Repeated vaccine stock ruptures, delays in the delivery of vaccines and consumables, transport constraints and weaknesses in cold chain infrastructure are consistently reported across Darfur. These interruptions drastically reduced access to routine immunisation and delayed outbreak response. Strengthening vaccine supply requires practical investments and adaptations that improve the continuity of vaccine delivery from central storage to peripheral health facilities, particularly in conflict-affected and hard-to-reach areas.

Priority actions include:

- Implement mechanisms/means to ensure uninterrupted availability of vaccines, syringes and vaccination consumables at all service delivery points.
- Strengthen last-mile vaccine distribution to remote and conflict-affected communities.
- Expand solar-powered refrigeration and backup power solutions where electricity remains unreliable.
- Pre-position vaccines, cold chain equipment and essential supplies in high-risk localities before seasonal access deteriorates.
- Routinely monitor vaccine availability and stock ruptures to enable early corrective action.

4. Strengthen Frontline Immunisation Capacity

Routine immunisation depends on trained staff, regular supervision and adequate operational support. Across Darfur, MSF teams reported shortages of vaccinators, limited outreach capacity and heavy reliance on volunteers and humanitarian organisations to maintain vaccination activities.

Strengthening routine immunisation requires continued investment in the frontline workforce responsible for delivering vaccination services.

Priority actions include:

- Recruit, train and retain vaccination personnel, particularly in underserved and conflict-affected areas.
- Ensure vaccination teams have transport, equipment and operational resources to conduct regular outreach activities.
- Strengthen supportive supervision and on-the-job mentoring of vaccination staff.
- Provide regular technical training for EPI personnel working in conflict-affected settings.
- Maintain operational support for routine immunisation between outbreak responses.

Across Darfur, MSF teams reported shortages of vaccinators, limited outreach capacity and heavy reliance on volunteers and humanitarian organisations to maintain vaccination activities

5. Reach Unvaccinated and Under-Immunised Children

MSF data show that most measles cases occurred among unvaccinated children, with children under five accounting for the majority of reported cases. Repeated outbreaks in the same localities show that many children continue to miss routine vaccination despite repeated reactive vaccination campaigns.

Routine immunisation activities should prioritise identifying and reaching children who continue to miss vaccination, particularly those living in displaced, remote and conflict-affected communities.

Priority actions include:

- Prioritise vaccination of unvaccinated and under-immunised children identified through outreach and catch-up activities.
- Integrate vaccination into other child health services whenever possible.
- Use local epidemiological data to identify individual children and cohorts within recurrent outbreak hotspots.
- Monitor dropout between vaccine doses and strengthen follow-up of children who miss scheduled vaccinations.

6. Strengthen Immunisation Monitoring

Reliable monitoring systems are essential to identify immunity gaps and guide vaccination activities. Discussions with EPI teams highlighted challenges with incomplete reporting, shortages of vaccination cards and registration books, and limited capacity to identify children who miss routine immunisation.

Monitoring systems should be strengthened using practical approaches that remain feasible in conflict-affected settings.

Priority actions include:

- Ensure vaccination cards, registration books and reporting tools are consistently available.
- Strengthen routine monitoring of vaccination coverage and dropout rates.
- Use local immunisation data to identify communities with large numbers of unvaccinated and under-immunised children.
- Strengthen follow-up of children who miss scheduled vaccinations.
- Use surveillance and outbreak data to guide targeted vaccination activities.

MSF teams repeatedly reported delays between outbreak detection and vaccination response

7. Reduce Delays in Outbreak Detection and Response

MSF teams repeatedly reported delays between outbreak detection and vaccination response due to barriers caused by laboratory confirmation requirements, administrative approval processes and delays in vaccine deployment. In conflict-affected settings, these delays allow outbreaks to spread before response activities can begin.

Outbreak response procedures should be adapted to enable earlier public health action while maintaining appropriate surveillance and epidemiological oversight.

Priority actions include:

- Simplify procedures for outbreak declaration and vaccine deployment/response. Enable finding practical solutions to reduce related delay time to response.
- Strengthening laboratory capacity where feasible, without delaying outbreak response.
- Improve coordination between surveillance teams, laboratories and immunisation programmes.
- Ensure adequate supply and logistics are in place for outbreak response (e.g. pre-position outbreak response supply in localities at highest risk of recurrent outbreaks; ensure sufficient supply in central warehouse and means for logistics).

- Monitor response timelines to identify operational bottlenecks and improve preparedness.

8. Strengthen Community Engagement and Access to Vaccination

MSF field observations and caregiver interviews show that the main barriers to vaccination are related to access rather than widespread vaccine refusal. Caregivers consistently described long travel distances, transport costs, irregular vaccine availability and interrupted outreach services as the main obstacles to vaccinating their children.

Community engagement should focus on bringing vaccination services closer to communities while strengthening trust, participation and early identification of children who miss routine vaccination.

Priority actions include:

Community engagement should focus on bringing vaccination services closer to communities while strengthening trust, participation and early identification of children who miss routine vaccination

- Work with community leaders and community health workers to identify unvaccinated and under-immunised children and ensure they are reached.
- Expand community mobilisation before outreach and vaccination activities.
- Strengthen communication on the importance of completing the full vaccination schedule.
- Use trusted local volunteers to support referral and follow-up of eligible children.
- Regularly collect community feedback to identify operational barriers affecting access to vaccination.
- Reduce the direct cost of accessing vaccination for families, including through decentralised or mobile services that lower transport time and expense for remote and outskirt communities.
- Ensure vaccination teams are adequately resourced and supported so that families are not asked to cover transport or other costs informally.

Achieving equitable vaccination coverage in Darfur will require immunisation strategies that are adapted to conflict realities and supported by flexible financing and implementation mechanisms that leverage the comparative advantages of humanitarian actors alongside available health authorities.

PHOTO:

Measles out break in Rokero, Central Darfur.

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