



World Health
Organization
South Sudan

Knowledge
Management
Series for Health

REVITALIZING ROUTINE IMMUNIZATION IN SOUTH SUDAN; PERSPECTIVES AND PRIORITIES



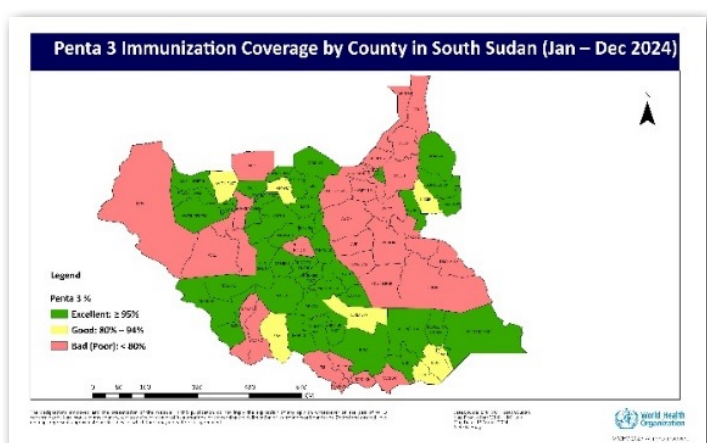
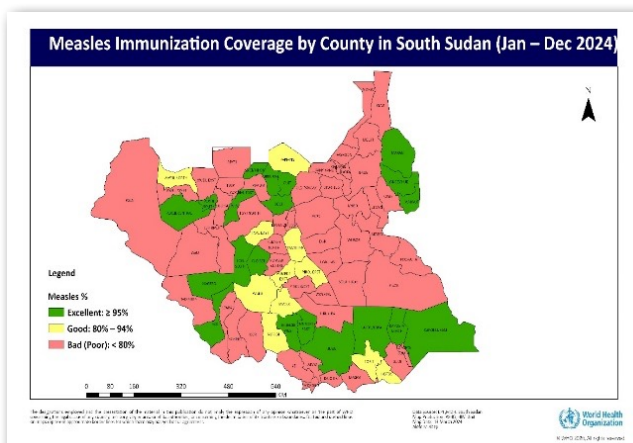
South Sudan's National Immunization Program, supported by Gavi, WHO, UNICEF, and other partners, aims to protect children under five and women of reproductive age through fixed, outreach, and mobile strategies. Guided by the 2023–2027 National Immunization Strategy, the country seeks to expand coverage and introduce new vaccines, including malaria, PCV, Rota, and MCV2. Despite progress, the number of unvaccinated children remains high due to displacement, poor infrastructure, limited data, and recurrent disease outbreaks.

Current Situation

The reporting rate for EPI varies across counties. Out of all 80 counties, 24 maintain an excellent reporting rate above 80%. However, 33 counties fall within the 60–79% range. 23 counties report rates below 60%.

Coverage

- Penta 3 immunization coverage varied across counties, with 51% (41 counties) achieving $\geq 95\%$ and 39% (31 counties) falling below 80%. Coverage was consistently higher than measles, with some states surpassing national targets, while Jonglei and parts of Unity reported low rates.
- MCV1 coverage is below 80% in 61% of counties (49). For IPV2, only 19% of counties (15) achieved $\geq 95\%$, while 69% (55 counties) reported coverage below 80%.
- R21 (malaria vaccine) annualized and unannualized coverage is 35% and 55%, respectively, covering 28 counties.

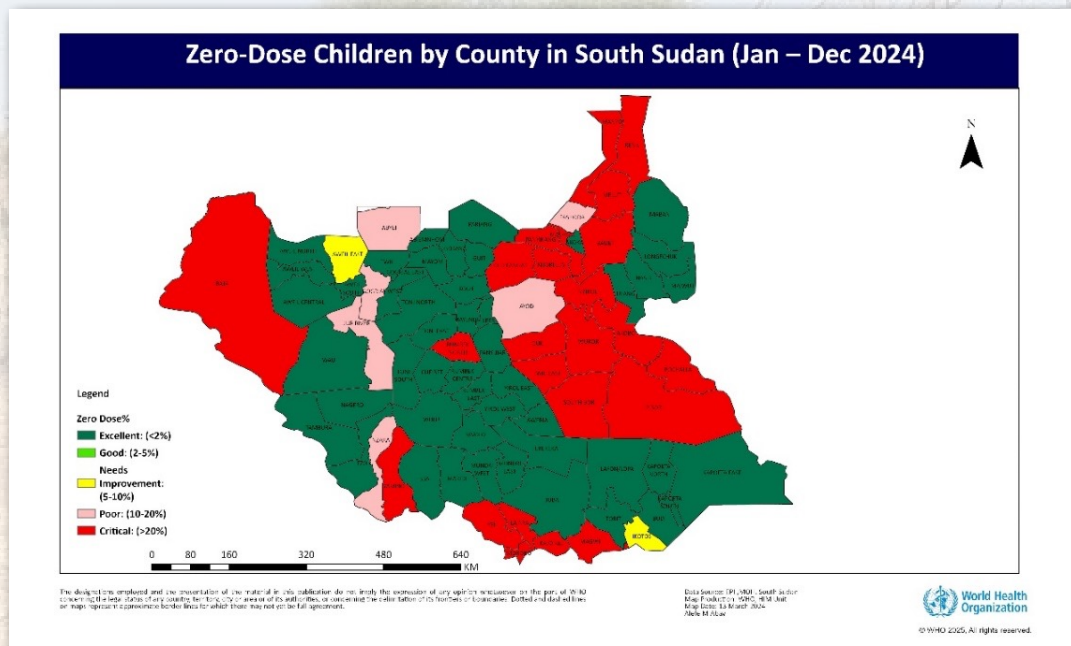




Zero-Dose Coverage

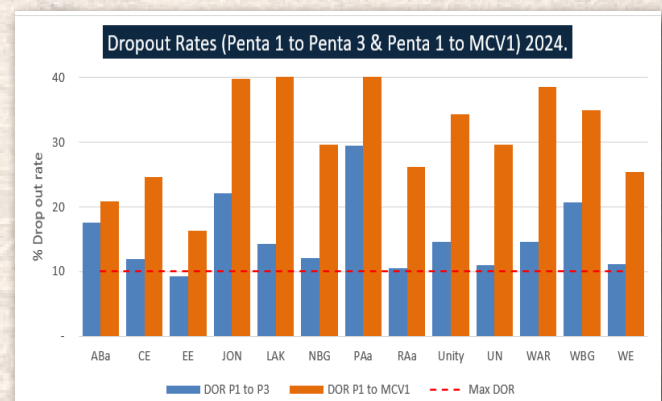
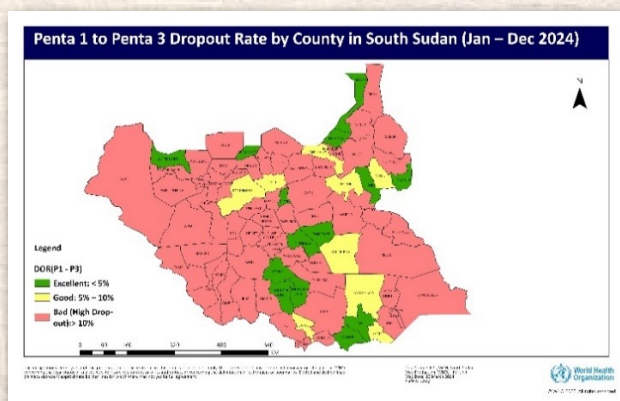
The distribution of zero-dose children by county reveals that a considerable number of counties have high proportions of unvaccinated children, particularly in the western and northern regions. A total of 66 out of 80 counties (83%) report between 8,551 and 50 zero-dose children. Bor South has the highest number of zero-dose children, while Torit has the lowest. Counties with more than 20% zero-dose children are classified as critical, indicating significant barriers to immunization services. In contrast, central and southern regions demonstrate better performance, with several counties achieving low zero-dose rates below 2%.

“ At least 83% of counties report zero-dose children, ranging from 50 to over 8,500 per county ”



Dropout Rates

Dropout rates exceed 10% in 72 counties (90%) between Penta 1 and MCV1. R21 shows a 73% dropout from the first to the third dose.

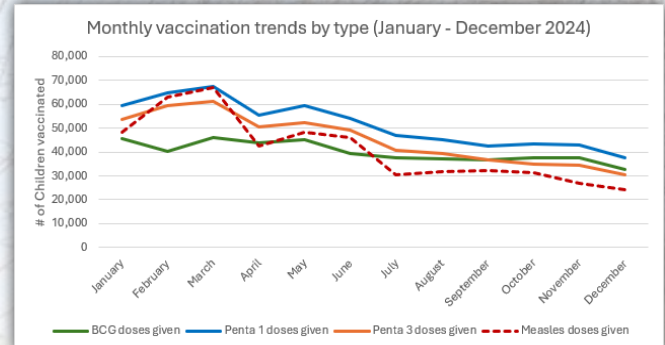
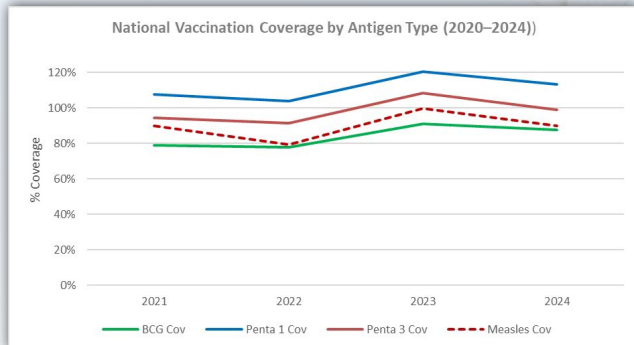




Trends

Yearly vaccination trends from 2021 to 2024 indicate a decline in coverage from 2023 to 2024 for all antigens, with measles showing the greatest variation. Penta 1 and Penta 3 remained comparatively higher but also declined in 2024.

Monthly vaccination trends for 2024 highlight a peak in vaccine administration during the first quarter, followed by a gradual decline from mid-year onward. The number of children vaccinated decreases significantly from July to December 2024.



Analysis

Health systems exhibit emergent properties that go beyond the sum of their components, meaning that performance in service delivery such as immunization cannot be fully understood by examining inputs or functions in isolation (Karamagi et al., 2021). Instead, outcomes arise from the dynamic interactions between system elements, institutions, and actors operating under complex constraints. In South Sudan, persistent underperformance in routine immunization reflects not only resource limitations but also the interplay of access barriers, quality lapses, weak demand, and limited system resilience. To better understand these interdependencies and identify actionable entry points, this analysis is structured across four domains: access to services, quality of delivery, community demand, and resilience of the immunization program.

Access

Access to immunization in South Sudan is limited by distance, insecurity, and weak facility functionality. On average, caregivers travel 45 minutes to access measles vaccination (MCV1), with the longest delays in Northern Bahr el Ghazal. In most cases, access is by foot, and transport-related barriers affect over 60% of caregivers, particularly in counties like Jonglei, Unity, and Fangak, where flooding and insecurity disrupt health services.

Only a minority of counties meet the threshold for optimal EPI reporting, while nearly one-third fall below 60%, indicating poor routine service performance. Cold chain integrity is compromised in many facilities: over a quarter of refrigerators operate above recommended temperatures and more than half store non-vaccine items. Additionally, stockouts lasting up to four weeks, lack of power backups in 44% of facilities, and the absence of temperature breach protocols constrain effective vaccine delivery.

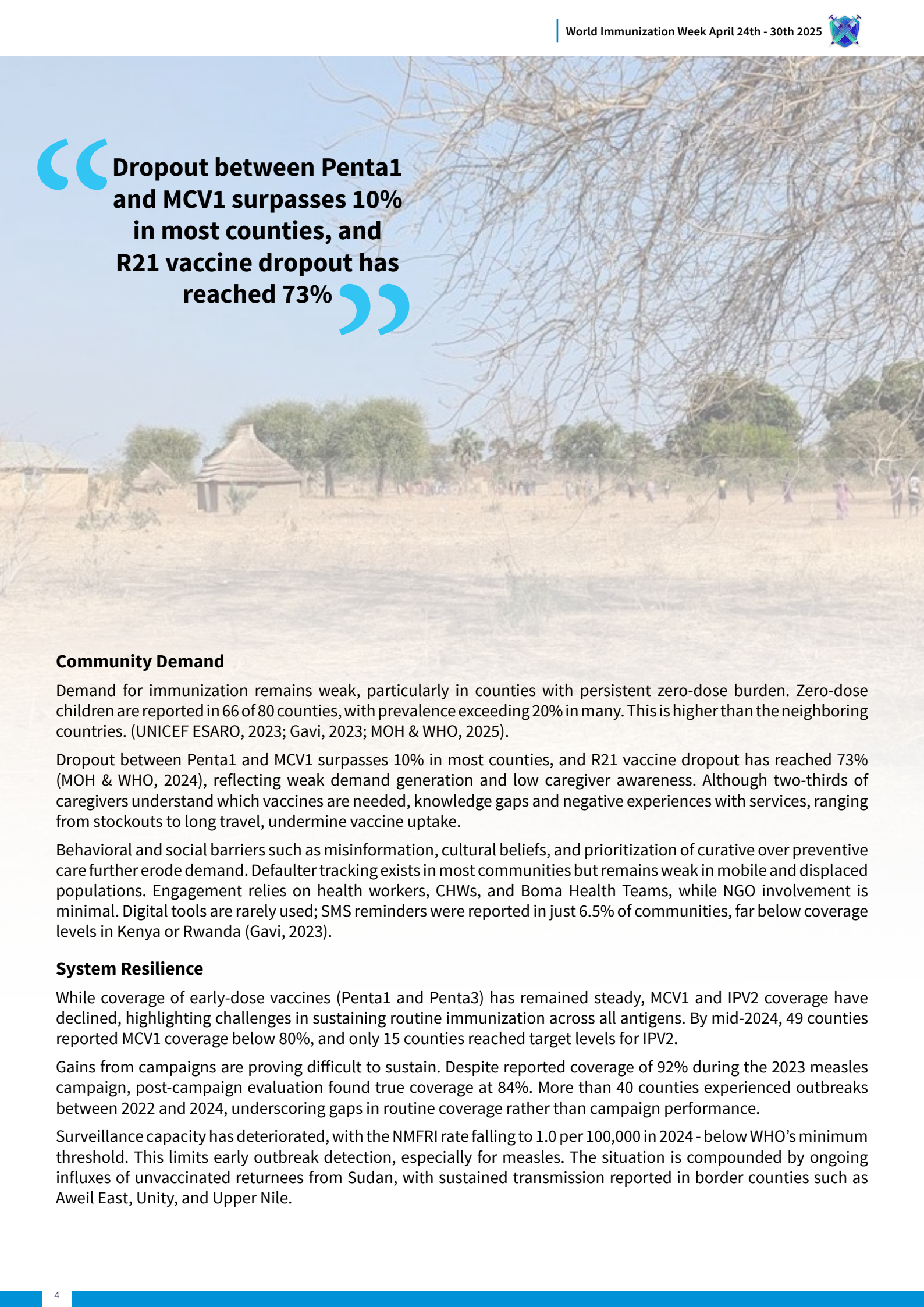
These geographic and system-level barriers are compounded by indirect factors such as poverty, high opportunity costs, and the lack of personalized outreach. Without addressing both physical and operational bottlenecks, completion of full immunization schedules will remain elusive for many communities.

Quality of Immunization

While caregiver satisfaction with services is generally high (88.7%), quality challenges persist. Over one in five caregivers reported being turned away due to stockouts or understaffing, particularly for MCV1 and IPV2. Nearly one-third are not adequately informed about vaccination schedules or potential adverse events (AEFI), contributing to missed follow-up doses.

Operational inefficiencies reduce vaccine effectiveness. Among confirmed measles cases from 2022–2024, only 17.9% had received MCV1, and estimated protective effect was just 11%—well below expected levels, suggesting breakdowns in cold chain management or vaccine administration.

System audits show that expired or open vials were present in 74% of facilities. Despite initial training for most staff, refresher training and equipment calibration are frequently missing. Combined with high staff turnover and absence of digital tracking systems, these gaps erode service reliability and continuity.



Dropout between Penta1 and MCV1 surpasses 10% in most counties, and R21 vaccine dropout has reached 73%

Community Demand

Demand for immunization remains weak, particularly in counties with persistent zero-dose burden. Zero-dose children are reported in 66 of 80 counties, with prevalence exceeding 20% in many. This is higher than the neighboring countries. (UNICEF ESARO, 2023; Gavi, 2023; MOH & WHO, 2025).

Dropout between Penta1 and MCV1 surpasses 10% in most counties, and R21 vaccine dropout has reached 73% (MOH & WHO, 2024), reflecting weak demand generation and low caregiver awareness. Although two-thirds of caregivers understand which vaccines are needed, knowledge gaps and negative experiences with services, ranging from stockouts to long travel, undermine vaccine uptake.

Behavioral and social barriers such as misinformation, cultural beliefs, and prioritization of curative over preventive care further erode demand. Defaulter tracking exists in most communities but remains weak in mobile and displaced populations. Engagement relies on health workers, CHWs, and Boma Health Teams, while NGO involvement is minimal. Digital tools are rarely used; SMS reminders were reported in just 6.5% of communities, far below coverage levels in Kenya or Rwanda (Gavi, 2023).

System Resilience

While coverage of early-dose vaccines (Penta1 and Penta3) has remained steady, MCV1 and IPV2 coverage have declined, highlighting challenges in sustaining routine immunization across all antigens. By mid-2024, 49 counties reported MCV1 coverage below 80%, and only 15 counties reached target levels for IPV2.

Gains from campaigns are proving difficult to sustain. Despite reported coverage of 92% during the 2023 measles campaign, post-campaign evaluation found true coverage at 84%. More than 40 counties experienced outbreaks between 2022 and 2024, underscoring gaps in routine coverage rather than campaign performance.

Surveillance capacity has deteriorated, with the NMFRI rate falling to 1.0 per 100,000 in 2024 - below WHO's minimum threshold. This limits early outbreak detection, especially for measles. The situation is compounded by ongoing influxes of unvaccinated returnees from Sudan, with sustained transmission reported in border counties such as Aweil East, Unity, and Upper Nile.



Call to action

To support and strengthen the leadership of the Ministry of Health in delivering equitable and effective immunization services, partners are encouraged to align around the following strategic priorities:

Expand Access

- Expand outreach and mobile immunization in hard-to-reach states including Jonglei, Unity, Upper Nile, and Northern Bahr el Ghazal.
- In flood-affected areas such as Lakes and Unity, implement pre-positioning and periodic intensification of routine immunization (PIRI).
- Restore functionality in low-performing health facilities in counties such as Bor South, Akobo, Fangak, and Koch by addressing stockouts, cold chain gaps, and staffing shortages.
- Prioritize zero-dose counties including Bor South, Akobo, Aweil East, Ulang, and Rubkona using local microplans and zero-dose mapping.

Improve Quality

- Distribute MCV1, IPV2, and R21 vaccines to counties with stockouts and low coverage, including Aweil East, Fangak, Rubkona, and Koch.
- Conduct regular cold chain monitoring, refresher training, and equipment maintenance to ensure safe and reliable vaccine delivery.
- Apply a person-centered approach in high-dropout counties such as Bor South, Akobo, and Ulang, focusing on communication, respectful care, and follow-up at the point of service.

Drive Community Demand

- Strengthen defaulter tracking in Jonglei, Unity, and Upper Nile, where dropout is linked to population movement, weak follow-up systems, and limited community health worker coverage.
- Deliver targeted immunization messages in Bor South, Akobo, Ulang, and Rubkona, where misinformation, low perceived risk, and poor caregiver awareness contribute to missed follow-up doses.
- Engage local leaders and caregivers to reinforce the value of full immunization and support timely completion of vaccine schedules.

Build System Resilience

- Stabilize routine immunization coverage in counties showing year-on-year declines by strengthening microplanning, monitoring and enforcing immunization ensuring consistent vaccine supply, and maintaining service continuity.
- Integrate zero-dose tracking, outbreak preparedness, and campaign follow-up into routine immunization systems to improve early response and sustained immunity.
- Support counties with repeated service disruptions to maintain performance during emergencies and prevent further coverage deterioration.

WHO calls for government leaders, health agencies, donors, and communities to unite in scaling up these strategies to reduce immunization dropouts and protect every child in South Sudan from vaccine-preventable diseases. Invest, collaborate, and act now!

Reference:

Gavi. (2023). *Zero-dose and missed communities: Progress and country profiles*. Gavi, the Vaccine Alliance. <https://www.gavi.org>

Karamagi, H. C., Tumusiime, P., Titi-Ofei, R., et al. (2021). Towards universal health coverage in the WHO African Region: Assessing health system functionality, incorporating lessons from COVID-19. *BMJ Global Health*, 6, e004618. <https://doi.org/10.1136/bmjgh-2020-004618>

Ministry of Health (MOH), & World Health Organization (WHO). (2025). *Root cause analysis of recurrent measles outbreaks in South Sudan (2022–2024)*. Juba, South Sudan.

UNICEF Eastern and Southern Africa Regional Office (ESARO). (2023). *Regional immunization dashboard and coverage estimates*. Nairobi, Kenya: UNICEF.

World Health Organization (WHO), & United Nations Children's Fund (UNICEF). (2023). *Estimates of national immunization coverage (WUENIC)*. <https://immunizationdata.who.int>

South Sudan Ministry of Health (SSMOH). (2024). *EPI routine immunization monthly report (DHIS2)*. Juba, South Sudan.

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