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*Corresponding author

Samson Oboche A, Chief Executive Officer (CEO), Sam-Divine Health Vanguard International CIC, Newcastle upon Tyne, United Kingdom

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Cholera; Emergency Response; South Sudan; Outbreak Preparedness; Oral Cholera Vaccine; Wash; Health System Resilience

Research Article

Paper Title: Emergency Cholera Response in South Sudan: Challenges, Risks, Mitigation Measures and the Way Forward

Samson Oboche A[1,2*]

[1]*Senior Consultant, Global Fund–ICHESS Technical Assistance Programme, Ministry of Health, Republic of South Sudan, Juba, South Sudan*

[2]*Chief Executive Officer (CEO), Sam-Divine Health Vanguard International CIC, Newcastle upon Tyne, United Kingdom*

Abstract

Background: South Sudan continues to experience recurrent cholera outbreaks driven by protracted conflict, population displacement, climate-related flooding, and fragile health and water systems. Despite repeated emergency responses, cholera remains a leading cause of preventable morbidity and mortality.

Objective: To analyze recent cholera outbreaks in South Sudan, assess emergency response performance, identify key challenges and risks, and propose evidence-based strategies to strengthen prevention, preparedness, and control under Ministry of Health leadership.

Methods: A narrative policy and practice review was conducted using Ministry of Health cholera situation reports, WHO and UNICEF epidemiological updates, Integrated Disease Surveillance and Response (IDSR) data, Oral Cholera Vaccination (OCV) campaign documentation, and peer-reviewed literature. Data were synthesized across epidemiology, emergency response actions, health system performance, and preparedness domains.

Results: The 2024-2025 outbreak was the largest recorded in South Sudan, affecting more than 50 counties across at least nine states. National Case-Fatality Rates (CFRs) ranged from 1.3% to 2.0%, exceeding recommended emergency thresholds during early phases. Emergency measures-including cholera treatment centres, oral rehydration points, rapid response teams, WASH interventions, and reactive OCV campaigns-reduced facility-based mortality. However, delayed care-seeking, weak community surveillance, and limited decentralized capacity sustained community-level deaths and recurrent transmission.

Conclusion: Cholera in South Sudan represents a chronic systems emergency rather than episodic outbreaks. Sustainable control requires a transition from reactive emergency response to nationally led, multi-sectoral preparedness anchored in primary health care, community platforms, and resilient WASH systems. Integrating surveillance, decentralized emergency care, and strategic OCV use in line with global frameworks is essential to preventing future outbreaks and strengthening overall health security.

Introduction and Background

Cholera remains one of the most persistent public health emergencies in fragile and conflict-affected settings. Globally, an estimated 1.3-4.0 million cases and up to 143,000 deaths occur annually, disproportionately affecting populations with limited access to safe water, sanitation, and timely emergency care [1]. South Sudan exemplifies this vulnerability. Since the onset of conflict in 2013, the country has experienced near-annual cholera outbreaks driven by mass displacement, climate-related flooding, and systemic health system fragility. The 2016-2017 epidemic marked a turning point, lasting more than 16 months and affecting one-third of counties nationwide [2]. Subsequent outbreaks have followed similar epidemiological patterns, disproportionately impacting internally displaced persons, riverine communities along the Nile, pastoralist populations, and informal urban settlements characterized by poor WASH infrastructure [3]. National estimates indicate that fewer than half of the population has sustained access to improved drinking water, creating ideal conditions for faeco-oral transmission [2,3].

Surveillance data from the 2024-2025 outbreak underscore the scale of the challenge, with tens of thousands of suspected cases reported and a substantial proportion of deaths occurring outside health facilities [6,7]. Although cholera is highly treatable, these patterns reflect delayed detection, limited decentralized care, and gaps in referral and surveillance systems. While the Ministry of Health (MoH) and partners have implemented recurrent emergency responses-including case management, WASH interventions, risk communication, and Oral Cholera Vaccination (OCV)-these efforts have largely been reactive and heavily dependent on humanitarian surge capacity.This paper examines cholera in South Sudan as a protracted systems emergency, analyses emergency response performance, and outlines strategic pathways toward sustainable preparedness and prevention anchored in community platforms and aligned with global cholera control frameworks.

Methods

This study adopted a narrative policy and practice review design. Data sources included Ministry of Health cholera situation reports, IDSR bulletins, WHO and UNICEF epidemiological updates, OCV campaign and post-campaign coverage survey documentation, and relevant peer-reviewed literature [1-5]. Documents published between 2013 and 2025 were included if they addressed cholera epidemiology, outbreak response, vaccination, WASH interventions, or health system performance in South Sudan. Materials lacking relevance to emergency response or system-level analysis were excluded. Quantitative data on (cases, deaths, CFRs, geographic spread) were summarized descriptively. Qualitative information from guidance documents and response evaluations was analyzed thematically across five domains: surveillance, case management, vaccination, WASH, and community engagement. All data were aggregated and publicly available. No individual-level or identifiable information was accessed; therefore, ethical approval was not required.

Results / Key Findings

Epidemiological trends

South Sudan has experienced repeated cholera outbreaks since 2013. The 2024-2025 outbreak was the largest recorded, with over 70,000 suspected cases and more than 1,300 deaths reported across more than 50 counties, yielding CFRs between 1.3% and 2.0% nationally [6,7]. Transmission peaked during the rainy season and along displacement corridors in Unity, Upper Nile, Jonglei, and Central Equatoria states [6-8].

Emergency response

Emergency response actions included the establishment of cholera treatment centres, oral rehydration points, rapid response teams, intensified risk communication, emergency WASH measures, and reactive OCV campaigns targeting high-risk counties [4,10]. These interventions reduced facility-based mortality where access was timely.

Health system performance

Despite improvements in facility outcomes, community-level deaths remained substantial due to delayed care-seeking, insecurity, limited decentralized capacity, and referral constraints. Surveillance sensitivity improved during outbreak phases, but laboratory confirmation and real-time reporting remained inconsistent [6-8] (Table 1).

Table 1: Key Cholera Indicators, South Sudan (2024-2025).

Indicator	Estimate
Suspected cases	>70,000
Reported deaths	>1,300
CFR range	1.3-2.0%
States affected	≥9
Counties affected	≥50

Discussion

The findings confirm that cholera in South Sudan represents a sustained public health emergency rooted in structural vulnerability, rather than a series of isolated or episodic outbreaks. Recurrent flooding, displacement, weak WASH coverage, and limited primary health care access interact to sustain transmission, consistent with experiences in other fragile settings across the Horn of Africa [11-13]. However, South Sudan is distinguished by lower system resilience and heavier reliance on humanitarian surge mechanisms. While emergency case management and reactive vaccination reduced mortality in targeted areas, these measures were insufficient to interrupt transmission sustainably. From an emergency medicine perspective, concentration of treatment capacity at centralized facilities, weak community surveillance, and delayed referral pathways remain critical gaps. Strengthening decentralized case management, early detection, and integration of vaccination and WASH within emergency planning is essential. These structural determinants interact to create persistent conditions conducive to rapid faeco-oral transmission, particularly in displacement sites, riverine communities, and informal urban settlements.

While emergency response interventions-most notably the rapid expansion of cholera treatment centres, deployment of oral rehydration points, and reactive oral cholera vaccination-were effective in reducing facility-based mortality, they proved insufficient to interrupt community-level transmission in a sustained manner. This pattern reflects a broader regional experience, but South Sudan is distinguished by lower system resilience and a heavier dependence on humanitarian surge mechanisms compared with neighbouring contexts [11,12]. As a result, gains achieved during emergency phases were often reversed once external surge capacity diminished. From an emergency medicine perspective, these findings underscore several critical gaps. First, the concentration of definitive case management capacity at centralized facilities limits timely access for populations in remote or insecure areas, contributing to delayed presentation and avoidable mortality. Second, weaknesses in community-level surveillance and referral systems reduce the ability to detect outbreaks early and initiate rapid containment. Third, inadequate integration of vaccination, WASH, and emergency clinical services constrains the overall effectiveness of response efforts, reinforcing a cycle of reactive care rather than preventive preparedness. The evidence suggests that decentralized case management, early referral pathways, and community-based detection mechanisms must be prioritized as core components of emergency preparedness, rather than adjuncts to outbreak response. Integrating these elements within routine primary health care and community health platforms would strengthen surge capacity during outbreaks while simultaneously reducing baseline vulnerability. Without such system-level integration, cholera response efforts in South Sudan are likely to remain reactive, resource-intensive, and insufficient to achieve lasting transmission control.

Challenges, Risks and Mitigation

Operational response was constrained by insecurity, flooding, supply-chain disruptions, health-worker shortages, cold-chain limitations, and global OCV supply shortages [10,17]. Systemic risks included chronic under-investment in WASH, heavy dependence on humanitarian financing, and limited inter-epidemic preparedness capacity [8,12]. Short-term mitigation measures-such as single-dose OCV deployment, mobile treatment teams, intensified risk communication, and targeted hotspot-focused WASH interventions-helped reduce mortality but did not address underlying transmission drivers [4,10]. Persisting gaps in safe water access, sanitation infrastructure, and routine immunization coverage continue to sustain high residual risk.

Way Forward / Recommendations

Priority actions include institutionalizing a national cholera preparedness and response platform; integrating cholera surveillance within IDSR and DHIS2 systems; expanding preventive OCV use in identified hotspots in line with the Global Task Force on Cholera Control roadmap; embedding WASH investments within health security and climate-resilience financing; and aligning preparedness efforts with core capacities under the International Health Regulations (2005) [2,18].

Conclusion

Cholera in South Sudan reflects a recurrent systems emergency driven by structural fragility, climate variability, population displacement, and prolonged underinvestment in basic services. While emergency response measures save lives, sustainable prevention demands a decisive shift from episodic, reactive outbreak response to nationally led, multi-sectoral preparedness and prevention. For emergency medicine practice, this entails strengthening early detection, decentralized treatment capacity, and rapid referral pathways that bring life-saving care closer to at-risk communities. For policymakers, embedding cholera control within resilient primary health care and WASH systems-aligned with global frameworks-offers the most viable pathway to breaking the cycle of recurrent outbreaks and strengthening overall health security.

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