

Elimination of Guinea worm disease in South Sudan through multi-disciplinary actions

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South Sudan is now in the pre-certification phase, having gone over sixteen months as of April 2018, with zero reports for cases of Guinea worm disease (GWD). The South Sudan Guinea Worm Eradication Programme (SSGWEP) mobilizes the efforts of thousands of communities, village volunteers, various government institutions and partners, to establish an extensive surveillance system for detection of GWD cases in post-war South Sudan.

Beginning in 2006, with the objective of breaking transmission as soon as possible, this system enabled rapid detection (<24 hours after worm emergence), case containment, and prompt delivery of specific interventions – cloth and pipe filters, vector control, provision of safe water and health education – thereby achieving the ultimate elimination of the disease in ten (10) years from 2006 – 2007.

This unquestionable success story in South Sudan, was possible through the multidisciplinary actions of key partners, such as The Carter Center, World Health Organization (WHO), UNICEF, and other NGOs with the MoH at the helm of the implementation of the key strategies for GWD eradication.

Key words: Guinea worm disease, Carter Center, eradication, South Sudan

INTRODUCTION

Guinea worm disease (GWD), or dracunculiasis is an incapacitating parasitic illness caught by drinking from water containing water fleas (copepods) that harbour infective Guinea worm larvae, *Dracunculus medinensis*. Once inside the body, the stomach digests the water fleas and these larvae find their way to the small intestine where they penetrate the intestinal wall and pass into the body cavity. During the next 10-14 months, the female Guinea worm grows to full size adult (60-100 centimeters long) and migrates to the site where she will emerge usually from the lower limbs. To emerge, the Guinea worm causes a lesion to develop on the skin at the site where she will emerge (Figure 1). The lesion begins with the formation of a blister which causes a very painful burning sensation, and which will eventually self-rupture within 24-72 hours, unless purposefully breached (by the patient or someone else). Once a worm started to emerge, it must be carefully and completely removed over a period of weeks. Often the resultant wound develops a secondary infection, increasing the time it takes for an infected person to resume normal activities. Failure to remove the worm can result in additional bacterial infection, as well as infection of the whole body (septicaemia) and permanent disability.

Despite a prolonged civil war, there was a 95% reduction in reported cases of GWD in South Sudan between 1995



Figure 1. Guinea worm emerging from the foot of a patient in South Sudan (Credit: Makoy S. Yibi)

(118,587) and 2005 (5,585). The comprehensive peace agreement (CPA) signed in January 2005 created the semi-autonomous Government of Southern Sudan. At the time, Southern Sudan accounted for over 45% of the world's GWD cases. The nascent Ministry of Health established the SSGWEP in 2006 with the goal of stopping transmission by December 31st 2009, although this initial target was not reached, South Sudan achieved the ultimate objective of interrupting GWD transmission in 2016, and reported 6 cases in 2016 and zero cases in 2017 for the first time since the start of the eradication campaign (Figures 2 and 3). This article details the multi-disciplinary actions in the implementation of the active surveillance system and interventions for GWD eradication in South Sudan.

MULTI-DISCIPLINARY ACTIONS IN THE FIGHT AGAINST GWD

GWD eradication is an absolute public health goal, and can only be achieved through concerted efforts from multi-disciplinary actors. From the outset, the Ministry of Health established a taskforce called the South Sudan Guinea Worm Eradication Task-Force (SSGWETF). The SSGWETF was under the chairmanship of the Director General for Preventive Health Services with membership from The Carter Center, WHO, UNICEF, Ministry of Water Resources and Irrigation, Ministry of Animal Resource and Fisheries, World Food Programme (WFP) and representatives of water implementing NGOs.

The purpose of the SSGWETF was to help the SSGWEP through high-level technical assistance, advocacy, resource mobilization, and coordination across critical eradication strategies that are all oriented towards empowering communities, to prevent GWD transmission:

1. Provision of safe water to endemic communities, including both “software” (health and hygiene promotion as well as Operations and Maintenance support) and “hardware” – e.g. new facilities such as boreholes, spring-fed schemes, protected wells, dam infiltration, etc.
2. Effective community-based surveillance that is the driving force for complete interruption of Guinea worm transmission.

In achieving this broad purpose, the terms of reference (ToR) for the SSGWETF were as follows:

a. Safe Water Provision and Health Education/Hygiene Promotion:

The lead partners include: UNICEF, Ministry of Cooperative and Rural Development, Ministry of Animal resource and Fisheries, Ministry of Water Resources

and Irrigation, WFP, and representatives of water implementing NGOs.

1. Mobilize resources from bilateral and multi-lateral donors for sustainable water development and mass health/hygiene promotion activities, targeting the most endemic villages.
2. Identify appropriate roles for communities and partners working in the water and health sectors for implementation of safe water delivery, including both hardware and software components, in targeted endemic communities of South Sudan.
3. Establish technical oversight mechanism for monitoring status of safe water delivery and sustainability in Guinea worm endemic villages.
4. Review and recommend coordination mechanisms with partners at county-, state- and national- levels for safe water development and health/hygiene promotion for both Guinea worm eradication and control of other water-borne/-related diseases.
5. Establish an awareness campaign with traditional, political, and civil society leadership to sensitize them to Guinea worm eradication and the role they can play in its success.

b. Surveillance and Case Containment: The lead partners include The Ministry of Health, the Carter Center, and WHO.

1. Roll-out plans for the wider implementation of SSGWEP community-based surveillance activities in South Sudan, including the incorporation of other surveillance structures to detect outbreaks in areas known to be free of GWD transmission.
2. Recommend a monitoring and evaluation plan for the SSGWEP and mechanisms for its implementation.

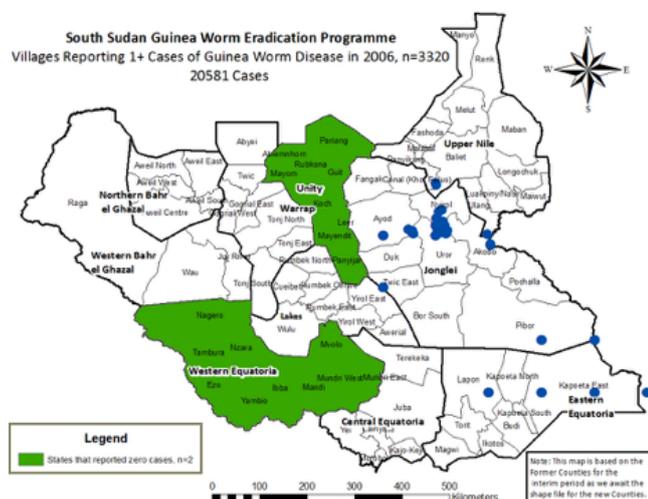


Figure 2. Number of cases of GWD in 2006 in South Sudan



Figure 3. Number of cases of GWD in 2016 in South Sudan

HOW DID SOUTH SUDAN SUCCEED IN INTERRUPTING THE GWD TRANSMISSION?

The Comprehensive Peace Agreement (CPA) that ended the 21-year war in South Sudan was a crucial turning point not only in forging historic political and constitutional changes for the people of South Sudan, but also in removing the single greatest barrier to completing the global campaign to eradicate dracunculiasis. The SSGWEP began in 2006 with the daunting task of establishing a community-based surveillance system capable of detecting all Guinea worm cases in endemic and at-risk villages of South Sudan and establishing an effective intervention delivery system to break dracunculiasis transmission.

With financial, technical and material support mainly from the Carter Center, the SSGWEP implemented the following strategies:

1. Strengthening Community-based Surveillance and Intervention Structures in endemic counties:

- Maintain active, village based surveillance in all villages.
- Ensure all rumours/suspects investigated within 24 hours of reporting and 100% follow up of previous year's cases and their households on weekly basis.
- Engender at least 80% national awareness of the cash reward – motivate self-reporting.
- Enhance collaboration with other health programmes such as NIDs, IDSR, to integrate active case searches for GWD and Cash Reward awareness.
- Continue engaging partners (UNICEF, MEDIWR) in the water sector to provide access to safe drinking water for communities at higher risk of GWD.

2. Strengthening Surveillance in Guinea worm non-endemic counties:

- Strengthen surveillance capacity at the state, county, payam and village levels to ensure timely detection and reporting systems within the context of the Boma Health Initiative (BHI).
- Ensure collection of quality GWD data and enhance 100% investigation of rumours within 24 hours and follow up of all suspects reported.
- Increase collaboration with partners to create/raise awareness of the communities on GWD and on the cash reward system (>80% of population).

- Enhance collaboration with other health programmes such as NIDs, IDSR, to integrate active case searches for GWD and Cash Reward awareness.
- Continue engaging partners (UNICEF, MWRI) in the water sector to provide access to safe drinking water for communities at higher risk of GWD.

3. Communication Road Map - South Sudan using social and behaviour change communication strategies.

- Objective 1: Increased awareness/knowledge in the general population about GWD and the Cash Reward for reporting of Guinea worm cases and animal infections.
- Objective 2: Increased uptake/maintenance of Guinea Worm Disease prevention practices (filtering water, use of safe water points, prevent people with Guinea worm lesions from entering water sources) among population in Endemic and At-risk counties.

4. Strengthen Cross border collaboration between the three countries, Kenya, Ethiopia and South Sudan.

- Implement cross-border surveillance activities to detect, report, and investigate rumours/suspect with 24 hours of reporting.
- Improve cross-notifications and investigation of cases.

CONCLUSION

The GWD eradication campaign is an evolving success story in South Sudan, as evidenced by dramatic reductions in numbers of cases and endemic villages, to complete interruption of transmission of GWD. The coordinated actions of key stakeholders have led to disruption of GWD transmission in seven states of South Sudan, and it can be emulated by other public health programs.

South Sudan has emerged victorious in the fight against GWD, despite all odds and has defied the prediction by experts in 2006 that it will be the last country to eliminate the disease. This is a huge psychological boost for the people of South Sudan given that there very rare stories of good things happening in South Sudan, in a very long time. It is a victory for the thousands of the Guinea worm warriors, as they courageously charged forward with only one purpose that is to interrupt transmission of GWD from all their communities.

The health services can institutionalize approaches used by the SSGWEP to implement other field-based initiatives.