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Polyvalent antivenom for snakebite envenoming in Ethiopia: a prospective cohort study

Alan de Lima Pereira[*1,2], Workineh Necho[3], Yigremachew Girma[4], Kasaye Demeke[5], Kasay Sisay[3], Molla Dessie[3], Amlaku Terefe[3], Noni Winkler[4], Birhanu Sahelie[4], Winston Mulanda[4], Gabriel Alcoba[6], Kalyan Velivela[7], Koert Ritmeijer[1]

[1]Médecins Sans Frontières (MSF), Amsterdam, Netherlands; [2]London School of Hygiene & Tropical Medicine, London, UK; [3]MSF, Abdurafi, Ethiopia; [4]MSF, Addis Ababa, Ethiopia; [5]University of Gondar, Gondar, Ethiopia; [6]MSF, Geneva, Switzerland; [7]MSF, Nairobi, Kenya

*alan.pereira@amsterdam.msf.org

Introduction

Snakebite envenoming is a neglected tropical disease, with global shortages of antivenom treatments that require cold-chain storage, impacting access to care and leading to preventable deaths in sub-Saharan Africa. The World Health Organisation recommended Premium-PANAF polyvalent snake antivenom for sub-Saharan Africa based on a risk–benefit analysis despite the lack of clinical outcomes data in humans. This antivenom is lyophilised, allowing for storage at room temperature. We aimed to provide evidence on real-world safety and effectiveness of Premium-PANAF in resource-limited settings.

Methods

This prospective cohort study was carried out in Abdurafi Health Center, North West Ethiopia. We included 600 patients who presented with snakebite envenoming, received Premium PANAF antivenom, and gave written informed consent. Patients without severe envenoming for whom antivenom was not indicated, those who had received other antivenoms before presentation, and those unable or unwilling to give informed consent were excluded from the study. The primary effectiveness endpoint was the correction of coagulopathy, measured by the 20-minute whole blood clotting test (20WBCT) at 6 hours after antivenom administration. The primary safety endpoint was the proportion of patients with severe allergic reactions within 6 hours of antivenom administration, according to the Brown grading system. We present interim results.

Ethics

This study was approved by the Institutional Research Ethics Review Committee of the University of Gondar, Ethiopia (Ref. CMHSSH-UoG-IRERC-59-12-2024) and the MSF Ethics Review Board (ID 2452).

Results

Of 1,752 snakebite patients admitted from 2 June 2025 to 22 March 2026, 600 were recruited into the study (mean age 24 years [SD 19–32]; 547 [91%] male, 53 [9%] female as self-reported). The main reason for exclusion of eligible patients was under-age with no legal guardian to provide informed consent (43 [7%]). Envenomation syndrome presentations were haemotoxic with cytotoxicity (395 [66%] patients), haemotoxic only (98 [16%] patients), severe cytotoxic only (69 [11%] patients), other systemic envenomation (36 [6%] patients) and neurotoxic (two [<1%]). No deaths were reported in patients receiving PANAF, with 160 (27%) participants experiencing an allergic reaction (92 [15%] mild, 57 [10%] moderate, and 11 [<2%] severe). All 600 patients improved and were discharged, with 127 (21%) patients needing more than two doses (ie, six vials) of antivenom treatment. Of 500 patients presenting with coagulopathy, 261 (52%) corrected within 6 hours, 421 (84%) within 24 hours, and 471 (94%) within 48 hours, when measured with 20WBCT. Six (1%) patients required rescue treatment with a different antivenom (EchiTAB-Plus-ICP).

Conclusions

The results are encouraging and point towards Premium PANAF being a safe and effective antivenom for use in Northwest Ethiopia. Further research is needed in other regions of Africa. These results could help influence national and international protocols as well as advocacy efforts for improved and decentralised access to snake antivenom.

Conflicts of interest

All authors declare no competing interests.