

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



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The study group have declared no conflict of interest.



A Neglected Tropical Disease

- Snake bite: every ten seconds globally
- 100,000 deaths annually
- Agricultural workers and children
- WHO Neglected Tropical Disease (NTD) since 2017
- Lack of safe, effective, affordable treatment options



Susanne Doettling, / MSF / 2018

Snakes of North West Ethiopia



East African Carpet Viper – Hemotoxic, Cytotoxic



Puff Adder – Cytotoxic, Hemototoxic



Premium PANAF Antivenom

Polyvalent – effective against 24 species of African snakes

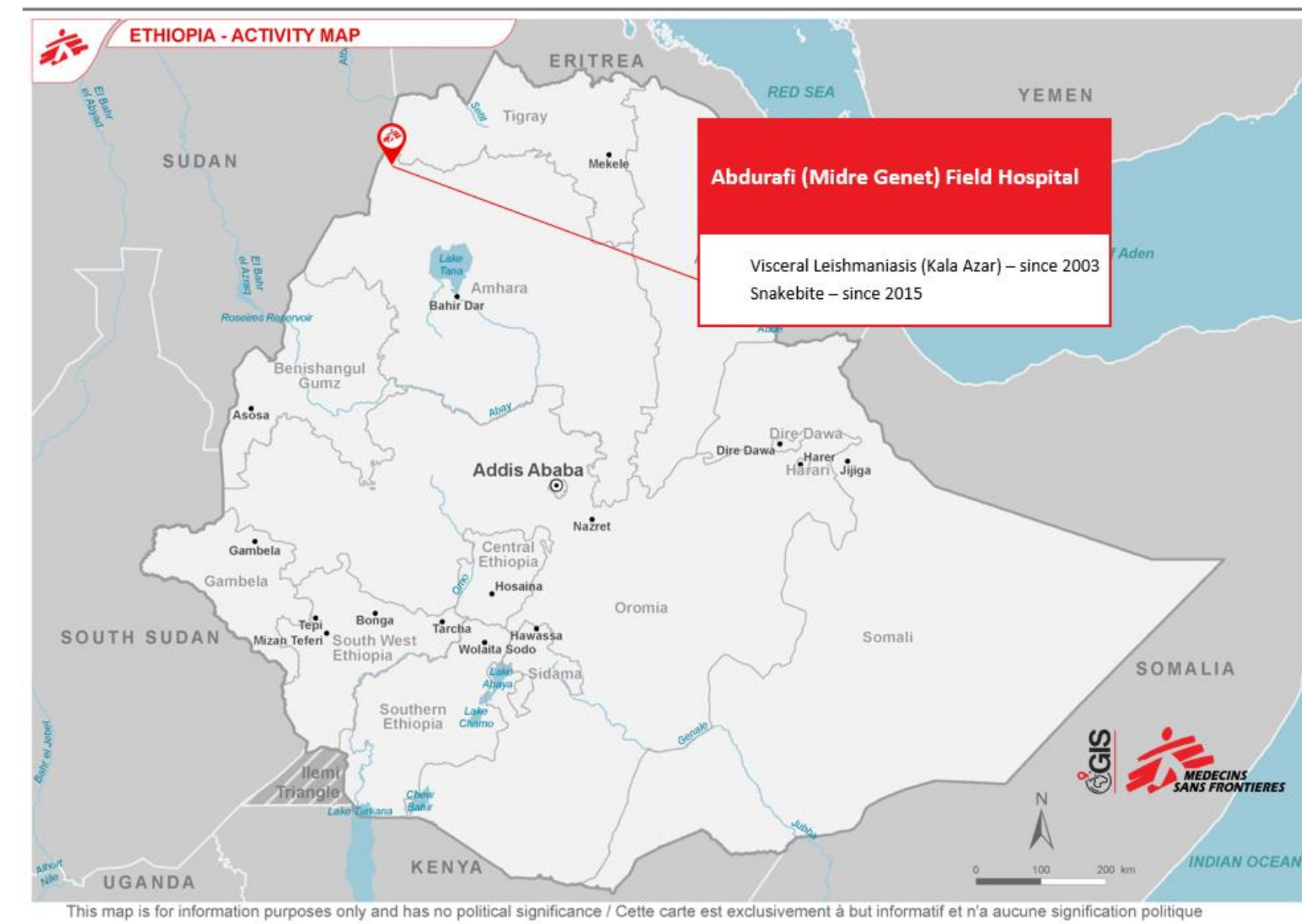
Lyophilised – Store below 30°C

WHO recommended 2023 – no clinical data from humans

Approval process ongoing in several sub-Saharan countries

Post-marketing safety data lacking

Cost: US\$84-280 per treatment (3-10 vials)



Study Objectives

Determine the safety and effectiveness of the new polyvalent antivenom (Premium-PANAF) for the treatment of haemotoxic, cytotoxic and neurotoxic envenoming.



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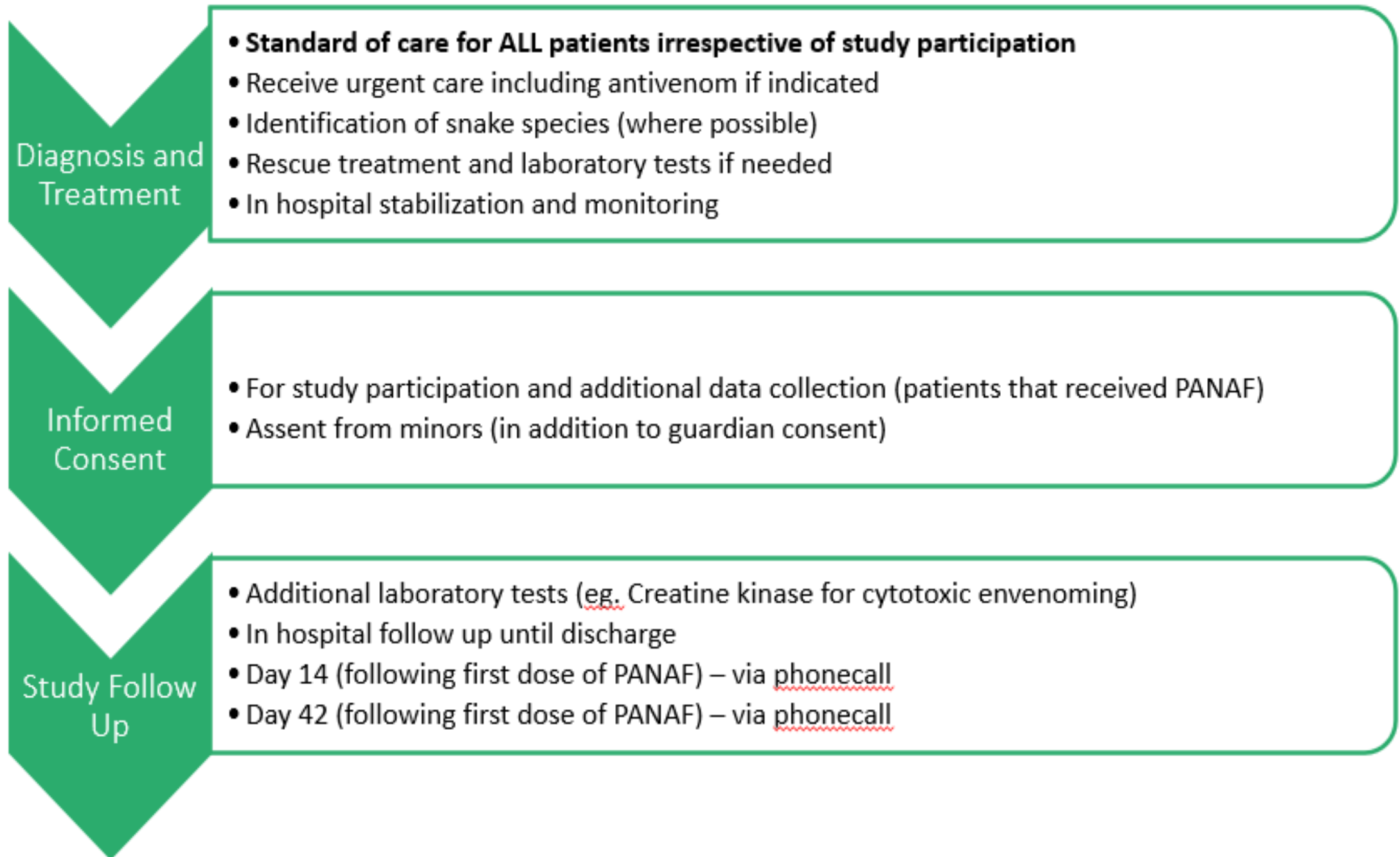
Primary Endpoints and Patient Flow

Safety

Proportion of patients with severe allergic reactions within 6 hours of antivenom administration

Effectiveness

Correction of coagulopathy as measured by the 20-minute whole blood clotting test at 6 hours after antivenom administration



Sample Size

400 hemotoxic syndromes, would detect a 5% relative increase (above 83% baseline) in the occurrence of corrected coagulopathy at 6 hours *

Hence 600 patients recruitment planned over 12 months



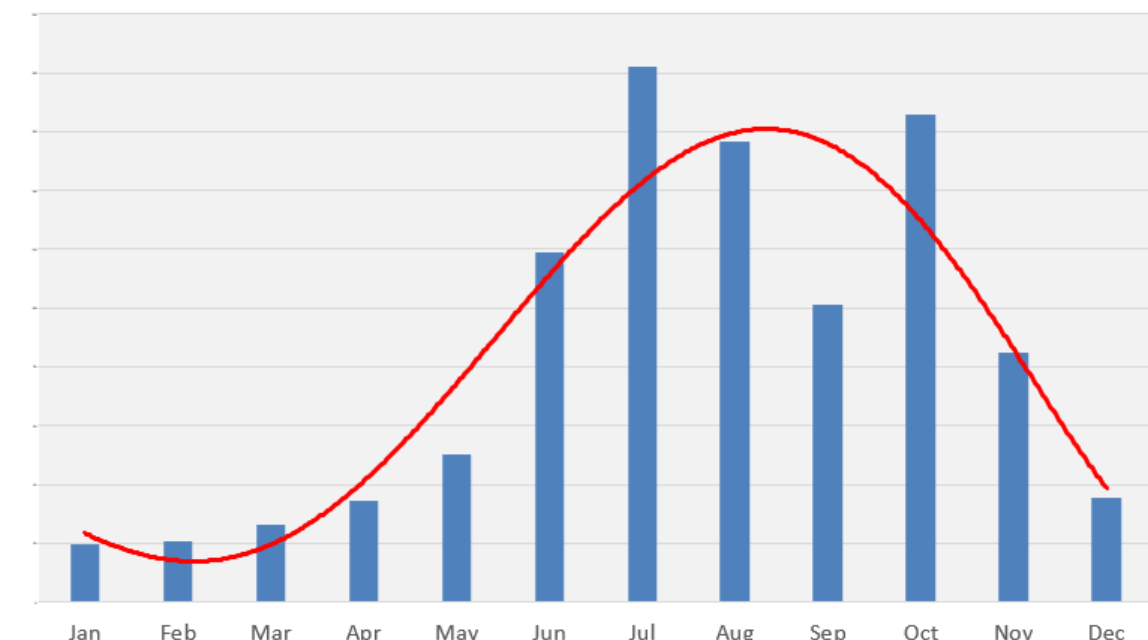
Inclusion criteria

- History of snakebite envenoming and have received Premium PANAF in facility
- AND
- Informed consent

Exclusion criteria

- Already received antivenom outside of facility
- OR
- Children without guardian or unwilling to give informed consent

Seasonal incidence trend snakebites 2015-2025



Interim Results: Demographics

Recruitment Period	2 nd June 2025 to 22 nd March2026
Total snakebite patients	1752
Total receiving PANAF	643 (37%)
Total recruited	600 (93%)
Mean age	27 years [<i>Range: 2 to 70 years</i>]
Sex distribution	Male: 547 [91%]
Primary reason for exclusion	Child with no legal guardian present

Interim Results (n=600)

Visited traditional practitioner before presentation	207 (35%)
Time since snakebite to presentation	< 6 hrs (203, 34%) 6 - 24hrs (320, 53%) > 24 hours (77, 13%)
Body site bitten	Foot (391, 65%), Hand (156, 26%)
Environment where snakebite happened	Agricultural Fields (509, 85%)
Snake Species	Puff Adder (157, 26%) Carpet viper (134, 22%) Unknown (207, 35%) Others (102, 17%)
Syndromic Classification	Haemotoxic with cytotoxicity (395, 67%) Haemotoxic only (98, 16%) Severe cytotoxic only (69, 12%) Other/Undetermined (36, 6%] Neurotoxic (2, 0.3%)



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Interim Results: Outcomes

Discharge outcome	Discharged home (598, 99.7%) Deceased (0, 0%), Referral to external facility (2, 0.3%) – both improved
Allergic Reactions (Safety) (n=600)	Total – 160 [27%] (Mild /Moderate – 149 [25%], Severe - 11 [1.8%])
Correction of coagulopathy (Effectiveness) (n=500)	< 6 hours: 261 (52%) < 24 hours: 421 (84%) < 48 hours: 471 (94%)
Number of vials needed	Mean – 5.66 vials (2 doses) Median – 3 vials (1 dose) 127 (21%) patients needed > 2 doses (six vials)
Patients needing rescue treatment with EchiTAB-Plus-ICP (non-response)	6 (1.0%)

Study Limitations & Challenges

Study Design – Prospective Observational Cohort

Single Site Study

Selection Bias

Inadequate data on neurotoxic syndrome

Time to presentation – majority early presenters

Validity across all snake species

Population demographic – Older age and female

Implementation challenges – security and conflict, safety monitoring, supplies



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Conclusions

Results are encouraging and suggest Premium PANAF is safe for all snakebites, and effective for haemotoxic and cytotoxic syndromes.

Further research needed in:

- Other regions of Africa with different snake species
- Females and older age groups
- Neurotoxic syndromes
- Late or severe presenters

13



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