Accelerating R&D for Snakebites: Building a Common Agenda for Progress

Geneva, Switzerland, 19 September 2023

Snakebite envenoming (SBE) is a complex and neglected condition that kills and injures hundreds of thousands of people every year, especially in Africa, Asia, and Latin America. In recent years, a concerted effort to raise the profile of SBE and stimulate investment in R&D has yielded positive outcomes. As work in this space progresses, there is a continued and growing need to provide the sector with data and information to guide research and funding decisions.

On International Snakebite Awareness Day 2023, stakeholders came together to address a series of challenge questions on the future of the SBE R&D ecosystem. Mobilising actors from beyond the SBE community, with experience across the broader neglected infectious disease and global health space, new and key perspectives were generated. One of the central recommendations from this meeting is to create a more coordinated and cohesive R&D ecosystem to allow the community to converge on a set of common priorities. Stakeholders also aligned on the need to:

▸ Define coordination mechanisms, for both funders and researchers, to incentivise collaboration, alignment of priorities, and data sharing.
▸ Renew advocacy efforts to clearly articulate the unmet needs for SBE.
▸ Further normative guidance like more Target Product Profiles, an R&D agenda, and a means to prioritise research.
▸ Integrate SBE into existing conversations and mechanisms on topics like One Health, pandemic prevention and preparedness, climate change, monoclonal antibodies access and manufacturing, and regulatory capacity in Africa.

Key questions and considerations for addressing SBE R&D challenges

The objective of this meeting was to generate momentum, identify bottlenecks, and determine recommendations for the SBE R&D ecosystem. The meeting considered key questions that will need to be answered to accelerate R&D:

▸ What past game changers in the global health or neglected disease ecosystem led to significant progress in their agendas? Identify key elements that are needed for significant progress of the SBE R&D agenda.
▸ What are key points of intersection between SBE, human-animal health and pandemic prevention, preparedness and response? What are key areas where further research would contribute to the integration of SBE and Planetary Health?
▸ What are three key priorities for each scientific innovation and the ecosystem structure? What are good models of prioritisation that would lend themselves to better the SBE R&D agenda?
▸ What are the barriers or challenges for prioritising investment or research for SBE at your organization? How can we mobilise more diverse types of funding? What are examples of successful strategies or mechanisms in other diseases?
Recommendations

The points below represent initial, high-level, recommendations and proposals based on the key takeaways of the consultation’s wide-ranging discussions. Throughout discussions, key points emerged that could be grouped under either scientific priorities or structural ecosystem needs:

**Ecosystem**

- Establish a coordinating mechanism for researchers to encourage information sharing and trans- and inter-disciplinary collaborations.
- Establish a coordinating mechanism for funders to encourage alignment of calls and priorities, and incentivise data sharing and collaboration through grant mechanisms.
- Explore options for a regional, adaptive clinical trial platform for SBE, or integrate with other neglected infectious diseases platforms, to share risks, costs, and knowledge.
- Improve epidemiology data through mechanisms including, but not limited to, integration of SBE notifications in other disease programmes, like malaria, and national and international mechanisms like DHIS2 or IHME.
- Agree on shared messaging and an advocacy campaign to mobilise new funders and political will, using evidence to clearly articulate the needs, gaps, and a business case.
- Expand the focus of the SBE R&D community by joining and leveraging ongoing discussions on One Health, pandemic prevention and preparedness, climate change, monoclonal antibodies access, and manufacturing and regulatory capacity in Africa.
- Optimise and scale-up ‘beyond R&D’ activities like antivenom accessibility and distribution, regulatory capacity, and manufacturing efforts — including tech transfers to support local manufacturing— to help improve confidence in the market and contribute to de-risking R&D.
- Explore innovative financing mechanisms of neglected infectious diseases, for example, the potential applicability of the US FDA’s Priority Review Voucher (PRV) system for novel products to SBE.

**Scientific**

- Publish normative guidelines like more Target Product Profiles for traditional antivenoms for expanded regions, next-generation therapeutics, and diagnostics. Produce an R&D agenda that focuses on short-term priorities for existing products and long-term priorities for innovation.
- Develop a prioritisation framework to assess the therapeutic potential and market readiness of investigational candidates and existing antivenoms to help narrow down a portfolio of viable and accessible products.
- Undertake a comprehensive needs-based assessment of antivenom immunisation strategies to guide improvements in existing products and evaluate, or expand, paraspecificity.
- Improve and further standardise reference venoms for antivenom development, and *in vitro* and *in vivo* preclinical testing for safety and efficacy.
- Trial currently available antivenoms for dosing, efficacy, and safety, and in the future, trial combinations of products including small molecule therapies and traditional antivenoms.
- Improve features of existing antivenom products like purification, shelf-life, and storage.
- Continue development of next-generation broad-spectrum technologies like small molecule therapies and monoclonal antibodies.
- Develop point-of-care diagnostic tests and support clinical evaluation of therapeutics.
Conclusions and next steps

The SBE R&D ecosystem is at an inflection point, with unprecedented levels of investment and innovation on the market and pipeline. Yet, even more time, resources, and collaboration will be required to progress R&D and meet the 2030 goals of the WHO Strategy for prevention and control of snakebite envenoming. Several streams of activity need to be advanced in parallel to make the vision of an affordable and widely accessible complement of products for SBE a reality.

While many exciting research opportunities are being undertaken, the community needs to come together and harmonise the different streams of work. With sufficient interest and collaboration between stakeholders, an informal working group could be conceptualised as a predecessor to a formal coordination mechanism as suggested above. Such a group could help galvanise further interest and develop an action plan for how to advance key recommendations.

We thank the co-organising parties, speakers and participants who made this meeting a success and look forward to future engagement in this space. To receive updates on future covenings, please contact Juliette Borri, Senior Analyst at Policy Cures Research.