Envenomings: a Neglected Public Health Issue Consultative Meeting

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Sustainable quality production of animal-derived sera to meet public health needs

Large scale antivenom productions for large geographical regions

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Envenomings: a neglected public health issue

<table>
<thead>
<tr>
<th>Region</th>
<th>Bites</th>
<th>Envenomings</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>4,000,000</td>
<td>2,000,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Africa</td>
<td>1,000,000</td>
<td>500,000</td>
<td>20,000</td>
</tr>
<tr>
<td>South &amp; Central America</td>
<td>300,000</td>
<td>150,000</td>
<td>5,000</td>
</tr>
<tr>
<td>North America + Europe + Australia</td>
<td>100,000</td>
<td>32,500</td>
<td>500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5,400,000</strong></td>
<td><strong>2,682,500</strong></td>
<td><strong>125,500</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>Stings</th>
<th>Envenomings</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunisia</td>
<td>8,000,000</td>
<td>40,000</td>
<td>2,000</td>
<td>10 to 100</td>
</tr>
<tr>
<td>Mexico</td>
<td>110,000,000</td>
<td>250,000</td>
<td>10,000</td>
<td>≠ 60</td>
</tr>
</tbody>
</table>

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Large scale antivenom productions for large geographical regions - January 10th, 2007
Envenomations: a world public health issue that needs local solutions, but may be not national ones

- Envenomations are different from one region to another one. Their treatments have thus to be adapted in each case.

- The antivenins can be specific for one region only. Different antivenins have thus to be prepared and their efficacy have to be controlled in each case.

- The therapeutic facilities vary in each region. The organization health cares have to be adapted accordingly.

This make a great difference with other pathologies (rabies, malaria, tuberculosis, AIDS ...) where a unique antidote can be used all over the world - Consequence: a temptation for national solutions

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Increasing quality, safety & efficacy of antivenoms: Good / Bad
→ Increase the cost production of antivenoms;
→ Decrease the producers’ profit - they stop to produce;
→ The production capacity is inadequate to meet the needs.

Efficient, safe & low cost antivenoms can be obtain by large scale productions: How?
→ Require to produce antivenoms for large geographical regions;
→ Possible since poisonous animals do not respect national borders;
→ Reduce research cost and a better efficacy on the manufacturing process;
→ Stimulate international collaborations ==> One of the major issue of WHO
Examples of antivenoms production for large regions

- **Europe** (more than 25 countries but less than 10 poisonous vipers)
  - 20 years ago: ≠ 20 antivenom producers; today only three ones remain;
  - Last November we had a Workshop to define the characteristics of an antivenom efficient in all the European countries;
  - The market in each country is too small (≠ 1000 doses) to be profitable, the one for all Europe should be profitable event for several producers.

- **North Africa & Middle East**
  - More than 10 countries and at least 5 producers manufacturing with difficulty poorly efficient & safe antivenoms against similar poisonous species;
  - A unique antivenom prepared following GMP procedures might be very useful for patient treatment and less expensive that the actual productions.

- **South America**
  - Several Brazilian producers manufacture excellent antivenoms for their country;
  - These products can be easily adapted at low cost for bordering countries.

- Many other examples exist => They have to be encouraged

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Conclusions

Envenomings is a neglected public health issue and WHO has to stimulate international willings to find solutions to solve this major health problem.

Large scale antivenom productions for large geographical regions is certainly one of the major tools to challenge this issue.