

## Snakebite as a neglected disease in indonesia

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### GUEST EDITORIAL

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**N**eglected Tropical Diseases (NTDs) are widespread in the world's poorest areas, where access to safe clean water, sanitation and health services is substandard.<sup>1</sup> NTDs affect more than 1 billion people worldwide and are mostly caused by a wide variety of pathogens including viruses, bacteria, parasites, fungi and toxins.<sup>2</sup> These diseases are "neglected" because they are virtually missing from the world health agenda, receive minimal funding, and are associated with stigma and social exclusion.<sup>3</sup> These diseases rarely get public attention and are commonly experienced by disadvantaged populations who have low education and limited employment opportunities. In May 2017, the Director-General of the WHO accepted the recommendation of the WHO Strategic and Technical Advisory Group for Neglected Tropical Diseases (STAG) to add snake bites to the list of neglected tropical diseases.<sup>1</sup>

Snake bites are predominantly found in low- and middle-income countries in Asia, Africa, Central and South America. An improvement in medical care would prevent the majority of the approximately 100,000 deaths each year and permanent physical damage in 400,000 people. In addition, there is a lack of antivenins (medicines to neutralize the effects of the poison) in sufficient quantity and quality, and adequate training of the medical staff at all levels of health care.

Venomous snakebites are a little-recognized and underestimated public health threat in countries with tropical climates and subsistence-based populations.<sup>4</sup> Epidemiological estimates published by the WHO in 1998 assume that about 5.4 million people are bitten by venomous snakes each year, of which about 125,000 die and an unknown number suffer significant physical disability.<sup>5</sup> These data suggest a worldwide incidence of about 90-130 venomous snakebites per 100,000 population with a mortality rate of about 2%.<sup>6</sup> However, the data is uncertain because these estimates are largely based on hospital statistics, but the vast majority of victims of venomous snake bites are treated with traditional healing methods in their villages or die on route to a medical facility and thus escape such statistical recording.<sup>7</sup> Not surprisingly, the few studies in which a randomized proportion of a country's population was surveyed showed a far higher incidence than the hospital-based epidemiological estimates: A nationwide survey in Bangladesh, for example, revealed an incidence of about 623 snake bites per 100,000 inhabitants per year 6.7 and a study from Nepal found an incidence of about 1162/100,000 with a mortality of about 14%.<sup>8</sup> A national representative survey of causes of death from India found 45,900 deaths from venomous snakebites per year in that country, which corresponds to a mortality rate of 4.1/100,000 population.<sup>9</sup>

Such solid epidemiological data are urgently needed in order to understand the real extent of this serious public health problem and then to be able to respond in a targeted and cost-effective manner. In particular, to estimate the need for snake venom antiserum, robust data on the absolute and seasonal frequency of snake bites are needed. It is also important to know which species of venomous snakes' cause envenomation with what frequency, how the snakes and the specific envenomation syndromes can be distinguished and which antisera should therefore be used in a particular region.

How about snakebite in Indonesia? With a population of over 250 million people, possessing over

17,000 islands extending more than 5000 kilometers east to west, Indonesia is one of the largest tropical countries and the most populous in the world.<sup>10</sup> Possessing a high biodiversity including approximately 450 species of snakes, in addition, one of the challenges for the people of Indonesia as with most residents of other tropical countries is facing public health threat due to snake bite envenoming, which their incidences are disregarded. Some of those snake species in Indonesia are thought to be venomous snakes. Once bitten, envenoming snakebite can cause human fatalities or a decrease in the quality of life drastically, such as physical disorders and psychological consequences like a traumatic event. Physical and psychological burden associated with envenoming bite could hamper the ability of people who live in rural areas to work in the field which in turn increase the vulnerability of the victims living in poverty.

Although there are various locally venomous snakes in Indonesia that demands specific antivenom, but in fact until now a common antivenom used in Indonesia is polyvalent antivenom, recognized as “Serum Anti Bisa Ular (“SABU”) which means snake antivenin. This only Indonesian’s antivenin is used to again snakebite caused by ular tanah or *C.rhodostoma* (Malayan pit viper), ular sendok or *N.sputatrix* (the Javan spitting cobra) and ular welang or *B.fasciatur* (the Banded krait).<sup>11</sup>

Even though snakebite cases have been occasionally reported in several regions in Indonesia and reported in newspaper; it is unfortunate situation for health system in Indonesia that there is lack of epidemiology data in this field and as a consequence it is difficult to deal with a comprehensive prevention programs and health policy intervention towards minimizing the threat of this disease.<sup>12</sup>

In addition, only few studies published on the epidemiology of snake bite envenoming in Indonesia. In fact, emergency management for snakebite are also demanding that the government develop an epidemiological surveillance system that can provide valuable information regarding the incidence and deaths from snake bites in Indonesia. Unfortunately, there is no systematic information available on this field. On the other hand, reporting on envenoming incidences along with documentation of snake bites should be presented covering regions in Indonesia, especially where the hazard-prone areas of snake bites are identified. There is an urgent need to make efforts in a coordinated national record information about the parameters associated with the epidemiology of snakebite danger to society. Due to the lack of epidemiological data, comprehensive health intervention policies and prevention efforts do not appear to be implemented immediately. In order to reveal the real condition of the snakebite burden in Indonesia, Rifaie, *et al.* suggested the need to improve the medical records of snakebite cases according to World Health Organization standards.<sup>13</sup> Thus, data on snakebite incidence in Indonesia is expected to be close to the actual number. The snakebite management in Indonesia need joint collaborative efforts from educational institutions, researchers, doctors and nurses, antivenom manufacturers, policy makers and public health authorities as well.

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