

# Animal vaccination: Accessibility and Availability

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## Short Communication

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### ABOUT THE STUDY

Animal vaccination is the immunisation of a domestic, livestock or wild animal. The practice is connected to veterinary medicine. The first animal vaccine invented was for chicken cholera in 1879 by Louis Pasteur. The production of such vaccines encounter issues in relation to the economic difficulties of individuals, the government and companies. Regulation of animal vaccinations is less compared to the regulations of human vaccinations. Vaccines are categorised into conventional and next generation vaccines. Animal vaccines have been found to be the most cost effective and sustainable methods of controlling infectious veterinary diseases. In 2017, the veterinary vaccine industry was valued at US\$7 billion and it is predicted to reach US\$9 billion in 2024. Animals have been both the receiver and the source of vaccines [1]. Through laboratory testing, the first animal vaccine created was for chicken cholera in 1879 by Louis Pasteur. Pasteur also invented an anthrax vaccine for sheep and cattle in 1881, and the rabies vaccine in 1884. Monkeys and rabbits were used to grow and attenuate the rabies virus. Starting in 1881, dried spinal cord material from infected rabbits was given to dogs to inoculate them against rabies [2]. The infected nerve tissue was dried to weaken the virus. Subsequently, in 1885, the vaccine was given to a 9-year-old boy infected with the rabies disease, Joseph Meister, who survived when no one had before. The French National Academy of Medicine and the world saw this feat as a breakthrough, and thus many scientists started to collaborate and further Pasteur's work.

An indirect view of animal vaccinations is seen through smallpox. This is because the vaccine given to humans was animal based. Smallpox was a deadly disease most known for its rash and high death rate of 30% if contracted. Edward Jenner tested his theory in 1796, that if a human had already been infected with cowpox that they would be

protected from smallpox [3]. It proved to be true and thus started the pathway to the eradication of the disease. Through the World Health Organization's eradication effort, at least 80% of people were vaccinated in every country. Subsequently, case finding and then ring vaccination was used, resulting in smallpox becoming the first eradication of a disease through vaccination in 1980. The main issues in relation to the vaccination of animals is access and availability. Vaccines are the most cost-effective measure in preventing disease in livestock populations, although the logistics of distributing vaccines to marginalized populations is still a challenge. Most smallholder farmers' (SHFs) livestock in marginalized populations (MPs) die as a result of a disease, they do not reach their full potential, or they transmit a disease [4]. The root of this issue could be prevented or controlled by increasing the accessibility to animal vaccines. Livestock are necessary to an estimated 600 to 900 million poor farmers in the developing world. This is because the animals provide food, income, financial reserve and status.

The diseases have been characterized into diseases that cause economic losses, government-controlled diseases, and neglected diseases, which all link to availability. The economic losses category entails necessary vaccines in developing countries normally produced by the private sector that make little to no profit, these companies require community support to continue producing [5]. Whereas, government-controlled diseases are controlled by government policy, the main issue here is if the vaccine is expensive it therefore becomes less available to poor farmers. Furthermore, there are some animal diseases which have been neglected as they mainly only affect poor communities, and thus will not be profitable. This is because producers target the largest markets first to ensure their return on investment (ROI). For example, the reason why dog transmitted rabies is taking time to eradicate is because it only affects the developing world, thus it is not able to be produced on a large and profitable scale.

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