2015 was a big year for rabies. In December, 2015, WHO and partners agreed a framework to eliminate human deaths from the disease by 2030. “It’s an ambitious goal”, says Bernadette Abela-Ridder who leads the organisation’s work on neglected zoonotic diseases, and a goal that, on paper at least, they have all the tools to achieve.

“We have effective vaccines for humans and effective vaccines for dogs”, she says, “so reaching zero human rabies deaths is a feasible thing. The key is to put all the components together while mobilising political will and community awareness together to get the job done and stop these unnecessary deaths.”

It’s the number of unnecessary deaths that both motivates and towers over the elimination effort: an estimated 59,000 a year, mostly in children in underserved rural areas of Africa and Asia. “We’ve got case studies that show that coordinated intervention works”, she says referring to successful elimination campaigns in KwaZulu-Natal (South Africa), Tanzania, and the Philippines, each done with a mix of both human and dog vaccination campaigns and all-important community awareness activities. “These three case studies have shown that a multipronged approach works. If rabies is not tackled in this way it will continue to be a problem.”

Getting this message across is key, and it’s what the theme for this year’s World Rabies Day on September 28 is “Educate. Vaccinate. Eliminate.” Education and awareness is especially important with rabies because human rabies vaccine, given as post-exposure prophylaxis (PEP), cannot be given in mass, vertical campaigns.

“When a child gets bitten the mother needs to know to wash the wound and to contact a local health worker”, Abela-Ridder says. “The health worker needs to know to give the child PEP, which needs to be available.” In this way, the rabies vaccination system needs to be finely-tuned at the point of care—a complication given that rabid bites often happen in rural, underserved areas.

“’We have effective vaccines for humans and effective vaccines for dogs...so reaching zero human rabies deaths is a feasible thing’”

With 95–99% of human rabies cases coming from dog bites, Monique Eloït, director general of the World Organisation for Animal Health (OIE), is keen to stress the importance of efforts in dog populations in any planned rabies elimination campaigns. OIE, along with the Global Alliance for Rabies Control and the Food and Agriculture Organization of the United Nations, is partnering with WHO to eliminate rabies. “Two complementary approaches are needed”, Eloït says of efforts to tackle the animal disease source in dogs. “We need to raise awareness at the national authority level so they establish mass dog vaccination, which decreases the chance of each bite being rabid.”

“We also need a sociocultural approach to raise awareness of people so they don’t get bitten”, she adds. Such activities include reminding communities not to feed or interact with stray dogs and to keep their streets clean and free of food that might attract dogs to the area. “At the top level it’s important that authorities realise how important it is to take charge of the problems in dogs so that between the animal and health systems somebody makes sure it [dog vaccination campaigns] gets done.”

The ability to mobilise effective campaigns in dogs, though, can be poor in many countries, especially in sub-Saharan Africa. “In some places rabies activity has, understandably, almost slipped off the radar in a sense compared with other conflicting priorities like HIV and malaria”, says Abela-Rider. “Because dogs aren’t livestock they are not regarded to have the same economic and social value like for example a cow, so health systems don’t count them as a priority.” The human vaccine, too, presents particular problems. “The vaccine is not in the EPI [Expanded Programme on Immunization] system, which affects the level of vaccine forecasting and purchasing, but the more countries engage the greater the impetus.”

There is another potential catalyst—investment from GAVI. In 2008, as part of their assessments for its 5-yearly vaccine investment rounds, the organisation decided that there were not enough data on vaccine need or use in endemic countries to support a decision. “Then when we visited rabies again in...
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Researchers at the University of Cambridge and the University of Glasgow in the UK are doing a modelling study on the cost-effectiveness of vaccination. Researchers from the Swiss Tropical and Public Health Institute in Basel are doing an empirical study in four west African countries—Chad, Mali, Liberia, and Côte d’Ivoire—that have traditionally had limited access to the human vaccine. Vaccine will be made available for free in selected districts, and cases will be followed-up to find out the demand, treatment success, and whether or not the biting animals had rabies.

“2015 was a big year for rabies. 2018, when GAVI makes its final decision...might be even bigger.”

Demand aside, another sticking point for GAVI is about operational feasibility of providing WHO’s recommended post-bite care, especially the use of rabies immunoglobulin (RIG) to boost PEP. WHO has, since 2009, recommended that the expensive RIG be given for every bite that breaks the skin. “But it’s not clear what the cost-effectiveness of RIG plus vaccine versus vaccine alone is in developing countries”, says Jon Abramson, Wake Forest University School of Medicine, who is chair of a Strategic Advisory Group of Experts on immunisation, which this year assembled a working group to review the organisation’s 2009 recommendations on rabies.

“We’ll be looking at immunologic data, at efficacy data, information in grey literature that’s not been published and we’ll see if we might be able to have the same protection with a shorter vaccination schedule”, he says. The group will also assess new vaccines in the pipeline.

Innovative delivery methods are being tested, such as a drone-delivery programme in Rwanda, but the importance of making sure vaccine is available when and where it is needed is a key issue. It’s why WHO is planning on setting up a human vaccine stockpile like one that already exists for animal vaccines.

“There’s more to a vaccine stockpile than just crates of vaccine sitting in a storage facility”, says Stephen Martin, a medical officer at WHO, who along with Abela-Ridder is coordinating these efforts. “Countries do not forecast their need for rabies vaccine as they might do with, say, those in the EPI. If a country runs out of vaccine they’ll turn to the manufacturer but might have to wait up to 8 months because of production lead times. As a consequence, they may either go without vaccine altogether or turn to another supplier and buy from them. The vaccine they eventually source might not have WHO quality assurance and might come at a high unit cost.”

A stockpile would provide vaccine for this emergency market, but it would also help countries better forecast their future vaccine needs, says Martin. A stable demand of vaccines means that manufacturers can better plan their production and make sure vaccine is always available. “If we increase the demand maybe we can put pressure on the price to bring it down”, he adds. The existence of a stockpile might also be seen by GAVI as an improvement in rabies since the unsuccessful evaluation in 2008.

“A GAVI investment would be important”, says Abela-Ridder. “Financially, of course, it will help but even more significantly as a political indicator to really show that we are heading for elimination and to encourage governments to mobilise efforts”, she says.

2015 was a big year for rabies. 2018, when GAVI makes its final decision about which vaccines to include in its next 5-year round of vaccine funding, might be even bigger.

Dara Mohammadi

2013 [for the subsequent evaluation round] what was really interesting and bad was that nothing had changed”, says Judith Kallenberg, head of policy at GAVI.

The estimated global mortality had not budged and gaps in data still existed for unmet need in endemic countries. “Our board didn’t feel too confident stepping into that space quite yet, but they didn’t want to just leave it there”, says Kallenberg. “In a way it felt like we’d missed an opportunity 5 years earlier to try to create more momentum in this space. We wanted data so that next time around when we consider this investment we can do it on the basis of good evidence.”

The organisation allocated US$2.9 million for data-gathering studies to try to fill some of the gaps. Findings from the studies have to be back with GAVI by mid-2017 in time for its shortlisting of candidate vaccines in mid-2018. The final decisions on what vaccines it will fund for the next 5 years will be made in late-2018.

WHO is participating in much of this data gathering. It is working with the most affected countries to better understand which populations are most at risk and what their unmet need for vaccine is. With the US Centres for Disease Control and Prevention and France’s Pasteur Institute, it is reviewing the available evidence around disease burden and vaccine usage, transportation, delivery, and adherence.

2015 was a big year for rabies. 2018, when GAVI makes its final decision about which vaccines to include in its next 5-year round of vaccine funding, might be even bigger.