

## Basic epidemiological indicators to assess the burden of canine rabies

The following table describes the basic indicators chosen for the PARACON bulletin to be able to assess the burden of canine rabies in a country or region. Recording these indicators over time will also allow the monitoring of the scale and impact of rabies control interventions.

Table: Description of and rationale for using initial basic indicators in the PARACON bulletin

| Indicator                         | Disaggregation  | Description   | Rationale   | Reporting period |
|-----------------------------------|---|---|---|------------------|
| Number of bite cases in humans    | Age: < 5 years, 5-14 years; ≥ 15 years; unknown age<br><br>Sex: male, female; unknown<br><br>Wound category: I, II or III | Number of bite cases reported at a healthcare facility, disaggregated by age, sex and wound category  | To determine at-risk populations (children, adults) and the numbers of people who have been potentially exposed to a rabid animal; this indicator influences decisions regarding human vaccine procurement and targeted education. This indicator also excludes snake bites.  | Annual           |
| Doses of human vaccines purchased | None  | Number of human vaccines purchased for the country  | To determine the number of vaccines available in the country and whether this complies with PEP requirements  | Annual           |
| Cost per vaccine (US\$)           | Private sector<br><br>Public sector   | Cost per vaccine administered in a government institution (including all associated costs such as doctor's fees, consumables etc.)  | To determine the costs associated with procurement and administration of vaccine for budgetary purposes and to advocate the allocation of funds towards rabies control efforts  | Annual           |
| Doses of animal vaccine available | Purchased this year<br><br>Viable vaccine carried over from previous year<br><br>Vaccine administered                     | Number of animal vaccines administered, carried over and purchased by the government for mass vaccination campaigns   | To establish the number of vaccine doses available to the government; this indicator is also used for the eventual calculation of the estimated vaccination coverage for the country  | Annual           |
| Estimated total dog population    | Human population: urban, rural<br><br>Human:dog ratio: urban, rural<br><br>Dog population: urban, rural                   | A means to determine an estimated dog population for the country based on the HDR method (Knobel et al. 2008; Knobel et al. 2005; Cleaveland et al. 2014; Davlin and VonVille 2012) | In most countries where rabies is endemic there is no information about their current dog population; this lack of knowledge inhibits the assessment of the effectiveness of mass dog vaccination campaigns and also prevents countries from purchasing the correct number of doses of animal vaccine to achieve 70% coverage | Annual           |

|                                |   |   |   |           |
|--------------------------------|---|---|---|-----------|
| Dog vaccination coverage       |   | A means to determine the estimated vaccination coverage for the estimated dog population for the country.   | To enable decision-makers to determine whether sufficient vaccine has been purchased and administered and for countries to plan ahead for vaccine purchase for the next year. | Annual    |
| Animal rabies cases            | Species: dog, cat, livestock, wildlife, bat<br><br>Result: positive, negative<br><br>Total: per species, per result       | Determination of the number of suspect rabies cases submitted for laboratory confirmation. The results indicate the number of positive and negative cases per species, as well as the totals. | Results to provide an indication of the effectiveness of a surveillance programme by examining the positive:negative ratio.   | Biannual  |
| Human rabies cases             | Diagnosis: clinical, laboratory<br><br>Result: positive, negative   | The number of human rabies cases diagnosed clinically and by laboratory confirmation.   | To determine the burden of the disease and to determine the efficacy of disease intervention strategies.  | Bi-annual |
| Number of people receiving PEP | Sex: male; female; unknown<br><br>Age: < 5 years, 5-14 years; ≥ 15 years; unknown age<br><br>Wound category: I, II or III | Number of humans receiving wound care and at least one dose of rabies vaccine for PEP.  | To determine the number of people receiving at least one dose of PEP in a country   | Annual    |

HDR, Human to Dog Ratio; PEP, post-exposure prophylaxis

Table reproduced from: Scott TP, Coetzer A, Fahrion AS and Nel LH (2017) Addressing the disconnect between the estimated, reported and true rabies data: the development of a regional African rabies bulletin. *Front. Vet. Sci.* 4:18. doi:10.3389/fvets.2017.00018