



## **Rabies Post-Exposure Prophylaxis Availability Across South Dakota: A 2023 Survey of Healthcare Facilities**

### **Background**

Rabies is a serious health concern in South Dakota, affecting both humans and animals. Every year, there are rabies infections reported in animals, especially wild animals like bats and skunks. In 2023, 20 animals tested positive for rabies in South Dakota, a 122% increase from the 9 reported in 2022.<sup>1</sup> Rabies can spread between animals and from animals to humans. Rabies is 100% fatal. However, a human exposed to rabies can get the rabies post-exposure prophylaxis (PEP) treatments. The rabies PEP for an unvaccinated person includes rabies immune globulin (RIG) (dosage dependent on weight) and four doses of human rabies vaccine administered in the arm on days 0, 3, 7, and 14 after the first vaccination.<sup>2</sup>

Completing the rabies PEP right away can prevent the disease. The rabies vaccine helps the body fight off the virus, while rabies immune globulin (RIG) gives the body extra protection by providing ready-made antibodies. These treatments are very important and work well when given soon after exposure. While a human has not gotten rabies in South Dakota since 1970, a lot of resources are used to manage possible exposures as rabies is still present in animal populations in the state.

In 2023, the South Dakota Department of Health (SD-DOH) conducted a survey to determine the availability of RIG or the rabies vaccine at hospitals and clinics. The survey provided awareness to the SD-DOH rabies consultation team on availability of medications available following a human exposure to rabies.

### **Research Summary**

A total of 50 health care facilities were contacted, of which 44 (88%) responded to our phone questionnaire. Of the 44 responding facilities, 10 (23%) did not routinely carry either RIG or the rabies vaccine; of these 10, 4 (40%) did not have a pharmacy. The remaining 34 (77%) health care facilities carried one or both of the rabies vaccine and RIG. Among these 34, 5 (15%) facilities only stocked the rabies vaccine and referred patients to nearby facilities for RIG, zero (0%) facilities stocked only RIG and not the rabies vaccine, and 29 (85%) facilities carried both RIG and the rabies vaccine. The overall inventory across the state included 222 doses of rabies vaccine and an estimated 361 vials of RIG, ranging from 1ml to 10ml vials. Based on conservative estimates for each of the RIG vials, there would be an estimated 124,350 international units (IU) statewide. The price range for a dose of rabies vaccine was 200-\$370 for the cost to pharmacy. The price range for the RIG per vial was \$255-\$700 for the cost to pharmacy. In Table 1, the patient setting where rabies post-exposure prophylaxis was typically given at these 34 healthcare facilities and the additional 4 facilities that could order and administer rabies PEP within 24 hours. Most facilities, even if they did not have rabies vaccine or RIG in stock could order and receive them within 24 hours, which would still meet the urgency for administering rabies PEP.

#### *Analysis Notes:*

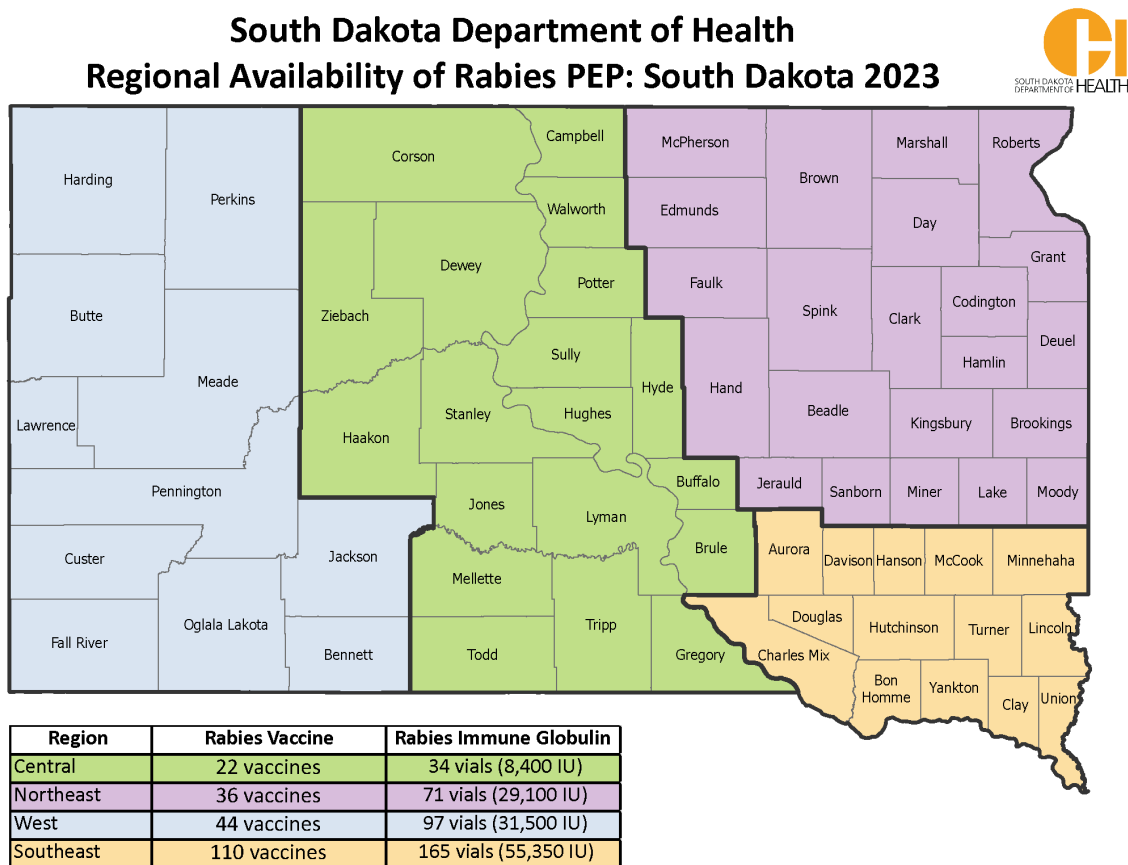
- 1. If a facility did not specify the ml of their RIG vials, the most conservative default estimate of 1ml per vial and 150 IU per ml was used.*
- 2. An assumption of our analysis was that 1 ml, 3 ml, and 5 ml contains 300IU per ml human rabies immunoglobulin; and 2 ml and 10 ml contains 150IU per ml human rabies.<sup>3</sup>*

**Table 1. Settings for Rabies PEP Administration**

Typical Patient Setting for Rabies Vaccine and Rabies Immune Globulin	Frequency (N=50)
Outpatient (OP)	14 (28%)
Emergency Room (ER)	4 (8%)
Both (ER + OP)	20 (40%)

### Regional Summary

The map below shows the regional summaries of rabies vaccine and RIG and their counties.



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**Central:** A total of 8 health care facilities were identified in the central region. Of these, 4 (50%) carried both RIG and the rabies vaccine, 1 (12.5%) carried only the rabies vaccine, 1 (12.5%) did not carry either, and 2 (25%) did not respond. The central region facilities held 22 rabies vaccines and 34 vials of RIG (estimated 8400 IU). The price range for the rabies vaccine was found to be \$300-\$370 for cost to

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pharmacy. The price range for the rabies immune globulin per vial was found to be \$473-\$695 for cost to pharmacy.

**West:** A total of 7 health care facilities were identified in the western region. Of these, 6 (86%) carried both RIG and the rabies vaccine, while 1 (14%) facility, which lacked a pharmacy, did not carry either. The western region facilities held 44 rabies vaccines and 97 vials of RIG (estimated 31,500 IU). The price range for the rabies vaccine was found to be \$200-\$320 for cost to pharmacy. The price range for the rabies immune globulin per vial was found to be \$473-\$646 for cost to pharmacy.

**Southeast:** A total of 17 health care facilities were identified in the southeast region. Of these, 8 (47%) carried both RIG and the rabies vaccine, 3 (17%) only carried the rabies vaccine, 6 (35%) carried neither (with 2 (12%) lacking a pharmacy). The southeastern region facilities held 110 rabies vaccines and 165 vials of RIG (estimated 55,350 IU). The price range for the rabies vaccine was found to be \$300-\$320 for cost to pharmacy. The price range for the rabies immune globulin per vial was \$240-\$700 for cost to pharmacy.

**Northeast:** A total of 18 health care facilities were identified in the northeast region. Of these, 7 (40%) carried both RIG and the rabies vaccine, 1 (5%) carried only the rabies vaccine, 6 (33%) didn't carry either, and 4 (22%) did not respond. The northeastern region facilities held 36 rabies vaccines and 71 vials of RIG (estimated 29,100 IU). The price range for the rabies vaccine was found to be \$300-\$351 for cost to pharmacy. The price range for the rabies immune globulin per vial was \$240-\$510 for cost to pharmacy.

### Estimated Service Capacity

Using the survey findings, we aimed to estimate the capacity to administer rabies post-exposure prophylaxis (PEP) to multiple unvaccinated individuals in the event of a mass rabies exposure in South Dakota. The state had a total of 222 doses of rabies vaccine and at least 124,350 IU of RIG on hand at any given time. The CDC recommends administering 20 IU/kg of RIG. For an average US male weighing 199.8 pounds or 90.8 kg (1816 IU), while for an average US female weighing 170.8 pounds or 77.6 kg (1552 IU).<sup>4</sup> With a mixed sex rabies exposure and based on the dosage guidelines for an unvaccinated person, the health care facilities in South Dakota could administer rabies post-exposure prophylaxis to at least 36 adults at a 1:1 ratio of males to females with the usual stock of rabies vaccine and rabies immune globulin on hand.

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## References:

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