Rabies Vaccination: Evidence Supporting Titers, Individualized Risk Assessment, and Dose Consideration

1. Long term immunity supports titer based decisions.

Rabies Challenge Fund Study (Schultz et al., 2020): Dogs remained protected 6–7+ years after vaccination. Previously vaccinated dogs survived rabies challenge even with very low titers, demonstrating durable immune memory.

Implication: Protective immunity persists beyond labeled booster intervals.
Conclusion: Titers can verify protection and avoid unnecessary revaccination.

Study link: https://pmc.ncbi.nlm.nih.gov/articles/PMC7088826/

2. Vaccine dose is effectively higher in small dogs.

Robb, 2017 – Dosages Are Linear by Weight: Small dogs develop higher antibody titers from the same 1 mL dose, and adverse event rates increase as body weight decreases. Immune response correlates with size.

Implication: Fixed dosing delivers a proportionally larger biologic dose to small dogs.
Conclusion: Weight based dosing is biologically rational and safety relevant.

Study link: https://www.protectthepets.com/uploads/1/0/8/0/108023613/dosages_are_linear_by_weight_2017_j_robb.pdf

3. Rabies vaccination carries measurable adverse event risk.

JAVMA Adverse Events Study (Moore et al.): Over 1.2 million dogs evaluated with 38.2 adverse events per 10,000 vaccinations. Risk highest in small breed dogs and increased with multiple vaccines per visit; rabies vaccination contributed to adverse event burden.

Implication: Vaccination risk varies by patient factors.
Conclusion: Uniform schedules do not reflect individual risk.

Study link: https://avmajournals.avma.org/view/journals/javma/235/6/javma.235.6.691.xml

Integrated Scientific Conclusions

Evidence across studies shows rabies immunity persists many years; titers reflect protection; small dogs receive proportionally larger doses; and adverse event risk is size and dose related and increases with repeated or stacked vaccination.

Policy / Clinical Relevance

These findings support titer testing when immunity exists, individualized rabies booster intervals, consideration of body weight in dosing, and medical discretion for higher risk dogs.

Overall Conclusion

Rabies vaccination remains essential for public health. However, current evidence demonstrates that routine repeat rabies vaccination at fixed intervals and fixed dose is not always the safest or most scientifically appropriate approach for every dog. An evidence-based model incorporating titers, patient size, and individual risk better aligns with immunology and safety data.