

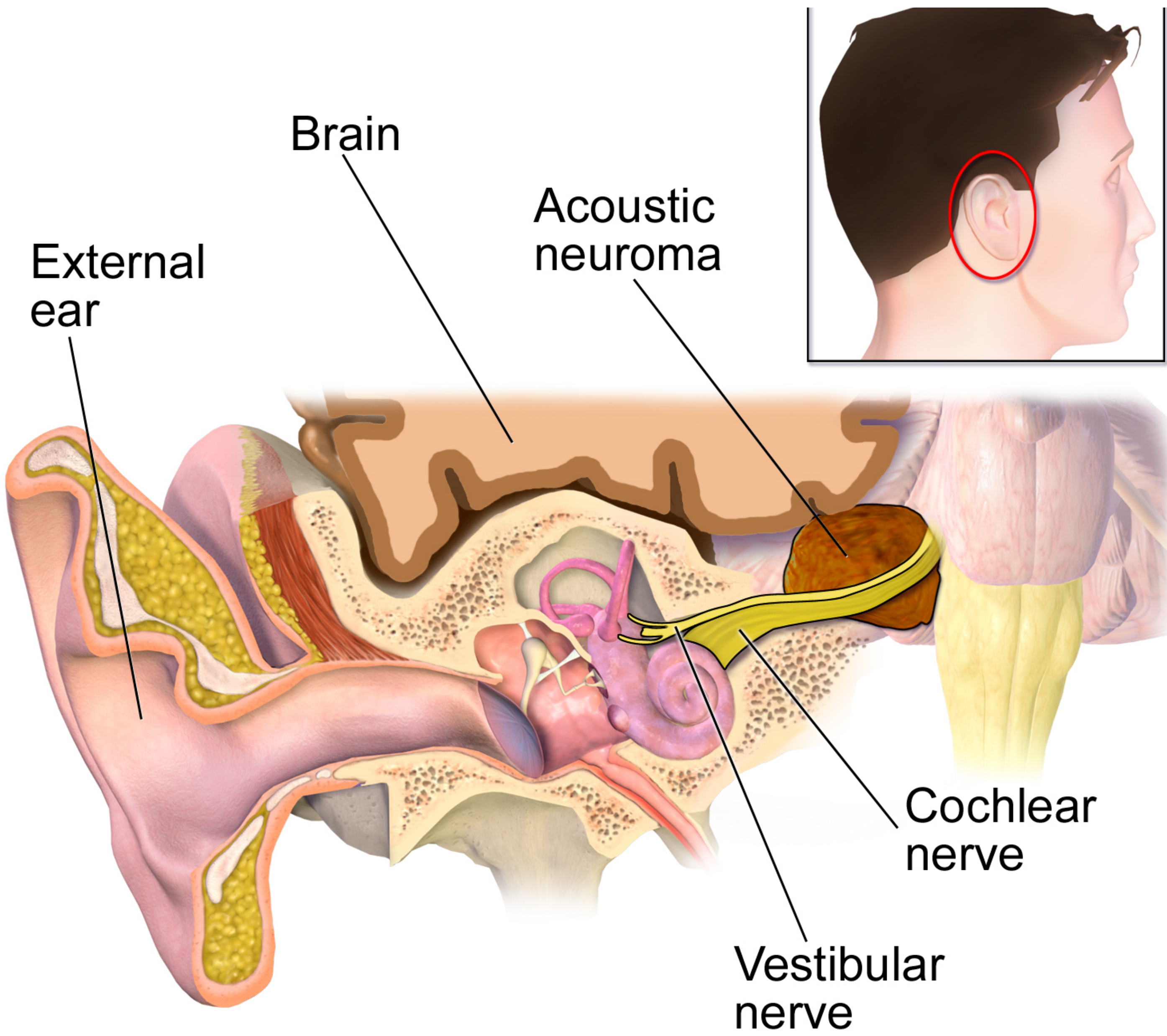
Timing of Intervention and Adverse Outcomes in Vestibular Schwannomas with Hearing Loss: A Retrospective Study

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INTRODUCTION

Vestibular schwannomas (VS) account for 80-90% of cerebellopontine angle tumors and are increasingly diagnosed at smaller sizes due to widespread MRI use. Management includes microsurgical resection, stereotactic radiosurgery (SRS), or observation, with treatment decisions balancing tumor control against risks to hearing and cranial nerve function.

While early intervention may prevent tumor progression, observation with serial imaging is often preferred to delay treatment until tumor growth or symptom progression occurs. The effect of delayed intervention on long-term outcomes can benefit from a large cohort, multi-institutional evaluation to better inform clinical practice.

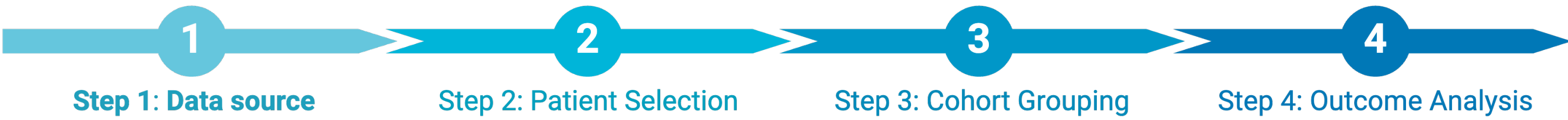


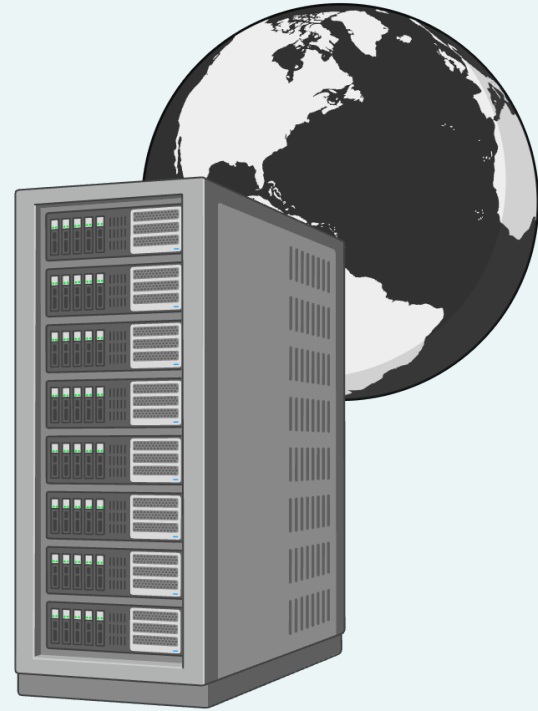
Anatomical depiction of a vestibular schwannoma (acoustic neuroma) originating from the eighth cranial nerve. The tumor affects the vestibulocochlear nerve, which plays a critical role in hearing and balance.¹

METHODS


- Retrospective cohort study utilizing the TriNetX Research Network. 548 patients included in the final analysis after propensity score matching.
- Inclusion Criteria:
 - Patients aged 18 or older diagnosed with benign vestibular schwannoma and conductive or sensorineural hearing loss.
- Exclusion Criteria:
 - Diagnoses of neurofibromatosis type 1 or 2.
 - Patients with otologic/audiological implants.

Study Design and Cohort Selection






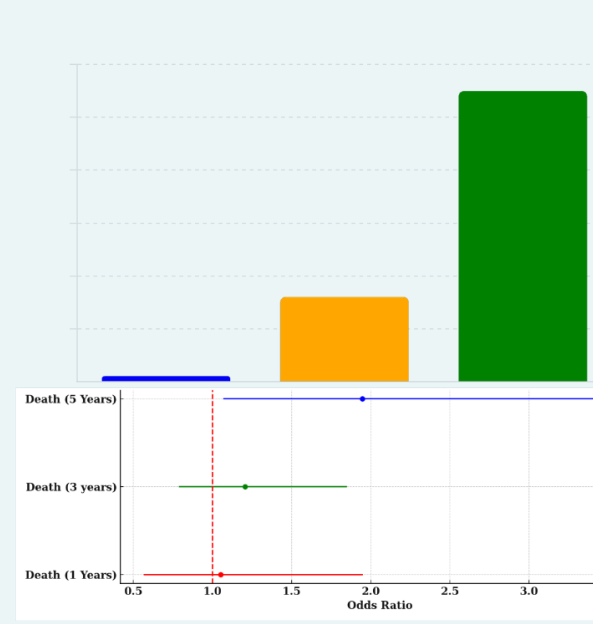
- TriNetX Research Network: 130 million patients.



- Inclusion Criteria:
 - Adults (≥18 years) diagnosed with benign vestibular schwannoma and hearing loss.
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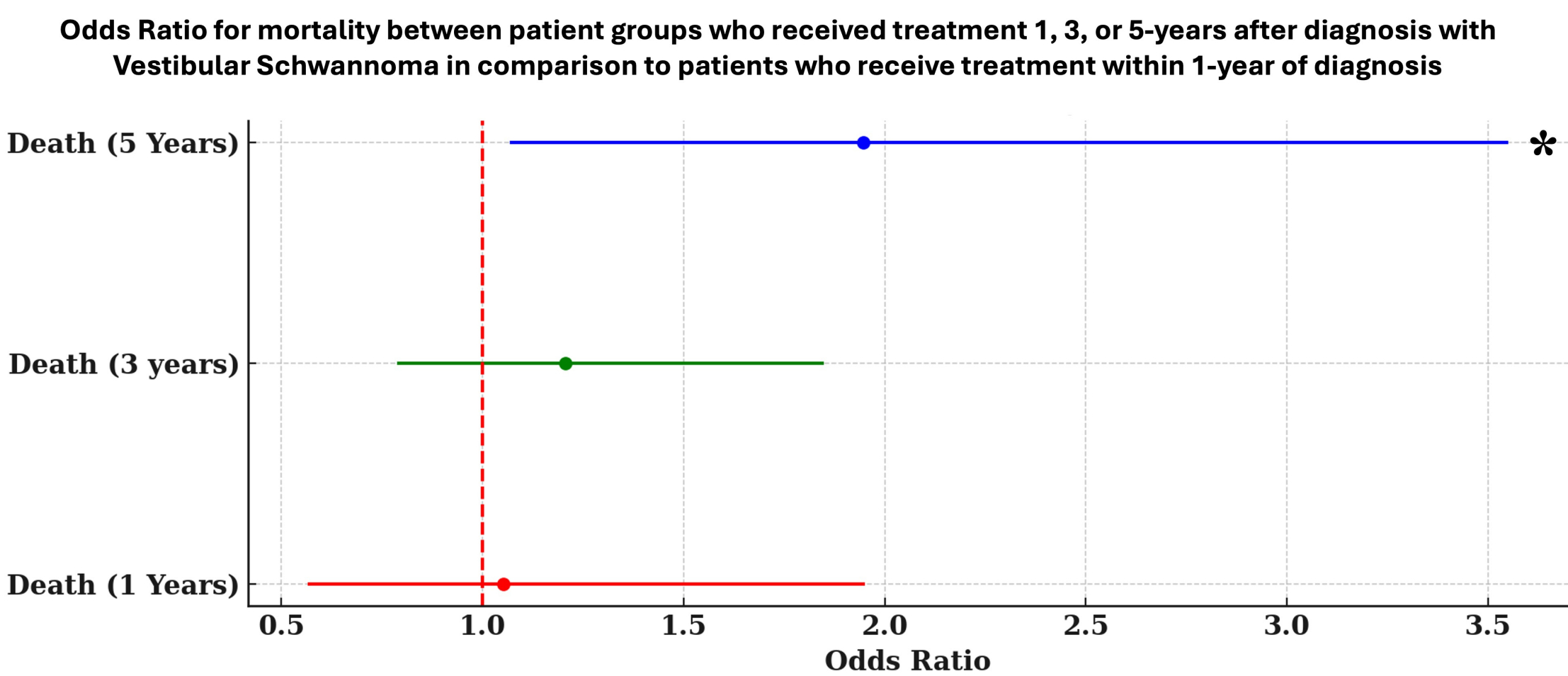
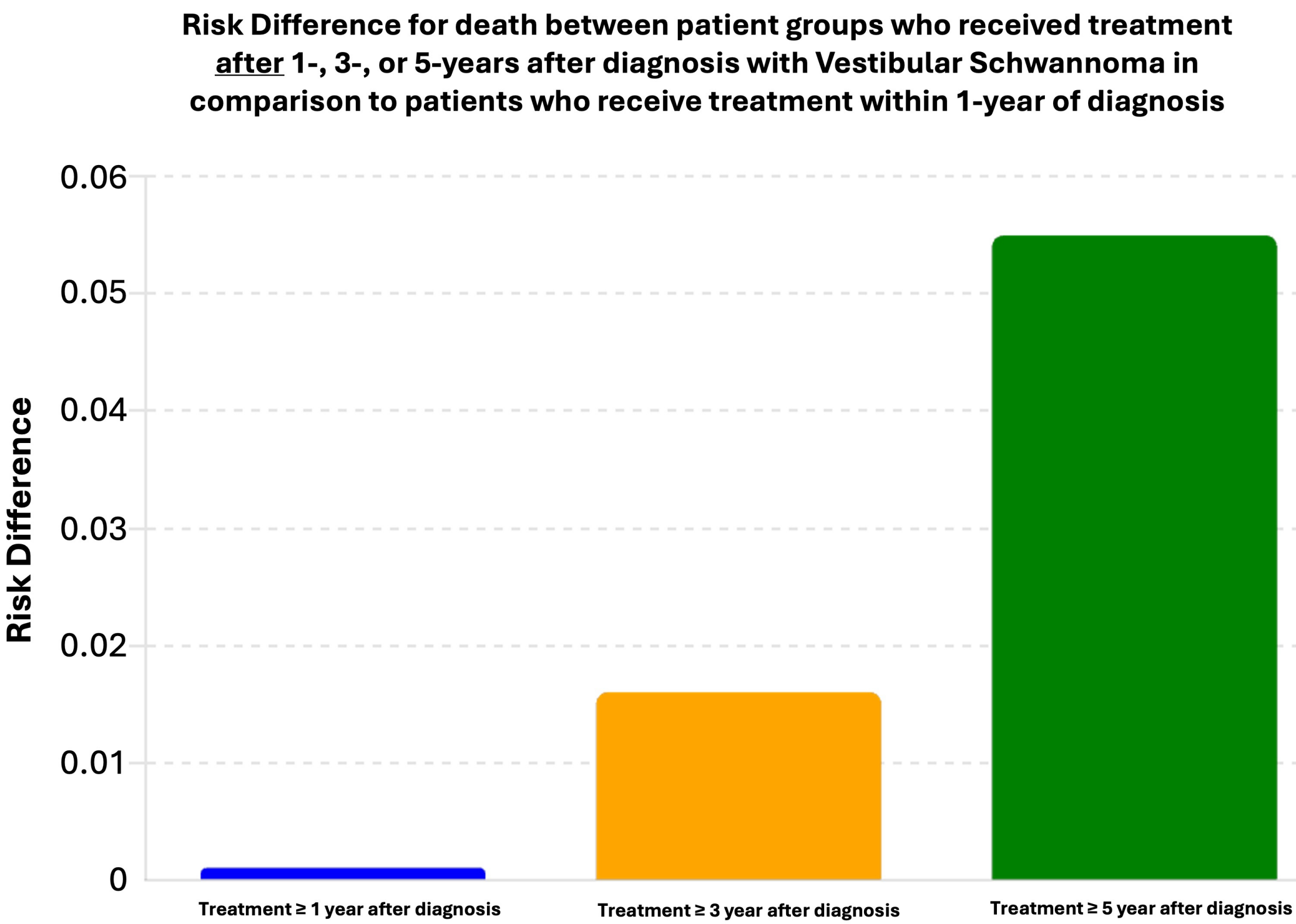
- Patients grouped based on time to intervention:
 - Within 1 year (N=3,314).
 - 1–3 years (N=851).
 - 3–5 years (N=502).
 - After 5 years (N=274).



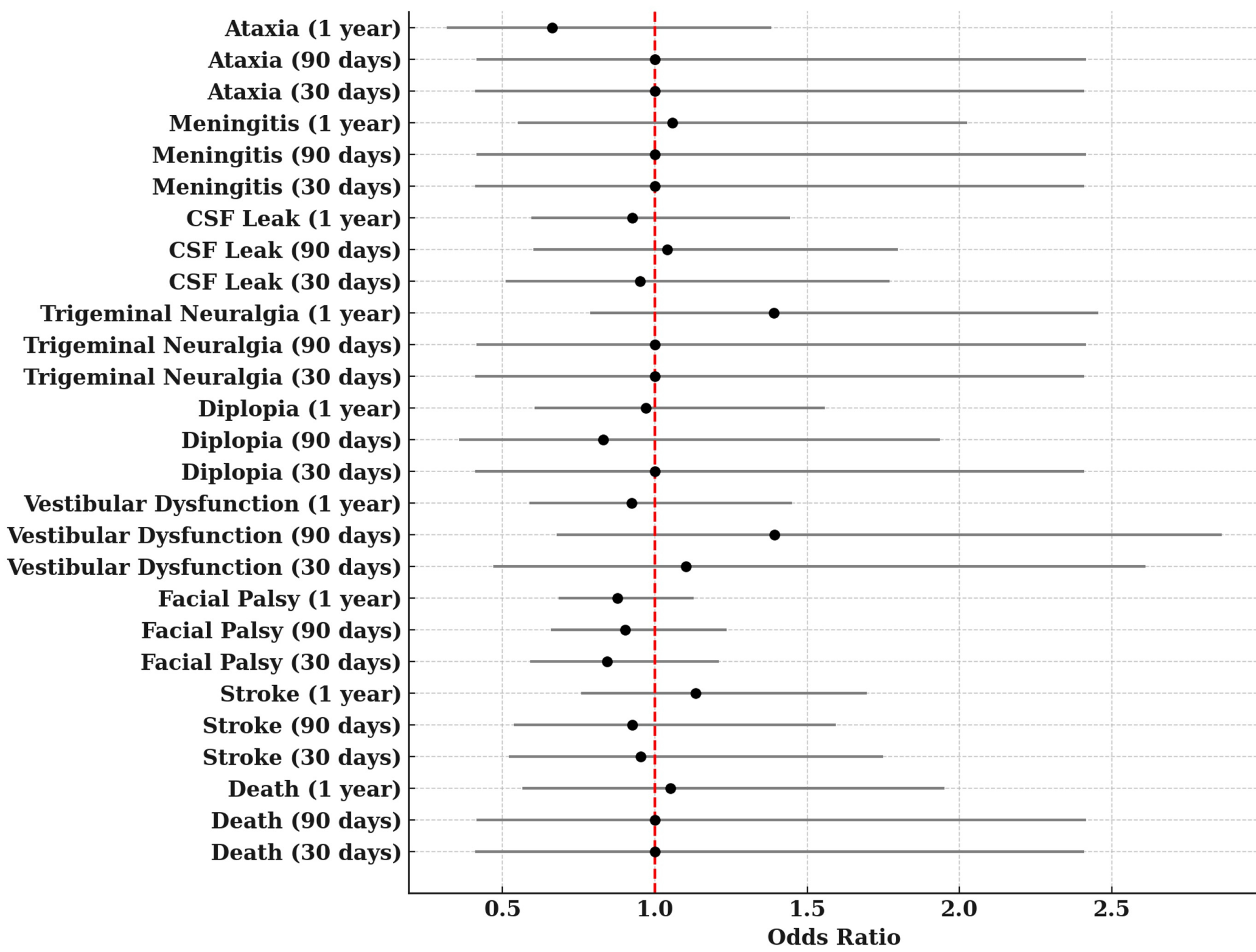
- Propensity Score Matching:
- Outcomes: Mortality and adverse events

RESULTS

- Mortality Risk (Top Figure):
 - Significantly increased after 5 years (OR: 1.947 [1.068, 3.551]).
 - No difference in mortality for treatment within 3 years.
- Comparison of Mortality Odds (Middle Figure):
 - Patients treated after 5 years had nearly double the mortality risk vs. early intervention.
- Adverse Events (Bottom Figure):
 - No significant differences at 30-day, 90-day, or 1-year follow-ups.



Adverse Events measured at 30-days, 90-days, and 1-year post intervention between intervention within 1 year and intervention after 1 year.



Conclusion

- Delaying treatment for vestibular schwannomas up to 3 years does not significantly impact mortality or adverse events.
- However, intervention beyond 5 years is associated with a significantly increased mortality risk.

Citations

1. BruceBlaus. When using this image in external sources it can be cited as: Blausen.com staff (2014). "Medical gallery of Blausen Medical 2014". WikiJournal of Medicine 1 (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436. CC BY 3.0, via Wikimedia Commons