

RADIOTHERAPY FOR CANINE LYMPHOMA – HALF BODY RADIOTHERAPY (HBRT)



Canine lymphoma is one of the most common cancers in dogs. While multi-agent chemotherapy protocols are effective at inducing remission, long-term survival remains limited for many patients. **Half Body Radiotherapy (HBRT)** is a promising adjunctive therapy showing potential to **prolong remission and survival**, particularly in dogs with **high-grade B-cell lymphoma**.



What is HBRT?

HBRT is a systemic radiotherapy technique in which each half of the body is irradiated with high-energy X-rays sequentially to target microscopic lymphoma cells that may persist after chemotherapy.

- + **Two treatments** are given, **two weeks apart**:
 - First: **cranial (front) half of the body (from the head to the belly button)**
 - Second: **caudal (back) half of the body (from the belly button to the tail tip)**
- + Each treatment delivers radiation to the entire body half at a **very low dose rate**.
- + Chemotherapy (typically **L-asparaginase**) is administered during the **interval week** to reduce the risk of tumour cell movement between body halves.

Treatments are performed under general anaesthesia but are relatively short (approximately 30 to 40 minutes), and most dogs return home the same day.

Candidate Selection

HBRT is typically considered for dogs who:

- + Have **high-grade lymphoma**, especially **B-cell lymphoma**.
- + Are in **complete clinical remission (CR)** following chemotherapy (for example, resolution of enlarged lymph nodes), meaning their cancer can no longer be detected clinically.
- + Are otherwise well with no significant concurrent health concerns.
- + Do not have significant kidney disease, liver disease, or other medical conditions that would make treatment unsafe.

T-cell Lymphoma

Dogs with **T-cell lymphoma** can also be treated with HBRT. However, outcomes are typically poorer due to the more aggressive nature of T-cell disease and its lower responsiveness to radiotherapy. We are happy to consider HBRT for dogs with T-cell lymphoma provided owners understand that less information is available regarding outcomes for this specific disease subtype.

Timing of HBRT

Some oncologists recommend administering HBRT **after the first or second chemotherapy cycle** (one cycle being vincristine-cyclophosphamide-vincristine-doxorubicin), aiming to treat while the disease burden is lowest.

However, **the most important factor is that dogs are in complete remission at the time of HBRT**. HBRT remains a valid option later in the chemotherapy protocol if remission is confidently confirmed.

Flexibility in timing may be necessary depending on clinician preference, patient status, and logistical considerations. We feel that the timing relative to chemotherapy is probably less crucial than ensuring that patients are in a confirmed complete remission when treatment is delivered.

What Does the Research Say?

Historically, studies have produced mixed results. Some have reported very encouraging improvements in outcome compared with chemotherapy alone, whilst others have been less conclusive. Interpretation can be difficult because different HBRT protocols have been used in varied populations of dogs with lymphoma.

Recent studies, although relatively small, have shown encouraging results for dogs with high-grade lymphoma, particularly when HBRT is administered whilst dogs are in remission.

Best et al. (2023)

- + **2-year disease-free rate**: 56% (HBRT) vs 0% (chemotherapy alone)
- + **2-year survival rate**: 78% (HBRT) vs 11% (chemotherapy alone)
- + Median survival was not reached in the HBRT group.
- + Treatment was generally well tolerated.

Lai et al. (2025)

- + **Median progression-free interval**: 1143 days (HBRT) vs 316 days (chemotherapy alone)
- + **Median survival time**: 1924 days (HBRT) vs 566 days (chemotherapy alone)
- + Dogs with **B-cell lymphoma** had significantly better outcomes than those with **T-cell lymphoma** (2127 vs 488 days).

In the largest study published to date (75 dogs, Colosi et al; 2026) evaluating HBRT alongside chemotherapy for canine lymphoma, the **median survival time was approximately 25 months**, considerably longer than is typically reported for dogs receiving chemotherapy alone.

Potential Side Effects

Short-term

Most dogs tolerate HBRT very well and experience only mild, temporary signs. Side effects are generally more common following treatment of the caudal (back) half of the body because portions of the gastrointestinal tract are included within the treatment field.

Possible short-term side effects include:

- + **Bone marrow suppression** resulting in temporary reductions in white blood cell, red blood cell, or platelet counts. These changes are usually mild and detected only on routine blood tests.
- + **Gastrointestinal upset**, including reduced appetite, nausea, diarrhoea and, less commonly, vomiting.
- + **Lethargy or reduced appetite** for a few days following treatment.
- + **Treatment delays** may occasionally be required to allow bone marrow recovery before further chemotherapy or radiotherapy can be given.

In the largest published study, treatment was generally very well tolerated. The most commonly reported side effects were mild and transient, particularly following treatment of the caudal half of the body. Most dogs experienced either no side effects or only mild signs that resolved with supportive care. Only one dog required hospitalisation because of treatment-related side effects.

More significant side effects can occur in a minority of patients and may include:

- + Severe diarrhoea requiring intensive supportive care.
- + Marked reductions in white blood cell counts or platelet counts.
- + **Febrile neutropenia** (fever associated with a low white blood cell count), which can be life-threatening and may require hospitalisation, intravenous fluids, antibiotics and close monitoring.

Overall, serious treatment-related complications appear to be uncommon.

Long-term

Long-term side effects are generally uncommon but may include:

- + **Hair loss (alopecia)** and **white hair regrowth (leukotrichia)** in irradiated areas.
- + **Cataract formation**, which is rare and generally not vision-threatening.
- + **Reduced tolerance to rescue chemotherapy** if relapse occurs shortly after HBRT.

Overall, HBRT is considered a **safe and generally well-tolerated treatment**, with serious side effects occurring infrequently.

Very rare patients have experienced severe prolonged diarrhoea for approximately three months, requiring hospitalisation for fluids, with significant weight loss. This is not commonly reported in literature and appears to be an isolated cases. There are some isolated reports of dogs having chronic diarrhoea for several weeks post-RT which can be frustrating to deal with.

Additional Considerations

- + Small patches of hair will need to be clipped at several sites along the body.
- + Small pen marks are placed on the skin to assist with positioning during the second treatment.
- + Blood tests (complete blood count and biochemistry) are required before each treatment.
- + Treatment scheduling must take chemotherapy timing and blood cell counts into account.
- + Dogs **not in complete remission** at the time of HBRT are unlikely to benefit from treatment.

Summary

HBRT is a novel and generally well-tolerated treatment that may improve long-term outcomes for dogs with high-grade lymphoma, particularly those with a **B-cell immunophenotype** that have achieved a **complete remission** following chemotherapy.

Recent studies have reported encouraging results, with some dogs experiencing survival times substantially longer than those typically achieved with chemotherapy alone. However, it is important to recognise that published studies remain relatively small compared to human studies and not all research has demonstrated dramatic benefits. Most recent data however is very supportive.

For carefully selected patients, HBRT represents a promising additional treatment option that may help extend both remission duration and overall survival.

