



## Feline Lymphoma Chemotherapy and Chemotherapy Protocols

If you have reached this page, your cat probably has a definite diagnosis of feline lymphoma from your veterinarian. The information below is not intended to substitute for your veterinarian's therapy, advice, or diagnosis. This information was gathered by feline lymphoma caregivers and is a result of our experience—we are NOT veterinarians.

**Lymphosarcoma** (lymphoma) is a malignant cancer that involves the lymphoid system. In a healthy animal, the lymphoid system is an important part of the body's immune system defense against infectious agents such as viruses and bacteria. Lymphoid tissue normally is found in many different parts of the body including lymph nodes, liver, spleen, gastrointestinal tract and skin. Lymphosarcoma is classified according to the location in the body in which the cancer begins. From [www.petplace.com/articles/artShow.asp?artID=694](http://www.petplace.com/articles/artShow.asp?artID=694)

Medical and veterinary science makes progress every day, so what you see here that we have experienced may have changed by the time you and your vet decide to use chemotherapy for your cat. Rely on your veterinarian's advice and do your own homework—search the web, join our Yahoo Group. (See bottom left of page to join.)

For information from the experts on chemotherapy and how it works, click here for Oncolink from the University of Pennsylvania Abramson Cancer Center:  
[www.oncolink.org/types/article.cfm?c=22&s=69&ss=548&id=5997](http://www.oncolink.org/types/article.cfm?c=22&s=69&ss=548&id=5997)

See also Feline Cancer Resources at [www.zzcat.com/resources/overview.htm](http://www.zzcat.com/resources/overview.htm)

### Protocols and Chemos

#### Protocols:

#### **Feline Lymphosarcoma “COP” protocol—Weekly Sequential Protocol.**

This was provided in April 2001 by the University of Pennsylvania Veterinary Hospital to one caregiver for Woodstock <http://felinelymphomacaregivers.org/woodstock.html>

**Week 1:** L-asparaginase (commonly called elspar) 400 units/kg/SQ (subcutaneous injection)

**Week 2:** Vincristine 0.5 mg/m<sup>2</sup> IV (IV injection)

**Week 3:** Cyclophosphamide 25 mg PO for 2 days (standard cat) (commonly called cytoxan)

**Week 4:** Vincristine 0.5 mg/m<sup>2</sup> IV

**Week 5:** Methotrexate 2.5 mg orally

### **Repeat Cycle (Weeks 1-5)**

**Prednisone** is given initially at 5 mg PO q 24 hr-BID. The prednisone can be tapered over time but cats with lymphosarcoma are generally kept on prednisone for prolonged periods of time. Continue this protocol with weekly treatments for 4-6 months. If the cat is in a good clinical remission, switch to every other week treatments. At one year, treatment intervals can be extended to every 3 weeks. Treatment is discontinued at 1 ½ - 2 years. If remission is not achieved, try other protocols such as L-COP or doxorubicin.

## **Feline Lymphosarcoma “L-COP” Protocol**

As of April 2001, University of Pennsylvania Veterinary Hospital

**Week 1:** L-asparaginase (elspar) 400 units/kg SQ (subcutaneous injection)

Vincristine .5 mg/m<sup>2</sup> IV (IV injection)

Prednisone 5 mg PO Q 24 hrs-BID indefinitely

**Week 2, 3 and 4:** Vincristine .5 mg/m<sup>2</sup> IV

Cytoxan 25 mg PO for 2 days (standard cat)

**Repeat cycle weeks 1-4.**

**Repeat weekly treatments for 4-6 months.**

Initially, WBC counts and differentials should be performed weekly.

This protocol is often used in cases of cranial mediastinal lymphoma and can be used as a rescue protocol when the weekly sequential protocol is no longer effective.

Cats with renal lymphosarcoma are more likely to relapse in the CNS. Cytosine arabinoside (100-150 mg/m<sup>2</sup>/day IV or SQ form 4 days; if given SQ dose should be broken up into 3-4 injections/day; alternative doses: 30 mg/kg or 600 mg/m<sup>2</sup> divided over 2 days) should be added to standard protocols for these cats due to the ability of cytosine arabinoside to penetrate the blood/brain barrier. Cytosine arabinoside should be given every 4-8 weeks.

## **University of Wisconsin-Madison School of Veterinary Medicine: Feline Lymphoma Protocol**

See [http://maxshouse.com/Oncology/feline\\_lymphoma\\_and\\_leukemias.htm](http://maxshouse.com/Oncology/feline_lymphoma_and_leukemias.htm) for full information.

**Week 1:** Vincristine 0.7 mg/m<sup>2</sup> IV once  
Asparaginase 400  
Prednisone 2 mg/kg, PO, SID daily

**Week 2:** Cyclophosphamide 250 mg/m<sup>2</sup> IV once  
Prednisone 2 mg/kg, PO, SID daily

**Week 3:** Vincristine 0.7 mg/m<sup>2</sup> IV once  
Prednisone 1 mg/kg, PO, SID daily

**Week 4:** Doxorubicin 20 mg/m<sup>2</sup> IV once  
Prednisone 1 mg/kg, PO, SID daily

**Week 6:** Vincristine 0.7 mg/m<sup>2</sup> IV once  
Prednisone 1 mg/kg, PO, SID daily

**Week 7:** Cyclophosphamide 250 mg/m<sup>2</sup> IV once

### **Renal lymphoma substitute cytosine arabinoside at 600 mg/m<sup>2</sup> div SC BID over 2 days**

**Week 8:** Vincristine 0.7 mg/m<sup>2</sup> IV once  
**Week 9:** Doxorubicin 20 mg/m<sup>2</sup> IV once  
**Week 11:** Vincristine 0.7 mg/m<sup>2</sup> IV once  
**Week 13:** Chlorambucil 1.4 mg/kg PO once or  
Cyclophosphamide 250 mg/m<sup>2</sup> IV (if not in CR)

### **Renal lymphoma substitute cytosine arabinoside at 600 mg/m<sup>2</sup> div SC BID over 2 days**

**Week 15:** Chlorambucil 1.4 mg/kg PO once or  
Cyclophosphamide 250 mg/m<sup>2</sup> IV (if not in CR)  
**Week 17:** Methotrexate 0.8 mg/kg IV once

- Week 19:** Vincristine 0.7 mg/m<sup>2</sup> IV once  
**Week 21:** Chlorambucil 1.4 mg/kg PO once or  
Cyclophosphamide 250 mg/m<sup>2</sup> IV (if not in CR)  
**Week 23:** Vincristine 0.7 mg/m<sup>2</sup> IV once  
**Week 25:** Doxorubicin 20 mg/m<sup>2</sup> IV once

### **VCAA Chemotherapy Protocol:**

- Week 1 and 6:** L-asparaginase (Elspar)  
**Week 2 and 7:** Vincristine  
**Week 3 and 8:** Cyclophosphamide (Cytoxan) - Daily for 3 or 4 days  
**Week 4 and 9:** Doxorubicin (Adriamycin)  
**Rest week 5, then repeat cycle again**

### **MEDIASTINAL LYMPHOMA PROTOCOL**

**Dr. Rogers Fred**

INDUCTION (Use 5mg pred SID)

- Wk 1:** Elspar 400IU/kg, Vincristine 0.1mg IV (Don't exceed)  
**Wk 2:** Vincristine 0.1mg IV, Cytoxan 150mg/m<sup>2</sup> I V  
**Wk 3:** CBC First, Vincristine 0.1mg IV, Cytoxan 150mg/m<sup>2</sup> I V  
**Wk 4:** CBC First, Adriamycin 1mg/kg IV slowly  
**Wk 5:** C B C  
**Wk 6:** Repeat Wk 1  
**Wk 7:** Repeat Wk 2  
**Wk 8:** Repeat Wk 3  
**Wk 9:** Repeat Wk 4  
**Wk 10:** CBC. If remission go to maintenance

### **MAINTENANCE (Use 5mg pred EOD)**

- Wk 1:** Elspar & Vincristine  
**Wk 3:** Vincristine & Cytoxan  
**Wk 5:** Vincristine & Cytoxan  
**Wk 7:** Vincristine & Cytoxan  
**Wk 9:** Methotrexate .8mg/kg (Andi took 1/4 to 1/2 of a 2.5mg pill)  
**Repeat cycle**

**A “modified Wisconsin” protocol has been given to some of our cats. It consists of elspar (Lasparaginase), vincristine, cytoxan, adriamycin (doxorubicin), methotrexate, and prednisone.**

## **Chemo Drugs:**

### **Chlorambucil/Leukeran**

”Chlorambucil (klor-AM-byoo-sill) belongs to the group of medicines called alkylating agents. It is used to treat cancer of the blood and lymph system. It may also be used to treat other kinds of

cancer, as determined by your doctor.

Chlorambucil interferes with the growth of cancer cells, which are eventually destroyed. Since the growth of normal body cells may also be affected by chlorambucil, other effects will also occur. Some of these may be serious and must be reported to your doctor. Other effects may not be serious but may cause concern. Some effects may not occur for months or years after the medicine is used.” From NIH Medline Plus

### **Cyclophosphamide/Cytoxan**

“Cyclophosphamide (syeh-kloeh-FOSS-fah-mide ) belongs to the group of medicines called alkylating agents. It is used to treat cancer of the ovaries, breast, blood and lymph system, nerves (found primarily in children), retinoblastoma (a cancer of the eye found primarily in children), multiple myeloma (cancer in the bone marrow), and mycosis fungoides (tumors on the skin)...”

“...Cyclophosphamide interferes with the growth of cancer cells, which are eventually destroyed. Since the growth of normal body cells may also be affected by cyclophosphamide, other effects will also occur. Some of these may be serious and must be reported to your doctor. Other effects, like hair loss, may not be serious but may cause concern. Some effects may not occur for months or years after the medicine is used.” From NIH Medline Plus.

From caregiver experience, cats may be prone to urinary tract infections when taking cytoxan. It is VERY important to monitor your cat carefully for at least 10 days after receiving this chemo—if you notice any hesitancy in urination, rush to the vet. Please consider giving your cat extra liquids to help ensure that urinary tract infections do not occur.

### **Cytosine arabinoside/Cytarabine**

“Cytarabine (syeh-TARE-ah-been) belongs to the group of medicines called antimetabolites. It is used to treat some kinds of cancers of the blood. It may also be used to treat other kinds of cancer, as determined by your doctor.

Cytarabine interferes with the growth of cancer cells, which are eventually destroyed. Since the growth of normal body cells may also be affected by cytarabine, other effects will also occur. Some of these may be serious and must be reported to your doctor. Other effects, like hair loss, may not be serious but may cause concern. Some effects may not occur for months or years after the medicine is used.” From NIH Medline Plus

### **Doxorubicin/Adriamycin**

“Liposomal doxorubicin (LIP-oh-som-ah dox-oh-ROO-bee-sin) belongs to the general group of medicines known as antineoplastics. It is used to treat some kinds of cancer.

Liposomal doxorubicin seems to interfere with the growth of cancer cells, which are eventually destroyed. Since the growth of normal body cells may also be affected by liposomal doxorubicin, other effects will also occur. Some of these may be serious and must be reported to your doctor. Other effects, like hair loss, may not be serious but may cause concern. Some effects may not occur for months or years after the medicine is used.” From NIH Medline Plus. Also called Adriamycin,

### **L-asparaginase (elspar)**

“Asparaginase resembles normal cell nutrients needed by cancer cells to grow. The cancer cells take up asparaginase, which then interferes with their growth. The length of treatment depends on the types of drugs you are taking, how well your body responds to them, and the type of cancer you have.” From NIH Medline Plus.

**This has been used as a rescue drug, but it may not be used as much anymore since some have found that it may not have long-term benefits, although there are some case studies in our files that would tell a different story.**

## **Lomustine / CCNU**

“Lomustine can cause a decrease in the number of blood cells in your bone marrow. Your doctor will order tests before, during, and after your treatment to see if your blood cells are affected by this drug... Lomustine is in a class of drugs known as alkylating agents; it slows or stops the growth of cancer cells in your body. The length of treatment depends on the types of drugs you are taking, how well your body responds to them, and the type of cancer you have.” From NIH, Medline Plus

## **Methotrexate**

“Methotrexate (meth-o-TREX-ate) belongs to the group of medicines known as antimetabolites. It is used to treat cancer of the breast, head and neck, lung, blood, bone, and lymph, and tumors in the uterus...”

“...Methotrexate blocks an enzyme needed by the cell to live. This interferes with the growth of cancer cells, which are eventually destroyed. Since the growth of normal body cells may also be affected by methotrexate, other effects will also occur. Some of these may be serious and must be reported to your doctor. Other effects, like hair loss, may not be serious but may cause concern. Some effects may not occur for months or years after the medicine is used.” From NIH, Medline Plus

## **Systemic corticosteroids/anti-inflammatories/anti-emetic/immunosuppressants**

### **Prednisolone**

\*“A synthetic corticosteroid used in the treatment of blood cell cancers (leukemias) and lymph system cancers (lymphomas)”

### **Prednisone**

\*“ Belongs to the family of drugs called steroids and is used to treat several types of cancer and other disorders. Prednisone also inhibits the body's immune response.”

\*Definitions from [www.thehealthencyclopedia.com/](http://www.thehealthencyclopedia.com/)

## **Vincristine**

“Vincristine when administered into a vein may leak into surrounding tissue.” Your veterinarian will be very careful administering this drug. “Vincristine is in a class of drugs known as vinca alkaloids. It slows or stops the growth of cancer cells in your body. The length of treatment depends on the types of drugs you are taking, how well your body responds to them, and the type of cancer you have.” From NIH Medline Plus

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