Non-Hodgkin Lymphoma (NHL):

Diagnosis, Treatment and Side Effect Management

LEUKEMIA & LYMPHOMA SOCIETY®

1

LEARNING OBJECTIVES

- Describe the various types and subtypes of NHL
- Identify tests used to diagnose disease and monitor treatment of NHL
- Explain the overarching goals of treatment for the types of NHL
- Explain approved and emerging treatment options for NHL, including CAR T-cell therapy and the role of clinical trials
- Describe strategies to manage treatment side effects, as well as potential long-term and late effects of treatments for NHL
- Describe the healthcare professional's role in managing patients with NHL

LEUKEMIA & LYMPHOMA SOCIETY®

2

FACULTY

Matt McKinney, MD
Assistant Professor of Medicine
Duke University School of Medicine
Durham, NC

Meredith T. Moorman, PharmD, BCOP, CPP
Clinical Pharmacist – Adult Outpatient
Leukemia & Lymphoma Clinic
Duke Blood Cancer Center
Durham, NC

LEUKEMIA & LYMPHOMA SOCIETY®

3

Overview and Update on Non-Hodgkin Lymphoma

Matt McKinney, MD
Assistant Professor of Medicine
Duke University School of Medicine, Durham, NC
matthew.mckinney@duke.edu

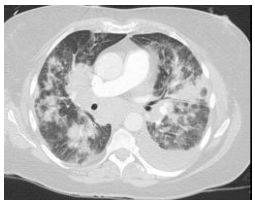
LEUKEMIA & LYMPHOMA SOCIETY®

4

Case

- 59-year-old woman with no significant medical history
  Presents to ED with abdominal pain, fatigue, dyspnea and cough.
- Respiratory status worsens requiring intubation, mechanical ventilation.
- Liver biopsy shows diffuse large B cell lymphoma
  LDH = 545 U/L (ULN 200 U/L).

- What is the stage of this patient's cancer?
- What is the prognosis of this patient?
- What treatment would you recommend?



CT chest prior to treatment

LEUKEMIA & LYMPHOMA SOCIETY®

5

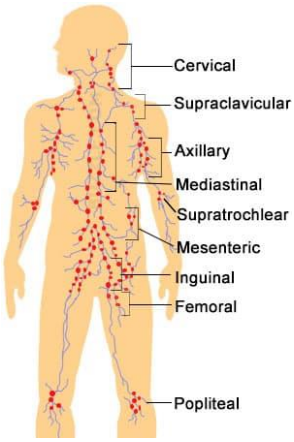
What is Lymphoma?

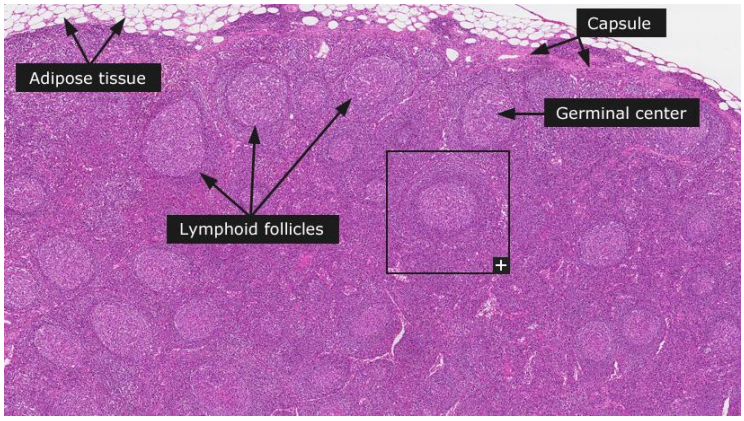
- Lymphomas are cancers that form from part of the blood/lymph system
- There are now more than 50 lymphoma diagnoses recognized by the World Health Organization
- Understanding the immune system is helpful to understanding how lymphoma forms in the body

LEUKEMIA & LYMPHOMA SOCIETY®

6

Lymph Node Architecture



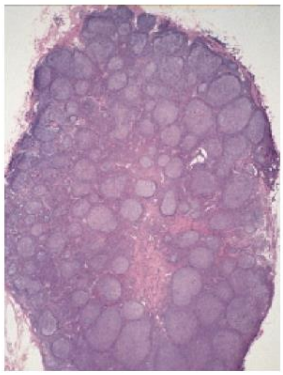


LEUKEMIA & LYMPHOMA SOCIETY®

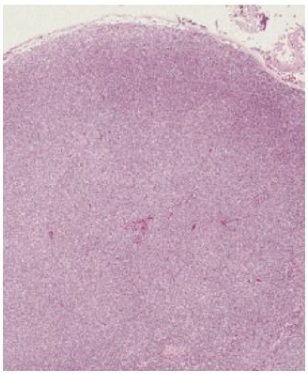
7

Differences in Patterns of Lymphoma Node Involvement

Nodular Lymphoma



Diffuse Lymphoma

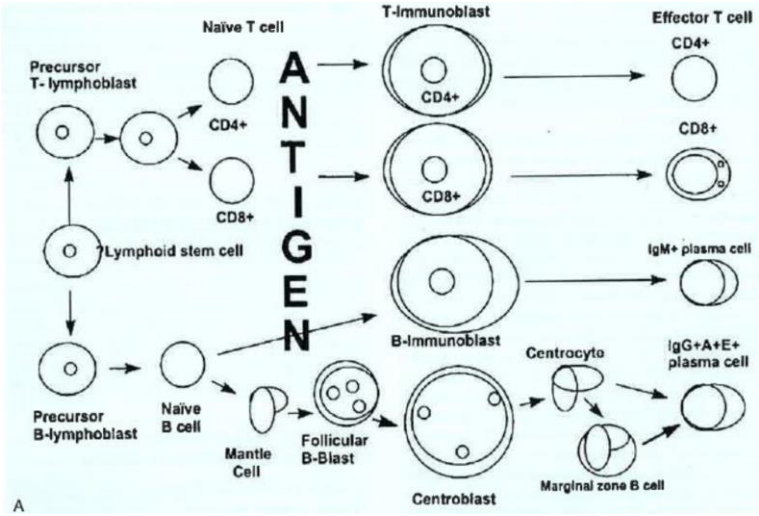


LEUKEMIA & LYMPHOMA SOCIETY®

http://www.pathology.vcu.edu/education/dental2/Dental_wbc/img025.jpg

8

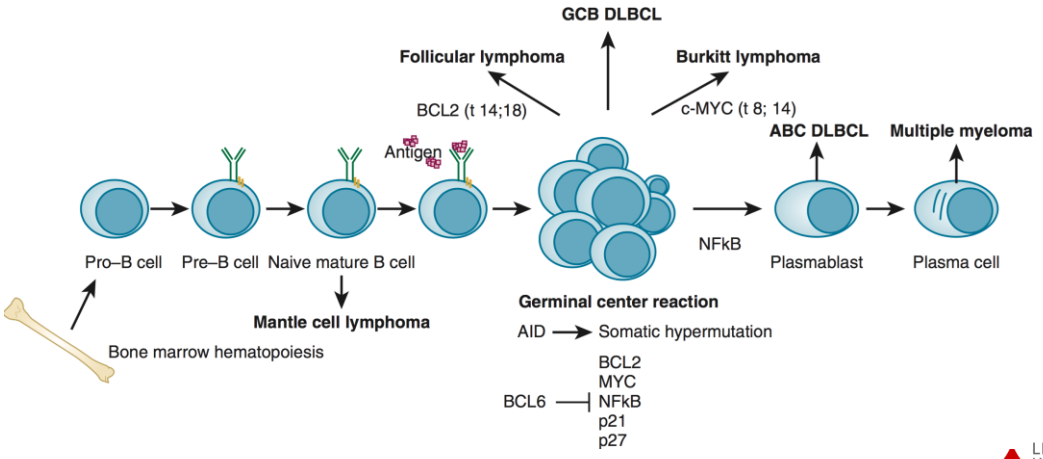
Development of Lymphoid Cells



LEUKEMIA & LYMPHOMA SOCIETY®

9

Lymphomas Reflect Stages of Normal Lymph Cells (B-cell Lymphomas)



LEUKEMIA & LYMPHOMA SOCIETY®

10

Lymphoma Classification Schemes

The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Lymphoid Neoplasms

WHO-HAEM5. *Leukemia* 2022;36(8):1720–1748.

SPECIAL REPORT | SEPTEMBER 15, 2022

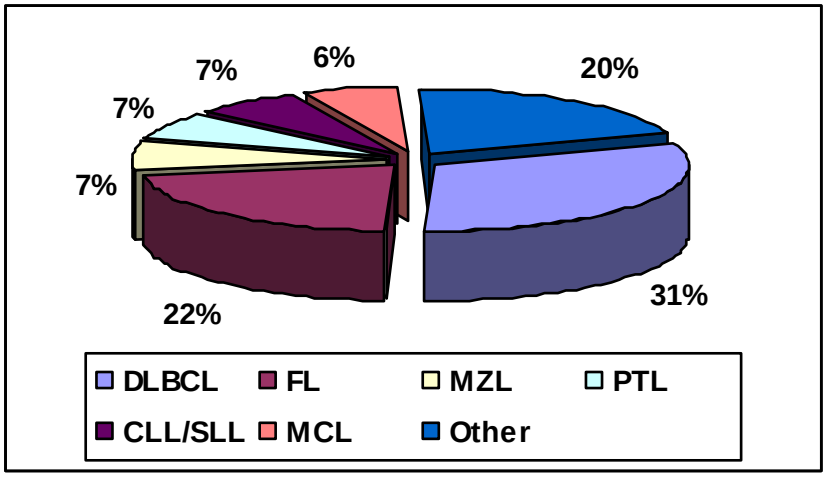
The International Consensus Classification of Mature Lymphoid Neoplasms: a report from the Clinical Advisory Committee

ICC. *Blood.* 2022;140(11):1229-1253.

LEUKEMIA & LYMPHOMA SOCIETY®

11

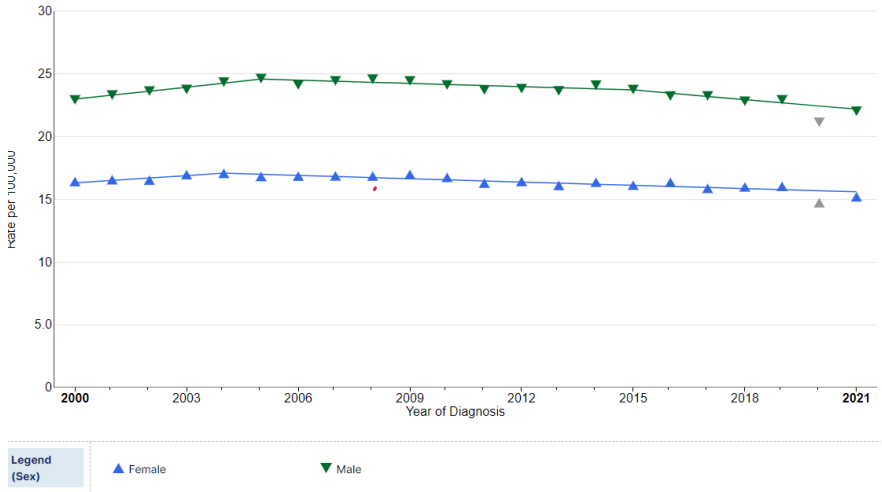
Distribution of Lymphoma Subtypes



LEUKEMIA & LYMPHOMA SOCIETY®

12

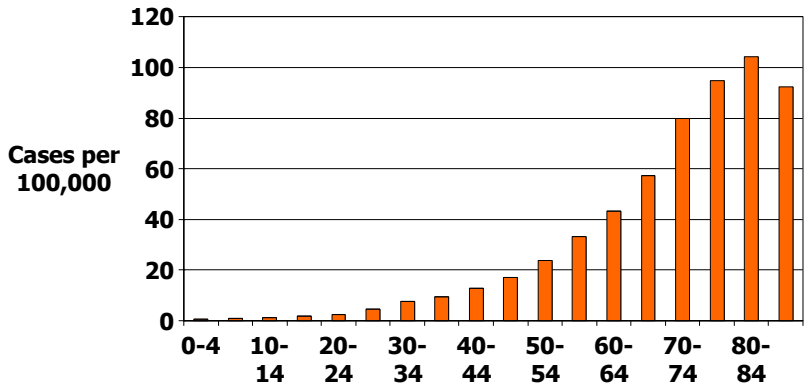
Incidence of Non-Hodgkin Lymphoma by Year (SEER data)



http://seer.cancer.gov.

13

Lymphoma Incidence by Age



http://seer.cancer.gov.

14

Epidemiology of Non-Hodgkin Lymphoma in Rheumatoid Arthritis

489 patients with Rheumatoid Arthritis Queen Elizabeth Medical Center, Birmingham	Cohort Study Population based control

Histologic Type	Observed	Expected	Observed/Expected	P Value
Lymphoma	7	.29	24.1	< .001

LEUKEMIA & LYMPHOMA SOCIETY®

Prior. *Am J Med.* 1985;78(suppl 1A):15-21.

15

Relative Risk of Developing Lymphoma Within 3 Years of an AIDS Diagnosis

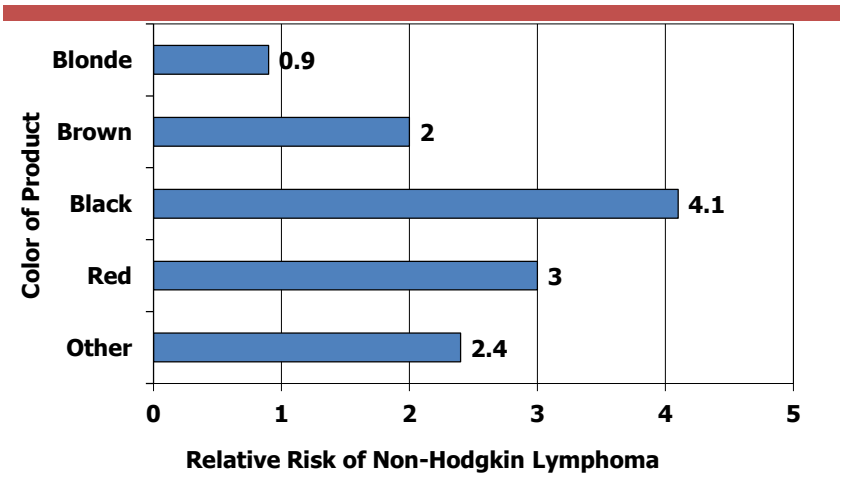
	Relative Risk
Any type of lymphoma	165
Diffuse immunoblastic lymphoma	652
Burkitt lymphoma	261
Intermediate-grade lymphoma	113
Low-grade lymphoma	14

LEUKEMIA & LYMPHOMA SOCIETY®

Cote TR, et al. *Int J Cancer.* 1997;73(5):645-650.

16

Epidemiology OF Non-Hodgkin Lymphoma in Hair Dyes (Permanent Hair Coloring)



Zahm, et al. *Am J Public Health*. 1992;82:990.

17

Summary 1

- Lymphoma is a group of cancers that form from blood/immune cells
- There are many different kinds of lymphomas
- Incidence increases with age, and prevalence has increased
- Risk appears to be related to exposures + immune environment

18

Questions to Ask at Diagnosis?

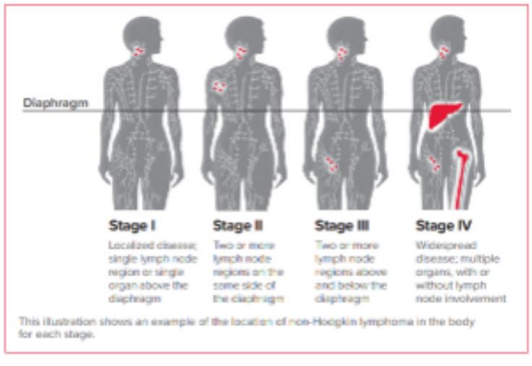
Is the biopsy sample adequate to make the diagnosis?

- **What is stage?**
  Mostly important for limiting treatment, less for prognosis
- **What markers indicate the patient's prognosis?**
  Different than same question having to do with staging
- **What is the best treatment plan?**

LEUKEMIA & LYMPHOMA SOCIETY®

19

Lymphoma Staging



Lugano Modification of Ann Arbor Staging Systems (for primary nodal lymphomas)

Stage	**Involvement**	**Extrandoal (E) Status**
Limited		
Stage 1	One node of adjacent nodes	Single extranodal lesions without nodal involvement
Stage II	Two or more nodal groups on the same side of the diaphragm	Stage I or II by nodal extent with limited contagious extranodal involvement
Stage II bulky	II as above with "bulky" disease	Not applicable
Advanced		
Stage III	Nodes on the both sides of the diaphragm Nodes above the diaphragm with spleen involvement	Not applicable
Stage IV	Additional non-contiguous extralymphatic involvement	Not applicable

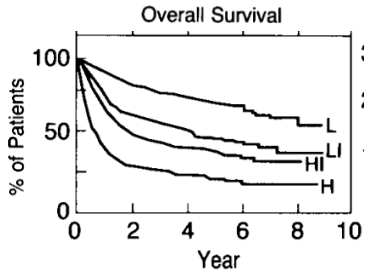
LEUKEMIA & LYMPHOMA SOCIETY®

20

International Prognostic Index

Clinical Features Growth and Invasion	Patient's Response to Tumor	Patient's Ability to Tolerate Therapy
Tumor stage Serum LDH Number of extra nodal sites	Performance Status	Performance Status Age

Criteria	0	+1
Age	<60	>60
Lactate dehydrogenase (LDH)	Normal	Elevated
Extranodal sites	0-1	>1
Stage	I-II	III-IV



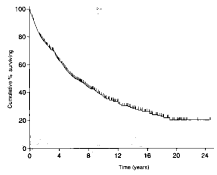
The International Non-Hodgkin's Lymphoma Prognostic Factors Project, N Engl J Med 1993;329:987-94.

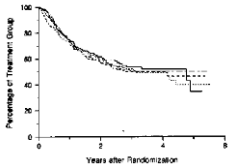
LEUKEMIA & LYMPHOMA SOCIETY®

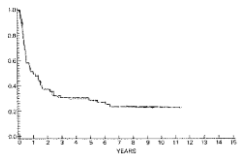
21

Framework for Understanding Treatment Approaches

Low Grade	Intermediate Grade	High Grade
Apoptosis	Apoptosis + Proliferative	Proliferative Proliferative Proliferative
Slow accumulating	Accumulating but active growth	Tremendously active growth
Treatable Not curable	Treatable Curable	Curable







LEUKEMIA & LYMPHOMA SOCIETY®

22

Lymphoma Treatment Options/Modalities

- Chemotherapy
- Radiation
- Antibody immunotherapies and radioimmunotherapy
- Small molecule inhibitors
- Stem cell transplant (autologous = self, allogeneic = donor infusion)
- Cell therapy (chimeric antigen receptor modified T-cells = CAR T-cells)
- Bispecific T-cell/antigen engagers

LEUKEMIA & LYMPHOMA SOCIETY®

23

Low-Grade/Indolent Lymphoma Principles of Treatment

- Early-stage (usually stage I) lymphomas may be amenable to curative radiation treatment
- Otherwise, treatment should be administered only for managing symptoms and using GELF criteria

LEUKEMIA & LYMPHOMA SOCIETY®

24

GELF Criteria

- Single node >7 cm
- More than 3 nodal sites >3 cm
- Systemic symptom(s)
- Compression syndrome or serious effusion
- Cytopenia
- Lymphocyte count >50,000/uL

LEUKEMIA & LYMPHOMA SOCIETY®

Journal of Clinical Oncology. 1997;15:1110-7.

25

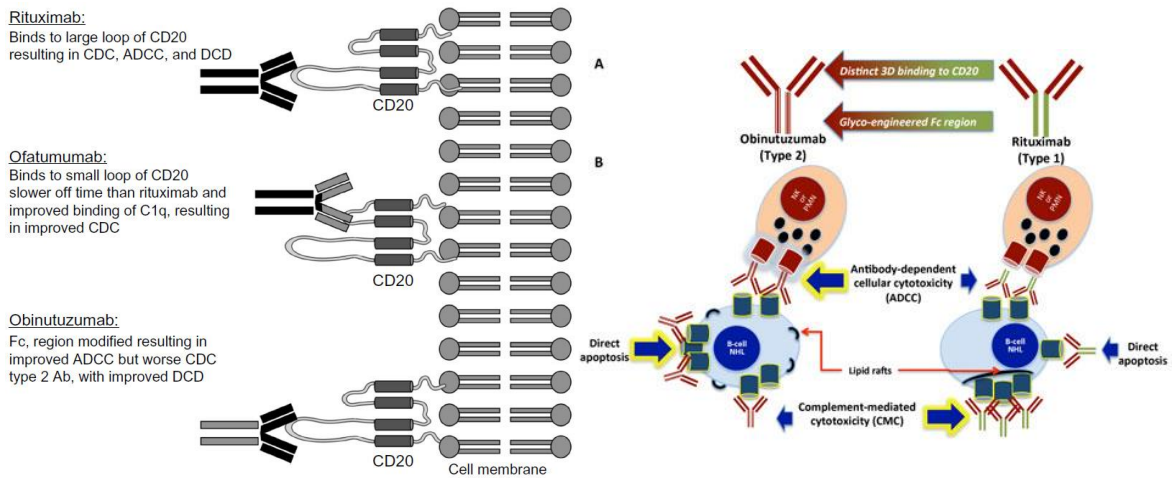
Treatment Programs for Indolent Lymphomas (Advanced Disease)

- Several regimens exist for follicular lymphoma
- Bendamustine-based regimens provide longest response in most patients
- We may be moving toward chemotherapy-free approaches
- Relapsed disease may also be treated with novel agents only

LEUKEMIA & LYMPHOMA SOCIETY®

26

CD20—Monoclonal Antibody Immunotherapy



LEUKEMIA & LYMPHOMA SOCIETY®

Blood and Lymphatic Cancer: Targets and Therapy 2015;5:43-53.

27

Advanced Follicular Lymphoma Approach

- I recommend observation for patients not symptomatic from their lymphoma
- If treatment is needed, options range from a chemo-free approach to aggressive regimens such as obinutuzumab-bendamustine
- Each patient's treatment must be individualized based on preferences and underlying health
- Most patients need multiple specific treatment regimens over many years

LEUKEMIA & LYMPHOMA SOCIETY®

28

Principles of Treatment for Aggressive Lymphomas

- Aggressive lymphomas include diffuse large B-cell lymphoma (DLBCL), Burkitt lymphoma (BL) and mantle cell lymphoma
- Vast majority of cases are DLBCL
- Goal in DLBCL/BL is **CURE**
- Burkitt lymphoma requires intense chemotherapy

LEUKEMIA & LYMPHOMA SOCIETY®

29

CHOP and Rituximab for DLBCL

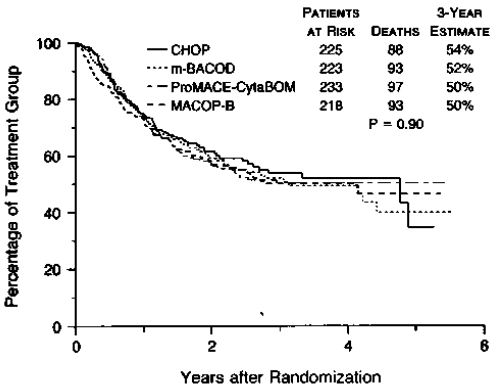
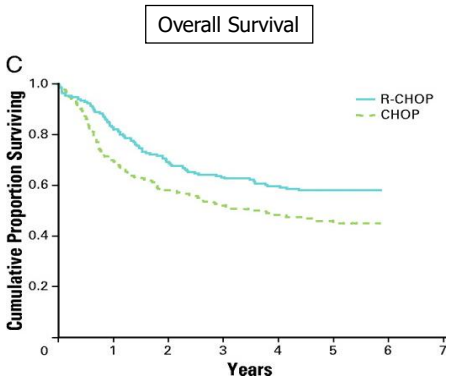


Figure 2. Overall Survival in the Treatment Groups. The three-year estimate is of overall survival.



Coiffier, B. J Clin Oncol; 23:6387-6393 2005

LEUKEMIA & LYMPHOMA SOCIETY®

30

DLBCL Summary of Treatment Course

- We cure more than half of DLBCL with initial chemotherapy
- If lymphoma is not cured with initial program options, include 2nd line chemotherapy, bone marrow transplant
- We now have newly approved treatments such as CAR T-cells and novel chemotherapy combinations

LEUKEMIA & LYMPHOMA SOCIETY®

31

Other Considerations (B-cell Lymphomas)

Mantle cell lymphoma

- Behaves aggressively, usually treated with intense therapy and stem cell transplant
- New agents such as ibrutinib, acalabrutinib, venetoclax emerging

Marginal zone lymphoma

- Usually very indolent often seen in older individuals

Waldenstrom's macroglobulinemia/lymphoplasmacytic lymphoma

- Indolent lymphoma characterized by IgM and complications from antibodies

Gastric MALT lymphoma

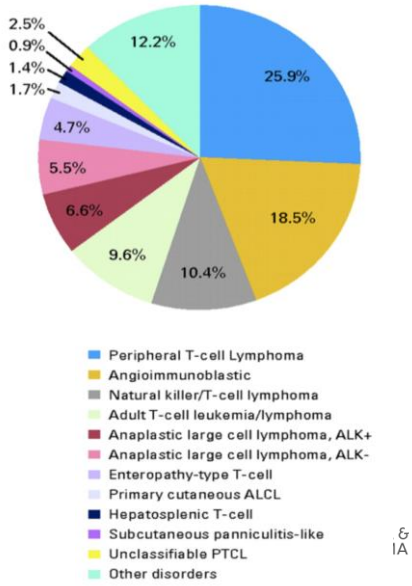
- Subset of marginal zone lymphoma can often treat underlying infection driving the lymphoma

LEUKEMIA & LYMPHOMA SOCIETY®

32

Peripheral T-cell Lymphomas

- **Represent ~15% of non Hodgkin lymphoma**
- **Many very rare**
- **Usually treated with aggressive B cell lymphoma regimens and stem cell transplant**
- **Newly approved agents now available:**
  - Romidepsin/belinostat (HDAC inhibitors)
  - Pralatrexate (anti-folate chemotherapy)
  - Brentuximab vedotin
  - Mogamulizumab (cutaneous T cell lymphoma)



International T cell lymphoma project. *J Clin Oncol.* 2008; 26 (25); 4124-30.

33

Updates on Upcoming New Therapies

Novel approaches can be classified into 3 types:

- New applications of existing therapies (i.e. stem cell transplantation in certain subgroups)
- Molecularly targeted agents
  - Specifically pairing characteristics of patient's tumor to a drug
  - May be guided by new laboratory studies
  - Targeted "Smartbomb" delivery of chemotherapy agents in tumor cells
- Immunotherapy
  - Immune "checkpoint" blockade
  - Modified activated T cell therapies

LEUKEMIA & LYMPHOMA SOCIETY®

34

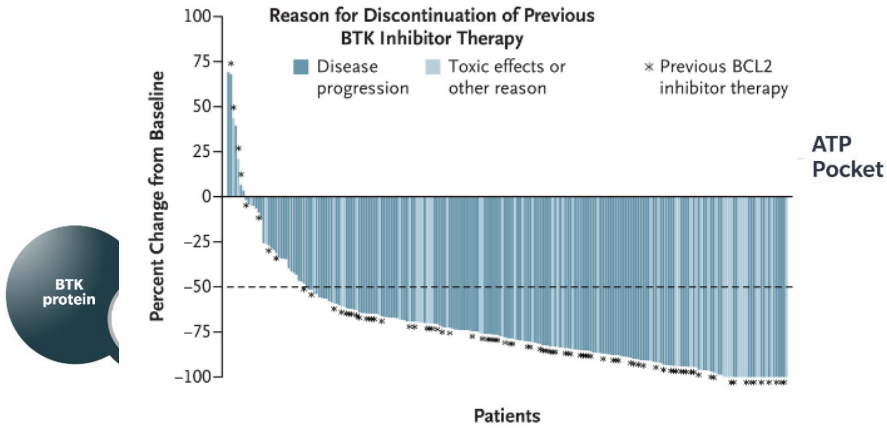
Important Recent FDA Approvals for New Lymphoma Drugs

Diffuse large B cell lymphoma • CAR T cells (axicabtagene ciloleucel, tisagenlecleucel) • polatuzumab -bendamustine-rituximab • bispecific antibody immunotherapies	**Waldenstrom macroglobulinemia** • ibrutinib with rituximab (the only FDA approved therapy in Waldenstrom's) • zanubrutinib
Follicular lymphoma • obinutuzumab frontline treatment • lenalidomide with rituximab • tazemetostat • bispecific antibody immunotherapies	**Mantle cell lymphoma** • zanubrutinib • pirtobrutinib • brexucabtagene autoleucel
Marginal zone lymphoma • lenalidomide with rituximab • zanubrutinib	**Cutaneous T cell lymphoma/peripheral T cell lymphoma** • mogamulizumab • brentuximab vedotin in front line PTCL treatment

LEUKEMIA & LYMPHOMA SOCIETY®

35

Novel Targeting of BTK Enzyme with Pirtobruntinib in Ibrutinib-Resistant Lymphomas



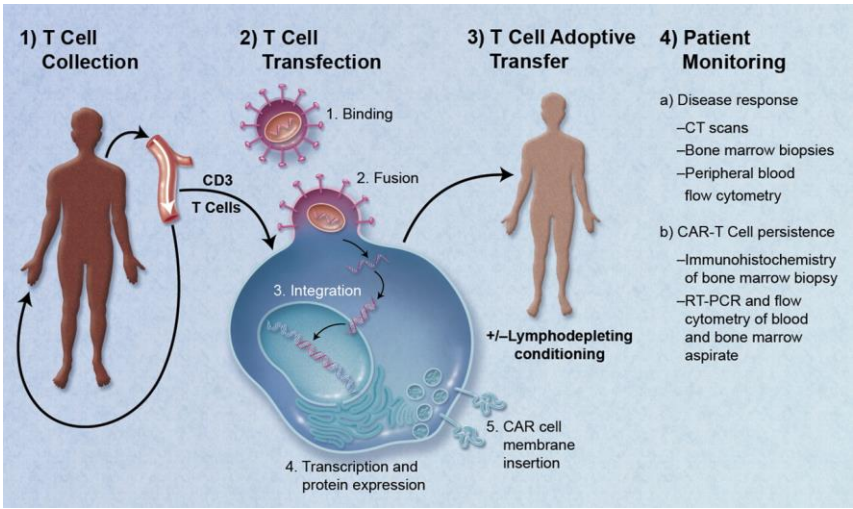
N Engl J Med. 2023;389:33-44.

Mechanism of Action (MOA) | Jaypirca® (pirtobrutinib) (lilly.com)

LEUKEMIA & LYMPHOMA SOCIETY®

36

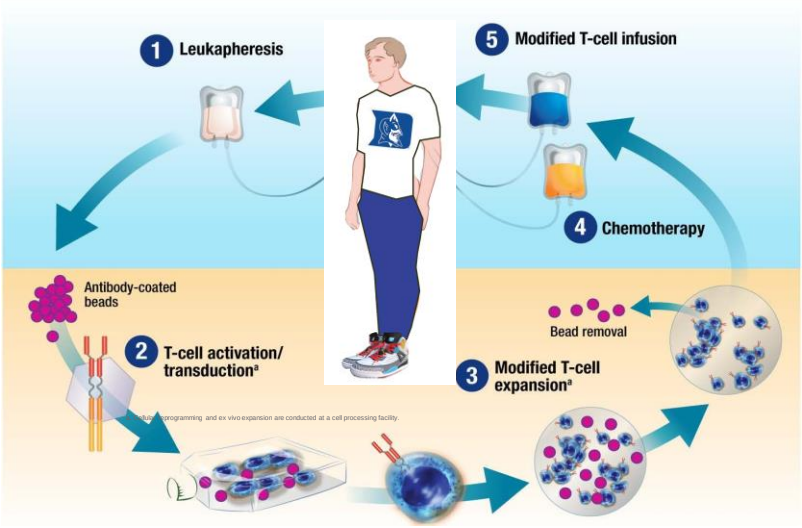
Chimeric Antigen Receptor T-cells Targeting CD19 and Other Antigens



LEUKEMIA & LYMPHOMA SOCIETY®

37

CTL019 is Designed to Hunt and Destroy CD19-Positive B-cell Cancers in Patients



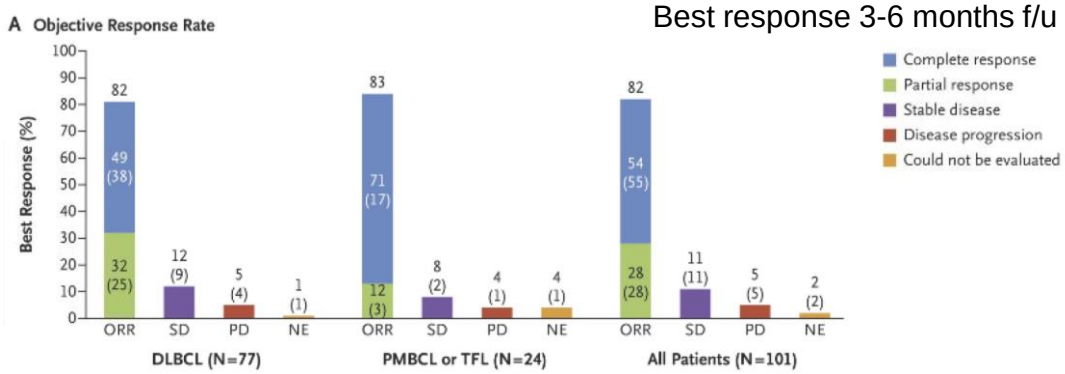
LEUKEMIA & LYMPHOMA SOCIETY®

Figure courtesy of Novartis.

38

Axicabtagene Ciloleucel (axi-cel) in Relapsed/Refractory DLBCL

Best response 3-6 months f/u



LEUKEMIA & LYMPHOMA SOCIETY®

N Engl J Med. 2017;377:2531-2544.

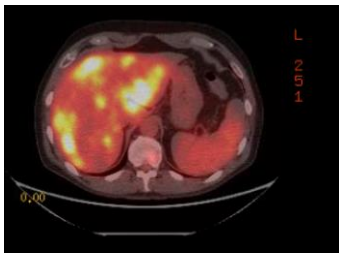
39

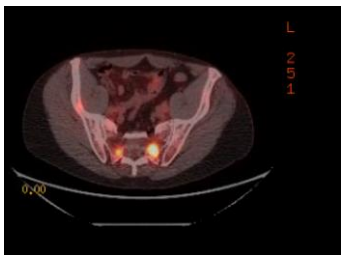
63 yo man with DLBCL

Treated with:

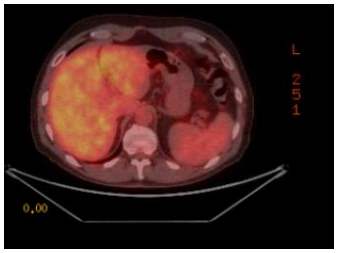
- rituximab-EPOCH/MTX
- rituximab-ICE
- 4/24/18 axi-cel infusion
- (post collection/chemo)

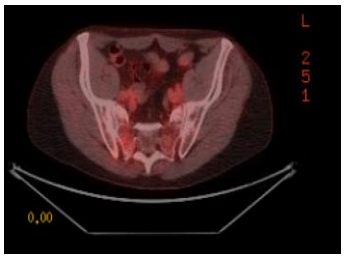
4/18 PET CT





6/18 PET CT





LEUKEMIA & LYMPHOMA SOCIETY®

40

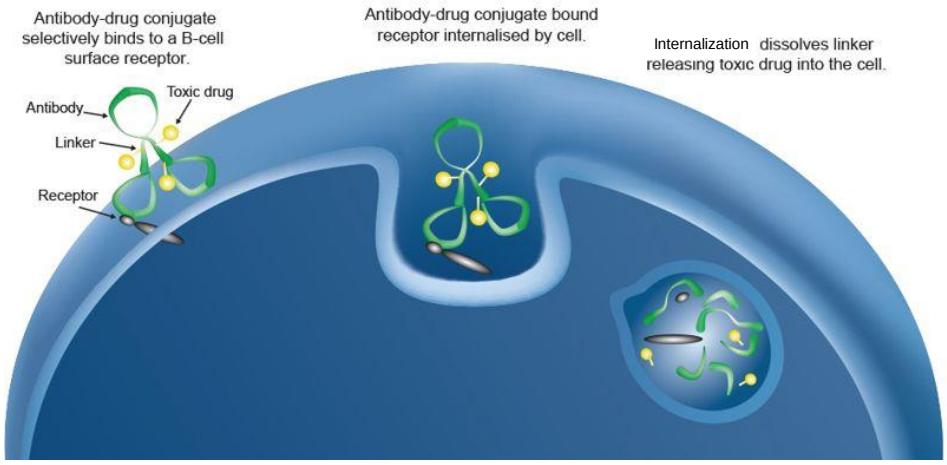
CAR T-cell Treatment in Lymphomas

- B-cell lymphoma can be treated with CAR T-cells directed against the CD19 protein (among others)
- Response rates high in studied patients with lymphoma where other therapies have failed
- Therapy is complicated, expensive and requires inpatient hospitalization for side effect monitoring
- Numerous trials are now evaluating CAR T-cells for other lymphoma types
  - Mantle cell lymphoma trial completed and will be presented at ASH meeting next month
  - More FDA approvals are likely to come in the next year

LEUKEMIA & LYMPHOMA SOCIETY®

41

Drug Conjugates in Lymphoma/Cancer Care



LEUKEMIA & LYMPHOMA SOCIETY®

42

Polatuzumab Vedotin: CD79B/MMAE ADC in DLBCL

AE, n (%)	PV + BR (n = 39)	BR (n = 39)
Pts with ≥ 1 AE	39 (100)	38 (97.4)
Grade 5*	7 (17.9)	7 (17.9)
Serious AE	20 (51.3)	20 (51.3)
Serious AE in ≥ 3% pts		
▪ Infections	8 (20.5)	10 (25.6)
▪ Febrile neutropenia	4 (10.3)	2 (5.1)
▪ Neutropenia	0	3 (7.7)
▪ Pyrexia	4 (10.3)	1 (2.6)
Peripheral neuropathy	15 (38.5)	NR
▪ Grade 2	7 (17.9)	
Grade 3/4 AE	33 (84.6)	26 (66.7)
Grade 3/4 AE in ≥ 10% of pts		
▪ Neutropenia	18 (46.2)	14 (35.9)
▪ Febrile neutropenia	4 (10.3)	2 (5.1)
▪ Thrombocytopenia	13 (33.3)	8 (20.5)
▪ Anemia	10 (25.6)	5 (12.8)
▪ Infections	7 (17.9)	7 (17.9)

- Ph 2 randomized trial

	BR	BR + pola
N	39	39
ORR	**33%**	**70%**
PET-CR	**18%**	**40%**
Median PFS	**2.0 mo**	**7.6 mo**
Median OS	**4.7 mo**	**12.4 mo**

- >70% of patients had 2+ prior lines of therapy
  - Prior SCT: 20%
  - Refractory to prior therapy: 80%
- Pola toxicities: PN limited to Gr 2, leading to d/c or modification in 4%
  - Gr 3/4 tox mostly heme; additive to BR, but similar to R + GemOx
  - 46% of pts in pola arm completed planned tx (vs. 18% in BR arm)
  - 33% d/c due to AE, but 54% modification due to AE

FDA approved in combination with BR for r/r DLBCL, at least two prior therapies.

LEUKEMIA & LYMPHOMA SOCIETY®

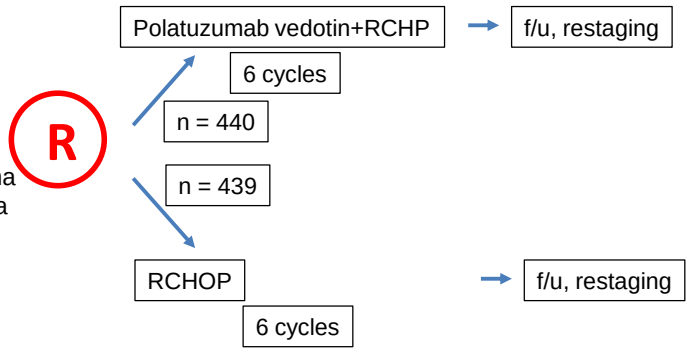
Sehn et al., ASH 2018, 1683.

43

POLARIX Study

DLBCL:
Treatment naïve
CD20+
ECOG 0-2
IPI 2-5
No history of indolent lymphoma
No evidence of CNS lymphoma

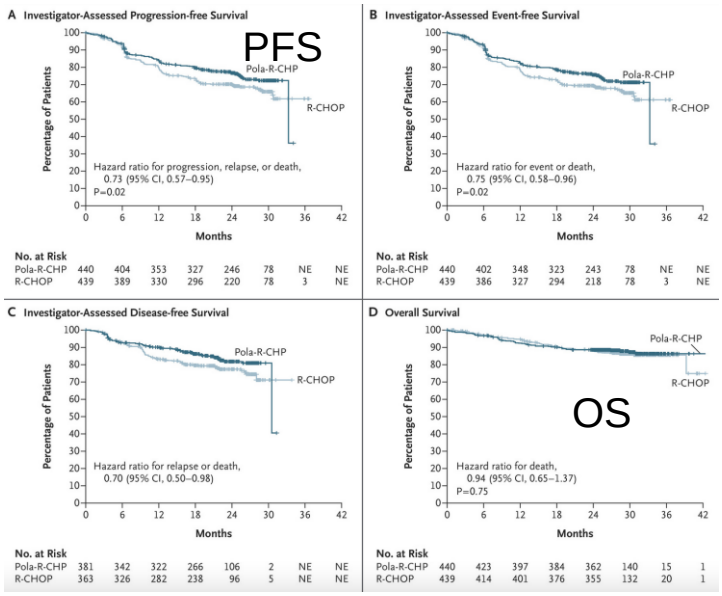
IPI:
Age > 60
Ann Arbor 3-4
ECOG > 2
LDH > normal
>1 extranodal site



Primary outcome measure: PFS

LEUKEMIA & LYMPHOMA SOCIETY®

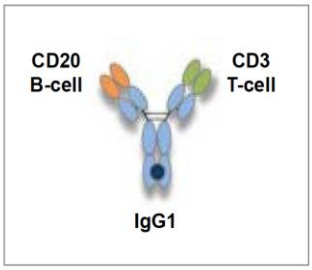
44



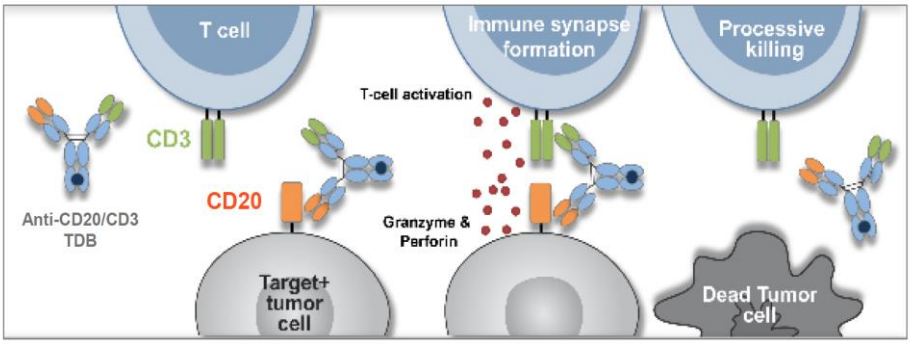
NEJM 2022;386:351-363.

45

Bispecific for NHLs Targeting CD20



- **Mosunetuzumab: A fully humanized T-cell dependent bispecific antibody**
  - Full length bi-specific, PK similar to conventional IgG1
  - Near-natural architecture, low antigenic potential
  - Glycosylation mutation (N297G) eliminates ADCC function => MOA distinct from rituximab and obinutuzumab
- **Binds to both T cell and B cell**
  - T-cell activation requires CD20 target engagement (conditional agonist)
  - Active against indolent (non-dividing) and chemo-resistant cells
  - Pre-treatment immune response to tumor not a pre-requisite (bypass adaptive immune response)



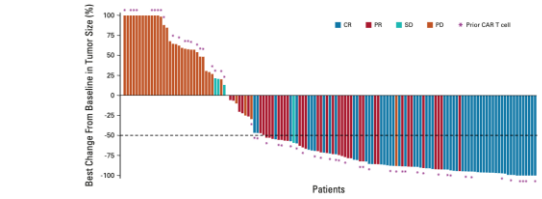
46

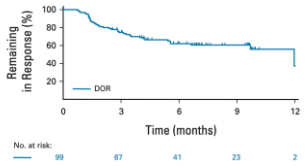
Epcoritamab (GEN3013) in LBCL

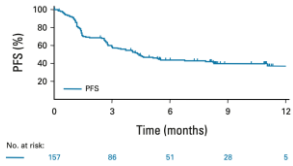
- **CD3xCD20 bispecific antibody**
- **SQ administration**
- **Mandatory hospitalization 24h after C1D15**

Cycle of treatment[a]	Day of treatment	Dose of EPKINLY	
Cycle 1	1	Step-up dose 1	0.16 mg
	8	Step-up dose 2	0.8 mg
	15	First full dose	48 mg
	22	48 mg	
Cycles 2 and 3	1, 8, 15 and 22	48 mg	
Cycles 4 to 9	1 and 15	48 mg	
Cycle 10 and beyond	1	48 mg	

[a] Cycle = 28 days







ORR 61% Estimated DOR 15.6m
CR 38%

LEUKEMIA & LYMPHOMA SOCIETY®

1) JCO 41;12: 2238-2247. 2) FDA Epcoritamab (Epkenly™) package insert.

47

New Agents in Lymphoma and What to Look for Next

- Novel cell therapies and new agents are offering new options for patients across diseases
- Treatment of chemotherapy-refractory diffuse large B-cell lymphoma is an example of progress in the field
- Upcoming advances to look for include:
  - Better combination treatments for T-cell lymphomas
  - CAR T-cell approvals outside of DLBCL (e.g., mantle cell or aggressive FL)
  - Bispecific antibodies
  - Chemotherapy-free approaches
  - New molecules, new cell products

LEUKEMIA & LYMPHOMA SOCIETY®

48

Summary 2

- There are many complex treatment programs for various lymphomas
- Hopefully, we will continue to develop new treatments and cure more patients

LEUKEMIA & LYMPHOMA SOCIETY®

49

Thank You!

LEUKEMIA & LYMPHOMA SOCIETY®

50

The Role of the Pharmacist in Treatment of Non-Hodgkin Lymphoma Patients

Meredith T. Moorman, PharmD, BCOP, CPP
Clinical Pharmacist – Adult Outpatient Leukemia & Lymphoma Clinic
Duke Blood Cancer Center, Durham, NC
meredith.moorman@duke.edu

LEUKEMIA & LYMPHOMA SOCIETY®

51

Primary Roles for Clinical Pharmacists

- Providing education
- Drug interaction review
- Chemotherapy dosage adjustments
- Supportive care
  - Antiemetics
  - Growth factor utilization
  - Infection prophylaxis
- Tumor lysis syndrome prevention, monitoring and treatment
- Viral reactivation monitoring
- Therapeutic drug monitoring
- Medication access and regulatory compliance
- Prior authorization and patient assistance

LEUKEMIA & LYMPHOMA SOCIETY®

52

Providing Education to Patients and Other Providers

- Review anticipated side effects of chemotherapy regimens
  - Focus on most common or most significant toxicity with initial education
  - Repeated interactions with patient can cover broader list of adverse effects
  - Often discrepancy in most concerning toxicity for providers vs. patients
- Review treatment schedules (can often be complex and confusing)
  - Combination of oral and IV chemotherapy agents
  - Scheduling of supportive care medications
  - Indefinite vs. finite treatment
- Educate other healthcare providers (often nursing colleagues) on new medication approvals—dosing, schedules, administration, common toxicities, indications, etc.

LEUKEMIA & LYMPHOMA SOCIETY®

53

Drug Interaction Review

- Many oral chemotherapy agents are metabolized by cytochrome P450 enzymes and subject to drug interactions
- PGP interactions can also be problematic
- Review concomitant medications to determine if dose modifications are needed
- Commonly interfering drug classes include antifungals, cardiac medications and anti-seizure medications
- Other drug or diet interactions that may alter clearance of a chemotherapy agent through different mechanisms (e.g., high-dose methotrexate and carbonated beverages)
- Provide guidance on herbal products and supplements

LEUKEMIA & LYMPHOMA SOCIETY®

54

Chemotherapy Dosage Adjustments

- Ensure all necessary diagnostic testing completed prior to starting chemotherapy
  - Monitoring of cardiac function prior to starting anthracyclines (e.g., echocardiogram)
  - Pulmonary function tests prior to bleomycin use
- Specific dose adjustments for many agents based on liver and renal dysfunction
- Also monitor lifetime doses of some medication(s)/medication classes
  - Anthracyclines: maximum lifetime dose to limit cardiotoxicity
    - Electronic medical record (EMR) may include progress tracker
  - Bleomycin: maximum lifetime dose to limit pulmonary toxicity

LEUKEMIA & LYMPHOMA SOCIETY®

55

Supportive Care Recommendations

- Follow established guidelines (such as those through National Comprehensive Cancer Network, NCCN)
- Antiemetics: risk category determined by chemotherapy medications
  - Additional patient-specific factors may influence risk of regimen
- Growth factor utilization (pegfilgrastim or filgrastim products)
  - Does chemotherapy regimen qualify for primary prophylaxis of neutropenic fever?
- Infection prophylaxis
  - Becoming more common with introduction of chimeric antigen receptor T-cell (CAR-T) and bispecific T-cell engager (BITE) therapies
- Tumor lysis syndrome (TLS)
  - Determine patient risk and suggest prophylaxis for intermediate and high-risk patients (e.g., allopurinol or febuxostat)
  - Quick clinical interventions for patients with laboratory and/or clinical signs of TLS (rasburicase for hyperuricemia, phosphate binders for hyperphosphatemia, etc.)

LEUKEMIA & LYMPHOMA SOCIETY®

56

Viral Reactivation Monitoring & Therapeutic Drug Monitoring

Viral reactivation

- Hepatitis B (and C)
  - Determine status prior to treatment to determine risk of reactivation
  - Selection of appropriate prophylactic antiviral therapy if patient at risk for viral reactivation
  - Generally continue for at least 6-12 months after completion of causative chemotherapy agent (e.g., rituximab, obinutuzumab)
- CMV: baseline and serial monitoring

Therapeutic drug monitoring

- Commonly used with high-dose methotrexate-containing regimens
- Clearance can be impacted by many other drug classes and/or carbonated beverages

LEUKEMIA & LYMPHOMA SOCIETY®

57

Medication Access

- Authorization for medication required prior to use (prior authorization for oral medications)
- Limited distribution channels for some oral medications
- Minimize or eliminate financial barriers to treatment:
  - Utilization of grants (such as those provided by LLS) to offset copay costs
  - Navigating manufacturer programs that could provide free medication

LEUKEMIA & LYMPHOMA SOCIETY®

58

Regulatory Compliance

- Many new therapies have Risk Evaluation and Mitigation Strategy (REMS) programs associated with their approval and use
  - REMS programs can vary significantly in complexity
  - Some as simple as patient and/or provider education
  - Codes required before dispensing dose (lenalidomide authorization codes)
- CAR-T products: education on risk of cytokine release syndrome (CRS) and immune effector cell associated neurotoxicity (ICANS), completion of tests and documentation of tocilizumab availability/supply
- Pharmacists can often play a significant role in management and/or oversight of these programs

LEUKEMIA & LYMPHOMA SOCIETY®

59

THANK YOU

We have one goal: A world without blood cancers

LEUKEMIA & LYMPHOMA SOCIETY®

60

Duke Cancer Institute

Nursing Considerations in Non-Hodgkin Lymphoma
Diagnosis, Treatment, and Side Effect Management

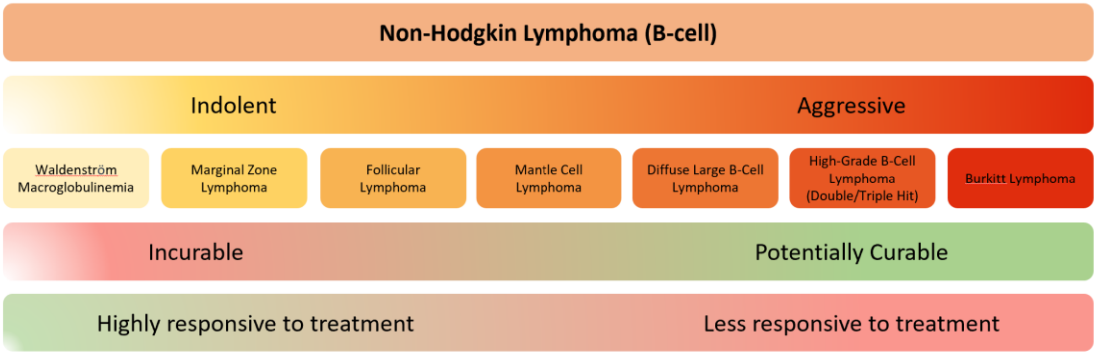
Melissa Reinhold, RN, BSN, OCN
Oncology Nurse Navigator
Duke Blood Cancer Center, Durham, NC

LEUKEMIA & LYMPHOMA SOCIETY®

61

Non-Hodgkin Lymphoma (NHL) has more than 60 subtypes

85-90% of NHL cases are B-cell lymphomas, which are further classified as either aggressive (60%) or indolent (40%):



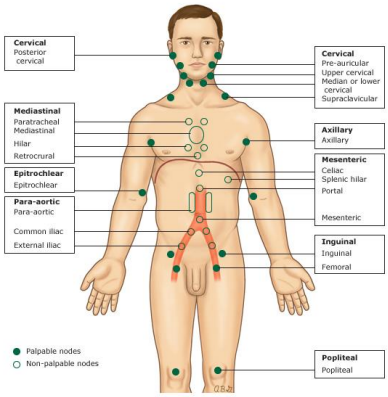
LEUKEMIA & LYMPHOMA SOCIETY®

https://lls.org/lymphoma/non-hodgkin-lymphoma/nhl-subtypes

62

Diagnosis | Physical & Patient Presentation

- **Lymphadenopathy**
  - Present in more than two-thirds of patients with NHL at presentation
  - Generally firm and painless
  - Rapidly-growing mass in aggressive lymphomas vs. waxing/waning lymphadenopathy over months or years in indolent lymphomas
- **Constitutional "B" symptoms**
  - Unexplained fever (>100.4F)
  - Night sweats (drenching)
  - Unintentional weight loss (>10% of body weight over past 6 months)
- **Lab abnormalities**
  - Anemia, thrombocytopenia, leukopenia, and/or lymphocytosis
  - Elevated LDH
- **Splenomegaly, hepatomegaly**
- **Fatigue, pruritis, skin changes, cough, dyspnea**



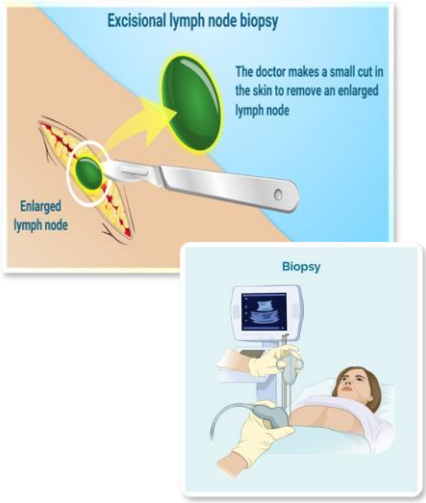
Freedman AS et al. UpToDate. August 2024.

LEUKEMIA & LYMPHOMA SOCIETY®

63

Diagnosis | Biopsy

- For patients suspected to have an NHL based on clinical or laboratory findings, **analysis of an involved lymph node or other involved tissue is required**
- Whenever possible, the biopsy specimen should be obtained ***before*** **administration of a glucocorticoid** to avoid interference with analysis
- An **excisional lymph node biopsy is preferred**; incisional or multiple core biopsies are acceptable
  - Fine needle aspiration is generally not acceptable, as it does not enable evaluation of the lymph node architecture, which is need to classify the lymphoma
- If no lymph node is accessible, biopsy of a site of extranodal involvement, liver, or bone marrow is acceptable

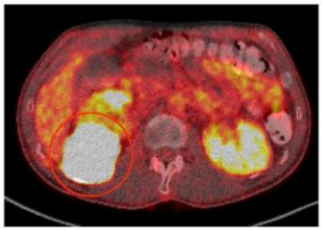


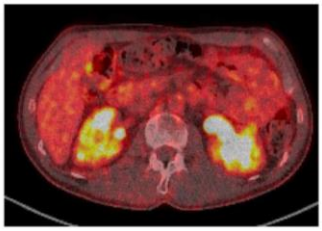
LEUKEMIA & LYMPHOMA SOCIETY®

Freedman AS et al. UpToDate. August 2024.

64

Diagnosis | Imaging





- Whole-body PET, using 18F-fluorodeoxyglucose (FDG), with concurrent CT is preferred for initial staging and assessing response to therapy for most NHL subtypes
- Although most categories of nodal NHL are FDG-avid, certain histologic subtypes are variably FDG-avid or non-avid
- PET has inconsistent usefulness for indolent lymphomas, but it may be helpful in some circumstances (e.g., to identify a preferred biopsy site if aggressive transformation is suspected)

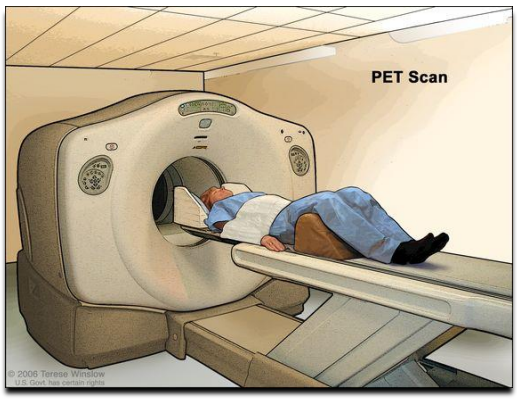
LEUKEMIA & LYMPHOMA SOCIETY®

Freedman AS et al. UpToDate. August 2024.

65

Diagnosis | Imaging PET Education Points for Patients

- **Do not eat or drink for six hours before** your test (except plain water). Do not suck or chew candy, gum, or lozenges.
- Limit intense physical activity 24 hours prior to the exam
- You can take medications for pain or anxiety prior to the procedure to lessen any fear or physical discomfort you may have
- There are **no contraindications** to FDG. The injection of the radioactive tracer is free from any side effects and is painless. Allergic reactions to FDG are extremely rare.
- Depending on imaging needs, the scan typically lasts **45-90 minutes.**



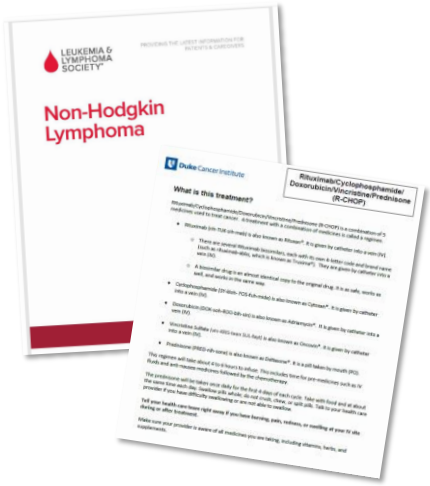
LEUKEMIA & LYMPHOMA SOCIETY®

https://www.cancer.gov/publications/dictionaries/cancer-terms/def/pet-scan

66

Diagnosis | Nursing Considerations & Interventions at Diagnosis

- Provide education
  - LLS disease booklets & fact sheets
  - Chemotherapy teaching sheets
  - Treatment calendars
  - When and how to call to report symptoms
- Assess barriers to care (e.g., transportation, communication, caregiver support, health literacy)
- Place early referrals (e.g., counseling, palliative care, social work, self-imaging, nutrition)
- Recommend financial resources, grants, support groups



LEUKEMIA & LYMPHOMA SOCIETY

67

Diagnosis | Nursing Considerations & Interventions at Diagnosis

LEUKEMIA & LYMPHOMA SOCIETY

68

Treatment | A Non-Comprehensive List of Treatment Options for Patients with NHL

Antibody Treatment	Chemotherapy	Corticosteroids	Bispecific Antibodies
Rituximab	Bendamustine	Prednisone	Mosunetuzumab-axgb
Obinutuzumab	Carboplatin	Dexamethasone	Glofitamab-gxbm
Tafasitamab-cxix	Cisplatin	Methylprednisolone	Epcoritamab-bysp
Mogamulizumab	Cyclophosphamide	**Immunomodulators**	**Small Molecule Inhibitors**
Antibody-Drug Conjugates	Doxorubicin	Lenalidomide	Ibrutinib
Brentuximab vedotin	Etoposide	**CAR T-Cell Therapy**	Acalabrutinib
Polatuzumab vedotin	Gemcitabine	Axicabtagene ciloleucel	Zanubrutinib
Loncastuximab tesirine-lpyl	Methotrexate	Tisagenlecleucel	Pirtobrutinib
Stem Cell Transplant	Oxaliplatin	Lisocabtagene maraleucel	Venetoclax
Autologous SCT	Vinblastine	Brexucabtagene autoleucel	**Watch & Wait**
Allogeneic SCT	Vincristine	**Radiation**	

LEUKEMIA & LYMPHOMA SOCIETY®

PDQ® Adult Treatment Editorial Board. PDQ Non-Hodgkin Lymphoma Treatment. Bethesda, MD: National Cancer Institute. Updated 08/22/2024. Available at: https://www.cancer.gov/types/lymphoma/patient/adult-nhl-treatment-pdq.

69

Treatment | A Non-Comprehensive List of Treatment Options for Patients with NHL

Antibody Treatment	Chemotherapy	Corticosteroids	Bispecific Antibodies
Rituximab	Bendamustine	Prednisone	Mosunetuzumab-axgb
Obinutuzumab	Carboplatin	Dexamethasone	Glofitamab-gxbm
Tafasitamab-cxix	Cisplatin	Methylprednisolone	Epcoritamab-bysp
Mogamulizumab	Cyclophosphamide	**Immunomodulators**	**Small Molecule Inhibitors**
Antibody-Drug Conjugates	Doxorubicin	Lenalidomide	Ibrutinib
Brentuximab vedotin	Etoposide	**CAR T-Cell Therapy**	Acalabrutinib
Polatuzumab vedotin	Gemcitabine	Axicabtagene ciloleucel	Zanubrutinib
Loncastuximab tesirine-lpyl	Methotrexate	Tisagenlecleucel	Pirtobrutinib
Stem Cell Transplant	Oxaliplatin	Lisocabtagene maraleucel	Venetoclax
Autologous SCT	Vinblastine	Brexucabtagene autoleucel	**Watch & Wait**
Allogeneic SCT	Vincristine	**Radiation**	

LEUKEMIA & LYMPHOMA SOCIETY®

PDQ® Adult Treatment Editorial Board. PDQ Non-Hodgkin Lymphoma Treatment. Bethesda, MD: National Cancer Institute. Updated 08/22/2024. Available at: https://www.cancer.gov/types/lymphoma/patient/adult-nhl-treatment-pdq.

70

Treatment | Chemoimmunotherapy: R-CHOP

R	= Rituximab
C	= Cyclophosphamide
H	= Doxorubicin Hydrochloride
O	= Vincristine sulfate (Oncovin)
P	= Prednisone

Emetic risk	**High** *Antiemetics recommended prophylactically and for breakthrough n/v*
Febrile neutropenia risk	**Intermediate** *G-CSF may be considered based on patient risk factors*
Treatment duration	**21-day cycle for 4-6 cycles** *Dependent upon stage at diagnosis & interim restaging response*

LEUKEMIA & LYMPHOMA SOCIETY®

National Cancer Institute. Updated 05/10/2023. Available at: https://www.cancer.gov/about-cancer/treatment/drugs/r-chop.

71

Treatment | Chemoimmunotherapy: R-CHOP

R	= Rituximab

- **Infusion reactions** are common. Premedicate, monitor for, and treat infusion reactions per institutional protocol. Modify infusion duration, rate escalation, and premedication regimen based on patient tolerance.
- Severe mucocutaneous reactions, some with fatal outcomes, can occur. Monitor closely for painful sores, ulcers, blisters, peeling skin, rash, or pustules to skin, lips, or mouth.
- Screen patients prior to initiating treatment given risk of hepatitis B reactivation. Initiate viral prophylaxis (e.g., entecavir) for those patients at risk.

Given on Day 1 of each cycle

Typically takes up to 8 hours to infuse with cycle one

Can be given as a “rapid infusion” over ~1hr in subsequent cycles if well-tolerated

LEUKEMIA & LYMPHOMA SOCIETY®

National Cancer Institute. Updated 06/03/2024. Available at: https://www.cancer.gov/about-cancer/treatment/drugs/rituximab.

72

Treatment | Chemoimmunotherapy: R-CHOP

C = Cyclophosphamide

- Monitor **renal function**
- Poorly hydrated patients may need supplemental IV hydration (goal: **2-3L/day**)

Given on Day 1 of each cycle

30-minute infusion

H = Doxorubicin hydrochloride

- Monitor **cumulative anthracycline dosage**
- **Ejection fraction** should be monitored prior to initiation of treatment and as clinically indicated
- **Liver function** should be monitored prior to each cycle and as clinically indicated

Given on Day 1 of each cycle

IV push

This agent is a **vesicant**. Consider central line access

LEUKEMIA & LYMPHOMA SOCIETY®

National Cancer Institute. Updated 07/08/2021. Available at: https://www.cancer.gov/about-cancer/treatment/drugs/cyclophosphamide.

73

Treatment | Chemoimmunotherapy: R-CHOP

O = Vincristine (Oncovin)

- Signs and symptoms of **neurotoxicity** should be monitored prior to each cycle
- May cause **peripheral neuropathy.** Monitor for altered sensation, pain, or motor weakness that interfere with ADLs
- May cause **constipation**. Patients often require prophylaxis with a bowel regimen.
- Monitor **liver function**

Given on Day 1 of each cycle

IV minibag over 5-10 mins

This agent is a **vesicant**. Consider central venous access.

P = Prednisone

- Monitor serum **glucose** & **blood pressure**
- Take with food, preferably in the morning
- Consider H2 blocker or PPI to reduce the risk of ulcers

100 mg PO on Days 1-5 of each cycle

LEUKEMIA & LYMPHOMA SOCIETY®

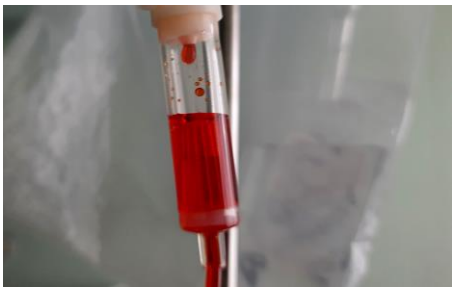
National Cancer Institute. Updated 05/04/2022. https://www.cancer.gov/about-cancer/treatment/drugs/vincristinesulfate
National Cancer Institute. Updated 09/09/2022. Available at: https://www.cancer.gov/about-cancer/treatment/drugs/prednisone.

74

Treatment | Chemoimmunotherapy: R-CHOP

Other Teaching Points

- Hair loss or hair thinning is common
  - Wig prescription
  - Referral to self-imaging services and/or counseling
- Urine changes are normal
  - Doxorubicin causes red, pink, orange, or brownish-colored urine
  - May stain clothes
  - Urine discoloration has an obviously different appearance than frank hematuria
  - Expected to last for 1-2 days after each dose is given
- Pancytopenic precautions

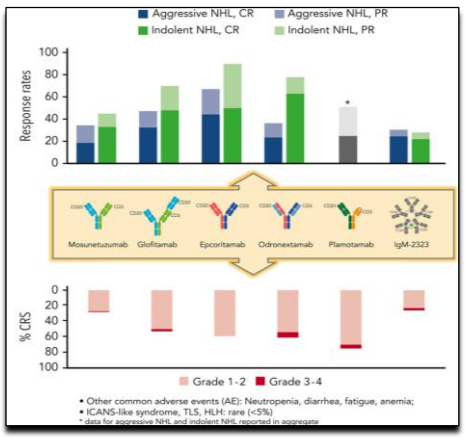


https://www.mskcc.org/cancer-care/patient-education/managing-your-chemotherapy-side-effects
https://healthsystem.osumc.edu/pteduc/docs/R-CHOP.pdf#:~:text=R-CHOP%20is%20the%20short%20name%20for

LEUKEMIA & LYMPHOMA SOCIETY®

75

Treatment | Bispecific Antibodies (BsAb)



Mosunetuzumab-axgb
(Lunsumio™)
R/R FL

Glofitamab-gxbm
(Columvi™)
R/R DLBCL or LBCL

Epcoritamab-bysp
(Epkinly™)
R/R DLBCL or FL

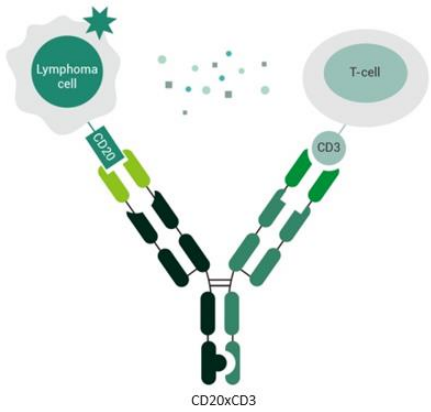
LEUKEMIA & LYMPHOMA SOCIETY®

https://ashpublications.org/blood/article/141/5/467/486966/Bispecific-antibodies-for-the-treatment-of-B-cell

76

Treatment | Bispecific Antibodies (BsAb)

- Novel class of T-cell redirecting drugs
- Activate immune cells by co-targeting both tumor antigens and T-cells
- "Off-the-shelf" immunotherapies are more readily available than CAR T cells
- Remarkable single-agent activity in heavily pretreated patients with B-NHL
- Manageable toxicity profile with rare treatment interruptions or discontinuations



LEUKEMIA & LYMPHOMA SOCIETY®

https://ashpublications.org/blood/article/141/5/467/486966/Bispecific-antibodies-for-the-treatment-of-B-cell

77

Treatment | Bispecific Antibodies (BsAb): T-Cell Overactivation

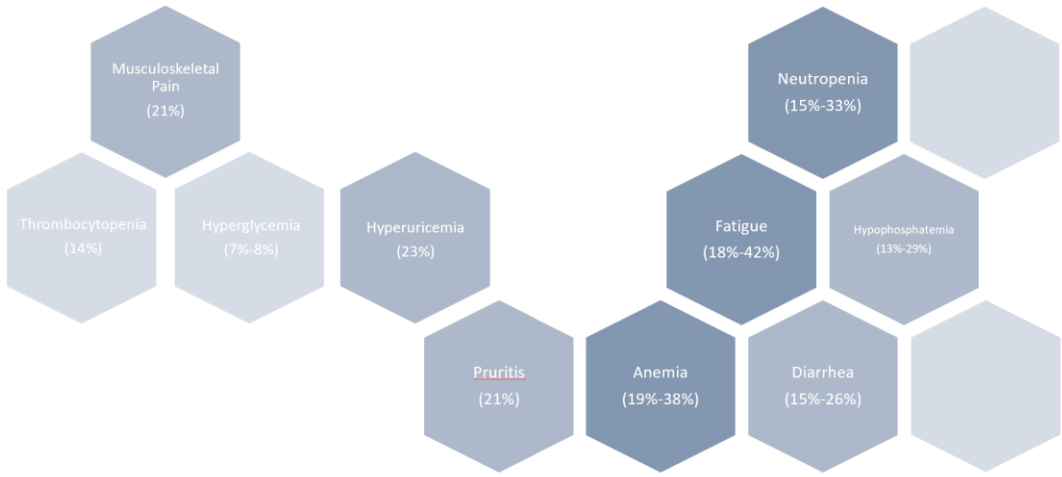
	Cytokine Release Syndrome (CRS)	Neurotoxicity/ICANS
Symptoms	Chills, fevers, skin rash, hypotension, hypoxia, confusion	Headache, delirium, dysphasia, tremor, lethargy, difficulty concentrating, agitation, confusion, aphasia, depressed level of consciousness, encephalopathy, seizures, cerebral edema
Onset Duration & Grade	- **Most frequent toxicity** (15%-80%) - Typically begins 0.5 – 2 days after BsAb administration - Occurs most frequently and with the greatest severity during the **first cycle** of therapy and rarely persists beyond the second cycle - Resolves 1.5-3 days post-administration. - Most cases are **grade 1-2**, which resolve spontaneously or with minimal intervention	- **Uncommonly observed** across BsAb trials - Symptoms typically self-resolve within hours of onset - BsAb-associated neurotoxicity is less common and generally of lower grade than CAR T-cell-induced ICANS - Can occur concurrently with CRS
Management	- **Step-up dosing** - Post-administration **observation** - Treatment with **tocilizumab** - Pre-treatment with a single dose of **obinutuzumab** - **Slower IV infusion** - Prophylactic **corticosteroids** - **Inpatient** administration	

LEUKEMIA & LYMPHOMA SOCIETY®

https://ashpublications.org/blood/article/141/5/467/486966/Bispecific-antibodies-for-the-treatment-of-B-cell

78

Treatment | Bispecific Antibodies (BsAb): Other Toxicities



LEUKEMIA & LYMPHOMA SOCIETY®

https://ashpublications.org/blood/article/141/5/467/486966/Bispecific-antibodies-for-the-treatment-of-B-cell

79

Treatment | Bispecific Antibodies (BsAb): Patient Education

- Ensure patients have access to a **thermometer**. Blood pressure cuff and pulse oximeter can also be helpful if available to the patient.
- Provide prescription for **dexamethasone** to use as needed for CRS. Patients should be instructed to administer only after discussing with care team.
- Ideally patients should remain near a facility that stocks **tocilizumab** during the treatment days with highest risk for development of CRS
- Reinforce **clear indications to call** the care team
  - Temperature > 100.4F
  - Clinical symptoms of hypoxia or hypotension
  - Any change in cognition or speech
- Provide necessary **contact information** (e.g., after hours/on-call number)
- If experiencing any degree of neurotoxicity, do not drive or operate heavy machinery

LEUKEMIA & LYMPHOMA SOCIETY®

https://ashpublications.org/blood/article/143/16/1565/514709/Consensus-recommendations-on-the-management-of

80

Treatment | Bispecific Antibodies: Sample Patient Education Sheet & Wallet Card

Patient Name:	DOB:
Diagnosis:	Current treatment:
Treatment start date:	My highest risk of side effects is on (date):
Treatment team: Contact information:	
CRS symptoms to monitor for: - Temp 100.4 F or greater - Pulse Ox 90% or less or >5% change from baseline - Decrease in SBP >10 mmHg from baseline and/or SBP <90 mmHg - Increased HR >110 or more than 20 bpm from baseline while at rest	Neurotoxicity symptoms to monitor for: - Confusion - Difficulty with speech - Difficulty staying awake - Abnormal actions - Seizures
What do I monitor at home? - Temperature - Blood pressure - Heart rate - Oxygen levels	How often do I monitor?
When do I call my doctor's office? - Any symptom of CRS or change in thinking or speech When should I go straight to the ER?	What number should I call? - During office hours: - After office hours:

LEUKEMIA & LYMPHOMA SOCIETY®

https://ashpublications.org/blood/article/143/16/1565/514709/Consensus-recommendations-on-the-management-of

81

Treatment | Watch-and-Wait

- Also called "expectant observation" or "active monitoring"
- Standard of care for people whose disease is not widespread and who have no symptoms (certain indolent subtypes).
- Can also be the best approach for patients diagnosed with widespread disease that treatment likely won't cure, but may remain stable for years, letting patients avoid the side effects of needless therapy
- Some blood cancers can be managed successfully for years using watch and wait as the treatment plan

LEUKEMIA & LYMPHOMA SOCIETY®

82

Treatment | Watch-and-Wait: Patient Education

- Understand **why** – Starting treatment too early may:
  - Have no benefit
  - Not improve quality of life or increase overall survival
  - Unnecessarily put patients at risk for short- and long-term side effects
  - Limit treatment options and clinical trial opportunities in the future
  - Increase drug resistance
- Know what to report:
  - Enlarging or new lymph nodes
  - Enlarging spleen
  - Fevers
- Do not skip appointments with your oncologist or your other doctors, even if you are feeling well
- Maintain health insurance coverage and healthy habits
- Join a support group

LEUKEMIA & LYMPHOMA SOCIETY®

83

Treatment | Lenalidomide

- Oral immunomodulatory drug with significant activity in indolent B-cell and mantle cell lymphomas
- Administered as a single agent or in combination with rituximab
- To avoid serious risk to embryo-fetal development, it is available only through a restricted distribution program called the REVLIMID REMS® program that requires enrollment of the patient, physician, and pharmacy
- Typically taken on days 1-21 of a 28-day cycle

Take once daily at the same time each day

Take with or without food

Swallow pills whole. Do not crush, chew, or split.

Skip missed or vomited doses

Store in a cool, dry place

LEUKEMIA & LYMPHOMA SOCIETY®

REVLIMID. US. Prescribing Information. Revised 03/2023.

84

How to receive your first prescription for lenalidomide

For Females:

Counseling
Your healthcare provider will counsel you on:
- Why and how you and your partner should prevent pregnancy
- Using 2 effective birth control methods (at least 1 highly effective method and 1 effective method)
- Not sharing lenalidomide
- Not donating blood
- Not to open, break, chew, or crush lenalidomide capsules or handle them any more than needed

Pregnancy Test #1
If you can get pregnant, you must take an initial pregnancy test within 10-14 days before getting a lenalidomide prescription

Pregnancy Test #2
If you can get pregnant, you must take a second pregnancy test within 24 hours before getting a lenalidomide prescription

Enrollment
You and your healthcare provider will then complete and submit the Lenalidomide REMS Patient-Physician Agreement Form

Complete Mandatory Confidential Survey
You and your healthcare provider will each complete a survey. Visit **www. REMSPatientSafety.com**, access the REMS Companion App, or call **1-888-423-5436** and press 1 to take your survey

Prescription
Your healthcare provider will send your prescription to a certified pharmacy

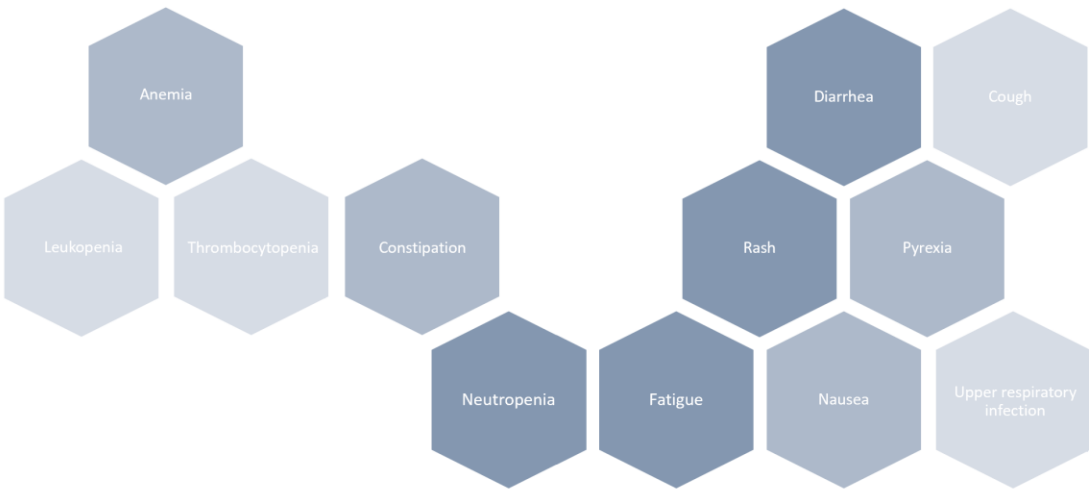
Pharmacy Call
The certified pharmacy will call you and will provide counseling on the serious risks and safety rules of Lenalidomide REMS. They will also discuss the delivery of lenalidomide to you

Receive Lenalidomide
Lenalidomide will be shipped to the address you provide. Someone must sign for this shipment

LEUKEMIA & LYMPHOMA SOCIETY®

85

Treatment | Lenalidomide: Common Toxicities (≥15%)



LEUKEMIA & LYMPHOMA SOCIETY®

REVLIMID. US. Prescribing Information. Revised 03/2023.

86

Treatment | Lenalidomide: Patient Education

- Discuss highly effective, reliable birth control vs. less effective, unreliable birth control
  - **Highly effective**: IUD, hormonal methods (e.g., birth control pill), tubal ligation, vasectomy, condom
  - **Unreliable**: progesterone-only "mini-pills," natural family planning ("rhythm method"), withdrawal
- Continue **two forms** of reliable birth control throughout treatment and for at least four weeks after stopping lenalidomide
- Males must use a latex or synthetic condom every time they have sex with a female who is able to get pregnant, even if they've had a successful vasectomy
- No breastfeeding while taking lenalidomide
- You must not donate blood or sperm while on therapy and for 4 weeks after stopping lenalidomide

Who is considered not able to get pregnant?

- You have been in natural menopause for at least 2 years
- You have had both ovaries and/or uterus removed
- You have not yet started your period and are under the age of 18

Highly effective birth control methods	Additional effective birth control methods
Intrauterine device (IUD)	
Hormonal methods (birth control pills, hormonal patches, injections, vaginal rings, or implants)	+ Male latex or synthetic condom
Tubal ligation (having your tubes tied)	+ Diaphragm
Partner's vasectomy (tying of the tubes to prevent the passing of sperm)	+ Cervical cap

LEUKEMIA & LYMPHOMA SOCIETY®

REVLIMID. US. Prescribing Information. Revised 03/2023.

87

Side Effect Management | Anorexia & Dysgeusia

- **<u>What causes altered appetite and taste changes?</u>**
  - Chemotherapeutic agents
    - Anthracyclines (doxorubicin)
    - Platinum-based (carboplatin, oxaliplatin, cisplatin)
  - Radiation therapy to head & neck
  - Disease involvement (head & neck lymphadenopathy)
  - Mucositis, xerostomia, nausea, vomiting, pain
  - Constipation, diarrhea
  - Stress, anxiety, depression
- **<u>Managing loss of appetite</u>**
  - Eat several small, calorie-dense or protein-rich snacks throughout the day, rather than 3 large meals
  - Eat your favorite foods at any time of day (e.g., breakfast for dinner)
  - Avoid large volumes of liquids while eating; drink liquids between meals
  - Have pre-made food or easy to reach snacks available and within reach
- **<u>Prevention</u>**
  - Regular dental care & good oral hygiene
    - Rinse with baking soda + salt water before and after meals and throughout the day
  - Tobacco and nicotine cessation
  - Avoidance of alcohol and alcohol-based mouthwashes
  - Staying ahead of nausea, constipation, diarrhea, and pain
  - Food diary
  - Early referral to registered dietician at cancer center
- **<u>When to call</u>**
  - Can't eat or drink for > 24 hours
  - Lose >/= 3 pounds in a week
  - Don't move bowels for 3 days

LEUKEMIA & LYMPHOMA SOCIETY®

Jatoi A. UpToDate. September 2024.

88

Side Effect Management | Anorexia & Dysgeusia

Bitter or metallic taste

- Swap metal cutlery with bamboo or plastic
- Cook in glassware instead of metal
- Mint, lemon, orange gum/candies to remove bad taste in mouth
- Counter with a sweetener (e.g., maple syrup)
- Avoid canned items (soups, sauces)
- Add fresh lemon, lime, orange , or juice if plain water is unappealing

No taste

- Add bold flavor with herbs, spices, extracts, citrus, vinegar
- Change the texture or temperature of food
- Try pickled, tart, or sour foods (kimchi) to stimulate taste

Bad taste or smell

- Serve foods cold or at room temperature
- Choose foods that don't need to be cooked
- Use cups with lids; drink through a straw
- Opt for low-odor alternatives (chicken > beef; turkey > fish)

Red meat aversion

- Substitute other protein-rich foods like chicken, fish, peanut butter, beans, tofu, eggs, cheese
- Marinate meats in fruit juices, sweet wines, salad dressings, or other sauces
- Prepare in combination with other foods (spaghetti sauce, chili, lasagna)

LEUKEMIA & LYMPHOMA SOCIETY®

Jatoi A. UpToDate. September 2024.

89

Side Effect Management | Constipation

What causes constipation?

- Certain chemotherapy agents (e.g., vincristine)
- Medications (e.g., opioids, ondansetron [Zofran])
- Not drinking enough fluids
- Not eating enough fiber
- Decreased physical activity

Prevention

- 64oz decaffeinated fluids daily
  - Warm beverages
  - Prune juice
- Stay as active as possible
- Include high-fiber foods in diet
- Establish a bowel routine/schedule

When to call

- No BM in three days
- Moderate to severe abdominal pain, cramping, or distention
- Vomiting or unable to eat
- Excessive gas or not passing gas

Management

- Docusate (Colace), polyethylene glycol (MiraLAX), Docusate (Senna-S), psyllium
- Avoid suppositories and enemas unless approved by provider
- If frequent or loose stools develop, decrease your laxatives by one-half

LEUKEMIA & LYMPHOMA SOCIETY®

https://www.mskcc.org/cancer-care/patient-education/constipation.

90

Side Effect Management | Peripheral Neuropathy

What causes neuropathy?

- Certain chemotherapy agents (e.g., vincristine, MTX)
- Primary disease (e.g., WM)
- Co-morbidities (e.g., HIV, DM, shingles)
- Vitamin deficiencies

Prevention

- Assess frequently
- Encourage early reporting
- Consider dose reduction and/or schedule modification
- Avoid smoking and alcohol

When to report

- Persistent or worsening symptoms
- Painful and/or impacting QOL (e.g., sleep)
- Limiting ADLs & fine motor skills
- Causing falls or injury

Management

- PT/OT to improve fine motor skills, balance, strength
- Massage, acupuncture, TENS
- Supplements (e.g., B12, folic acid)
- Creams (e.g., cocoa butter)
- Pharmaceuticals (e.g., duloxetine)

LEUKEMIA & LYMPHOMA SOCIETY®

https://www.cancer.org/cancer/managing-cancer/side-effects/pain/peripheral-neuropathy.html.

91

Side Effect Management | Cancer-Related Fatigue

What causes fatigue?

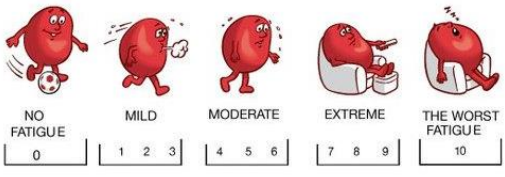
- The disease itself
- Side effect of treatment & medications
- Anemia, hypothyroidism
- Stress, anxiety, depression
- Altered sleep, nutrition, activity

Prevention

- Identify and address underlying causes
  - Insomnia
  - Anemia, hypothyroidism
  - Poor nutrition

When to report

- You feel too tired to get out of bed for a 24-hour period
- You feel confused, dizzy, lightheaded
- You are losing your balance and/or falling
- You have difficulty waking up
- You have shortness of breath



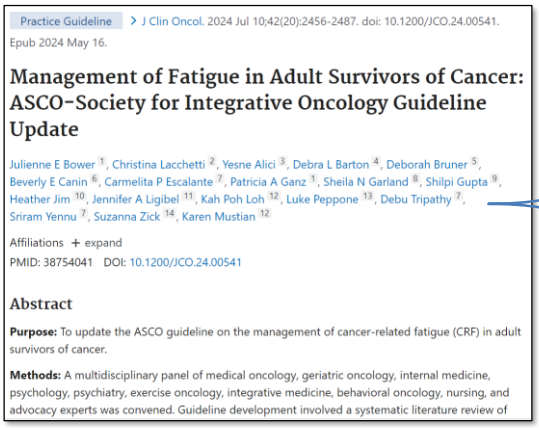
LEUKEMIA & LYMPHOMA SOCIETY®

https://www.mskcc.org/cancer-care/patient-education/managing-related-fatigue.

92

Side Effect Management | Cancer-Related Fatigue: Management

ASCO® Journal of Clinical Oncology®



Practice Guideline > J Clin Oncol. 2024 Jul 10;42(20):2456-2487. doi: 10.1200/JCO.24.00541. Epub 2024 May 16.

Management of Fatigue in Adult Survivors of Cancer: ASCO–Society for Integrative Oncology Guideline Update

Julienne E Bower [1], Christina Lacchetti [2], Yesne Alici [3], Debra L Barton [4], Deborah Bruner [5], Beverly E Canin [6], Carmelita P Escalante [7], Patricia A Ganz [1], Sheila N Garland [8], Shilpi Gupta [9], Heather Jim [10], Jennifer A Ligibel [11], Kah Poh Loh [12], Luke Peppone [13], Debu Tripathy [7], Sriram Yennu [7], Suzanna Zick [14], Karen Mustian [12]

Affiliations + expand

PMID: 38754041 DOI: 10.1200/JCO.24.00541

Abstract

Purpose: To update the ASCO guideline on the management of cancer-related fatigue (CRF) in adult survivors of cancer.

Methods: A multidisciplinary panel of medical oncology, geriatric oncology, internal medicine, psychology, psychiatry, exercise oncology, integrative medicine, behavioral oncology, nursing, and advocacy experts was convened. Guideline development involved a systematic literature review of

Summary:

Clinicians should recommend exercise, CBT, mindfulness-based programs, and tai chi or qigong to reduce the severity of fatigue during cancer treatment.

Psychoeducation and American ginseng may be recommended in adults undergoing cancer treatment.

For survivors after completion of treatment, clinicians should recommend exercise, CBT, and mindfulness-based programs; in particular, CBT and mindfulness-based programs have shown efficacy for managing moderate to severe fatigue after treatment.

Yoga, acupressure, and moxibustion may also be recommended.

Patients at the end of life may be offered CBT and corticosteroids.

Clinicians should not recommend L-carnitine, antidepressants, wakefulness agents, or routinely recommend psychostimulants to manage symptoms of CRF.

LEUKEMIA & LYMPHOMA SOCIETY®

93

Summary

- Non-Hodgkin Lymphoma (NHL) is a diverse group of lymphomas ranging from indolent to aggressive.
- Treatment is extremely varied. Your NHL patient may encounter everything from observation only to traditional chemo-immunotherapy to novel bispecifics and CAR T-cell therapy.
- Access www.NCCN.org for treatment guidelines on B-cell lymphomas
- High-quality patient education at diagnosis and throughout treatment is essential
  - Reinforce: When and who to call
  - Review: Supportive medications & side effect management
  - Recognize: Urgent and emergent concerns

Duke Cancer Institute

When to Call Your Health Care Team (Chemotherapy)

When do I call?

Cancer treatment may have side effects. Some side effects are serious and need to be treated right away. These instructions tell you when to call your health provider.

Your cancer treatment is _____

Your cancer doctor's name is _____

If you are having a life-threatening emergency, call 911 right away.

What side effects should I call about right away?

- Fever of 100.5° F (38.0° C) or higher or chills without a fever
- Redness, swelling, drainage, or pain with any vein or catheter (implanted Port, PICC line, Hickman® or other tunneled catheter)
- Severe headache or sudden changes in your ability to think
- New chest pain
- Sudden shortness of breath
- Blood in your urine
- Stools that are bright red or black and tarry
- Bleeding from your gums or nose or from coughing
- Vomiting (or "throw up") that is bright red or has a coffee-grounds appearance (black or dark brown)
- Swelling in your arm, neck, or face
- Have fallen

What side effects should I call about within 24 hours?

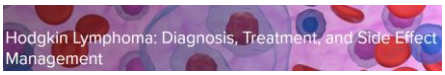
- Nausea if you have been unable to eat or drink for more than 8 hours or vomiting not controlled by medicine
- New abdominal pain or cramping
- Diarrhea or loose stools more than 4 times a day
- Constipation or no stools (bowel movement) for 3 days
- Cough which brings up yellow or green mucus

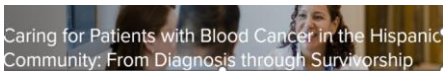
LEUKEMIA & LYMPHOMA SOCIETY®

94

FREE LLS RESOURCES FOR HEALTHCARE PROFESSIONALS

- ❑ CME & CE courses: www.LLS.org/CE
- ❑ Fact Sheets for HCPs: www.LLS.org/HCPbooklets
- ❑ Videos for HCPs: www.LLS.org/HCPvideos
- ❑ Podcast series for HCPs: www.LLS.org/HCPpodcast





CLICK HERE TO PARTICIPATE

LEUKEMIA & LYMPHOMA SOCIETY®

95

FREE LLS RESOURCES FOR PATIENTS

- ❑ **Information Specialists** – Personalized assistance for managing treatment decisions, side effects, and dealing with financial and psychosocial challenges (IRC).
  - ➢ www.LLS.org/IRC
- ❑ **Nutrition Education Services Center** – one-on-one consultation with a registered dietician for patients/caregivers of all cancer types (NESC).
  - ➢ www.LLS.org/Nutrition
- ❑ **Clinical Trial Nurse Navigators** – RNs and NPs provide a personalized service for patients seeking treatment in a clinical trial, sift through the information and provide information to bring back to their HC team (CTSC).
  - ➢ www.LLS.org/CTSC
- ❑ **Reach out Monday–Friday, 9 am to 9 pm ET**
  - Phone: (800) 955-4572
  - Live chat: www.LLS.org/IRC
  - Email: infocenter@LLS.org
  - HCP Patient Referral Form: www.LLS.org/HCPreferral

LEUKEMIA & LYMPHOMA SOCIETY®

96

HERE TO HELP: LLS COMMITMENT

to providing education & resources to help patients access clinical trials

CLINICAL TRIAL SUPPORT CENTER

- A team of highly trained nurses and nurse practitioners experienced with hematological malignancies and clinical research.
- Provide education to patients about clinical trials, treatment options, and other disease specific information.
- Provide patients, families, and their caregivers with a professional, detailed, individualized search to discuss with their HCP.
- Provide guidance and serve as advocates throughout the clinical trial process. Help make connections between the patient and the trial site to facilitate enrollment as appropriate.
- Provide a personal connection and develop long term relationships to help better serve our patients.

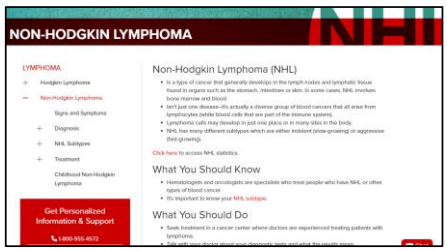
LEUKEMIA & LYMPHOMA SOCIETY®

97

FREE LLS RESOURCES FOR PATIENTS AND CAREGIVERS

❑ **Webcasts, Videos, Podcasts, booklets**:

- www.LLS.org/Webcasts
- www.LLS.org/EducationVideos
- www.LLS.org/Podcast
- www.LLS.org/Booklets
- **www.LLS.org/Lymphoma**



❑ **Support Resources**

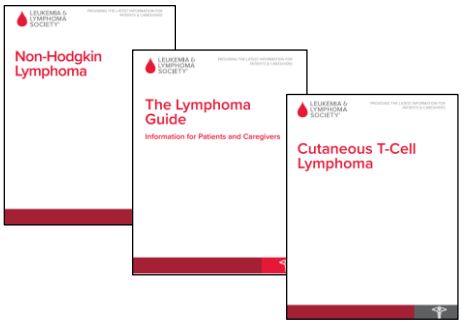
❑ Financial Assistance: www.LLS.org/Finances
- Urgent Need
- Patient Aid
- Travel Assistance

❑ Other Support: www.LLS.org/Support
- LLS Regions
- Online Weekly Chats Facilitated by Oncology SW
- LLS Community Social Media Platform
- First Connection Peer to Peer Program

LEUKEMIA & LYMPHOMA SOCIETY®

98

FREE LLS RESOURCES FOR YOUR PATIENTS



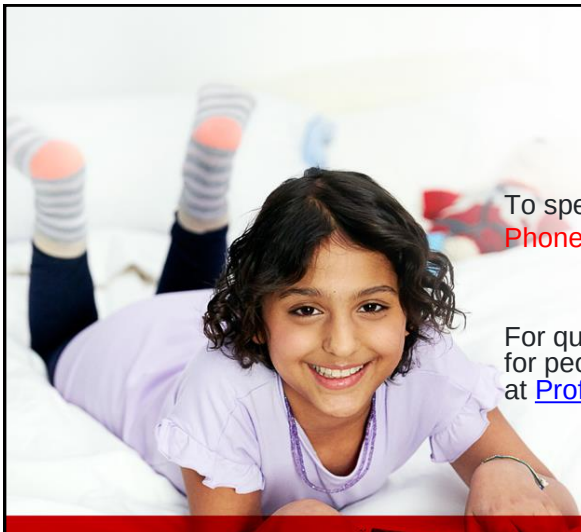
BOOKLETS AND FACT SHEETS

English – www.LLS.org/Booklets
Spanish – www.LLS.org/Materiales

LEUKEMIA & LYMPHOMA SOCIETY®

99

THANK YOU



To speak with an Information Specialist or to refer a patient:
Phone (800) 955-4572 Email: Infocenter@LLS.org

For questions about this program, concerns, or assistance for people with disabilities or grievances, please contact us at Profeducation@LLS.org

We have one goal: A world without blood cancers

LEUKEMIA & LYMPHOMA SOCIETY®

100