

# The Lymphomas

## An overview.....

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**SOUTHLAKE**  
REGIONAL HEALTH CENTRE

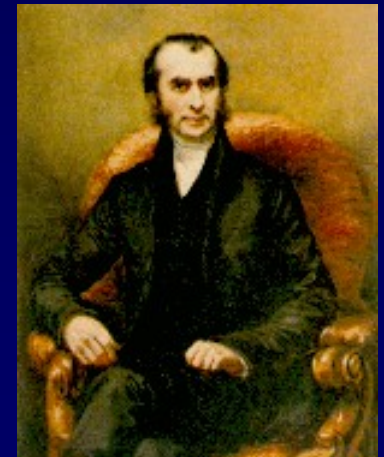


"Limbphoma."

# The lymphomas are an important part of the history of medicine

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- 1666
  - Magpighi publishes first recorded description of lymphoma in *De viscerum structuru exercitatio anatomica*
- 1832
  - Hodgkin publishes his paper "On Some Morbid Appearances of the Absorbent Glands and Spleen"



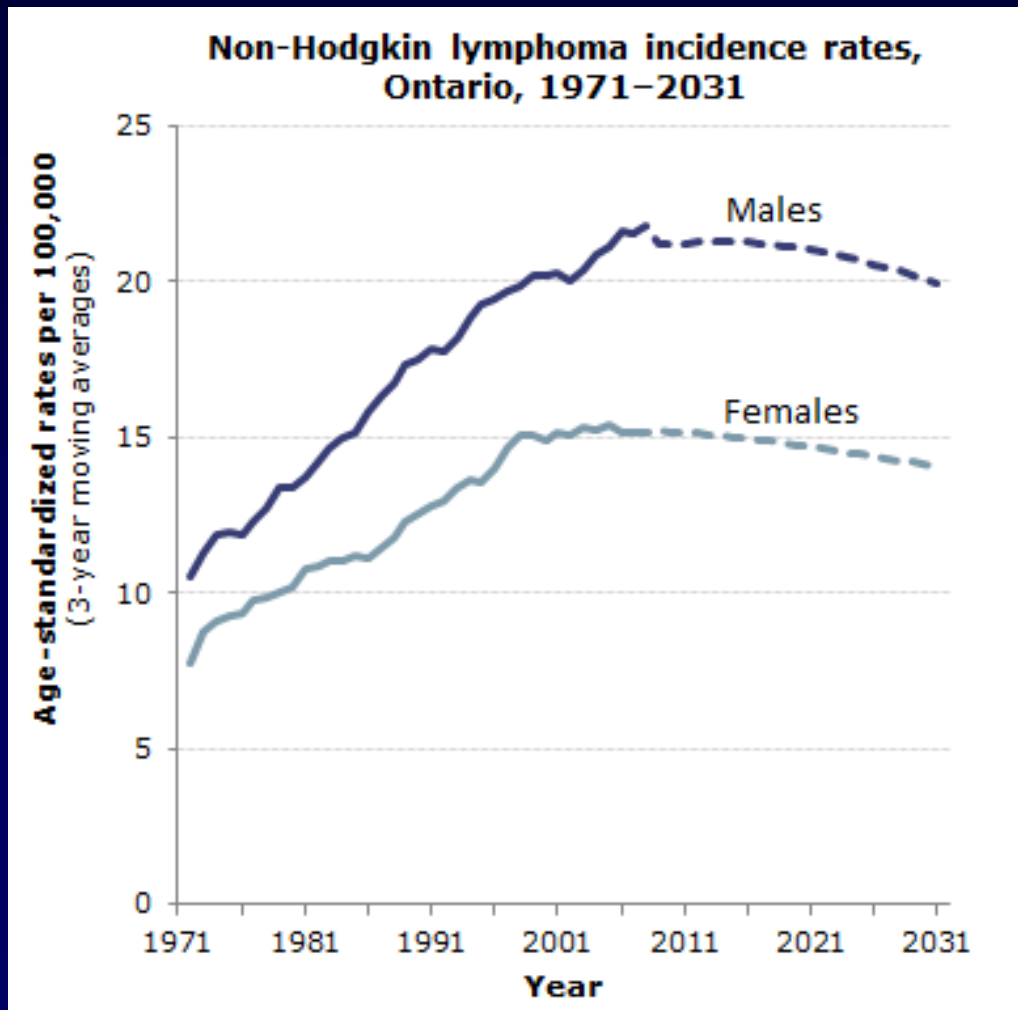
# Outline of Overview

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- Some history
- A few stats
- Overview of diagnostic process
  - Pathology
  - Imaging
  - Staging
- An overview of treatment



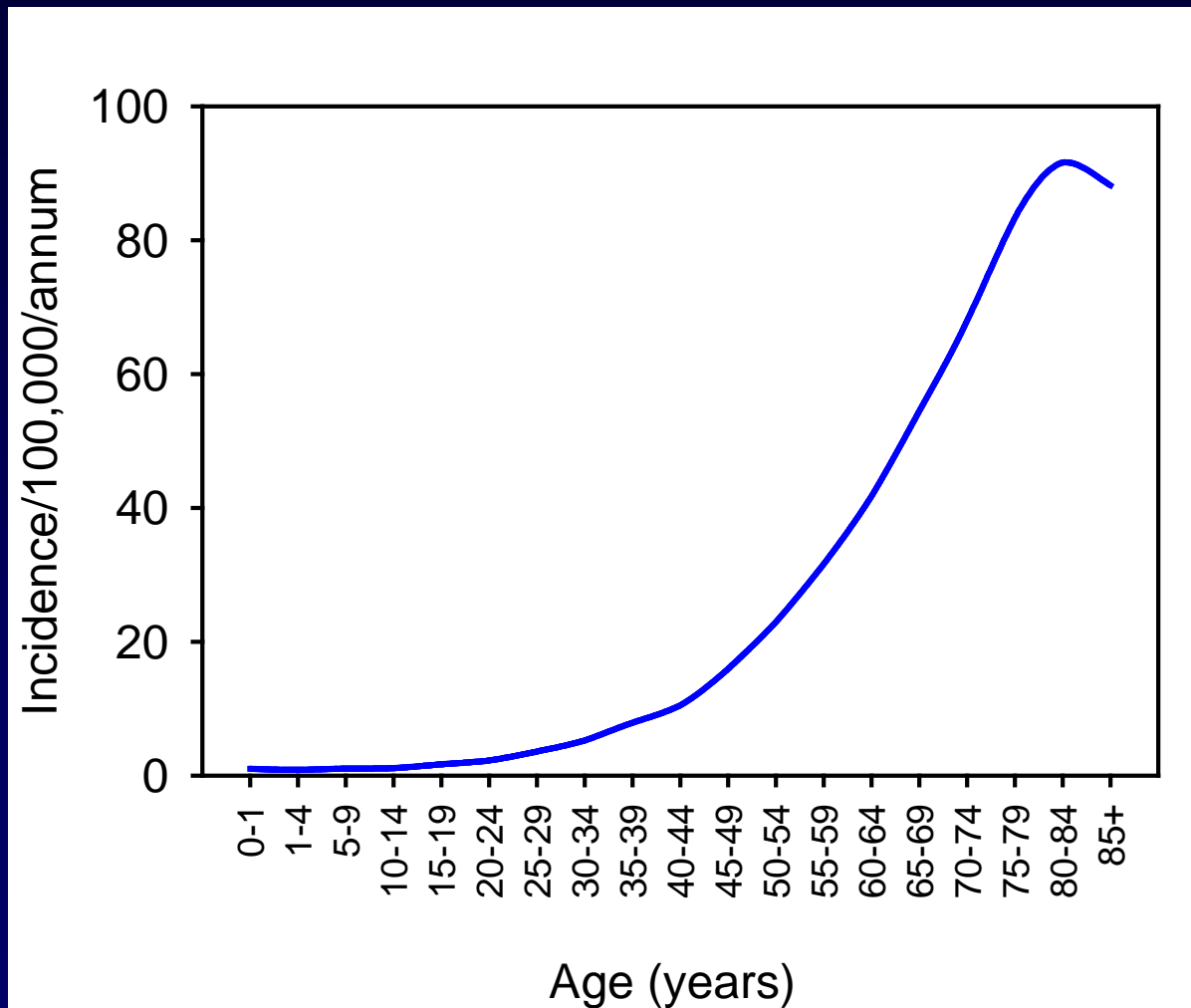
After rising for several decades incidence rates for NHLs in Ontario are expected to decline.



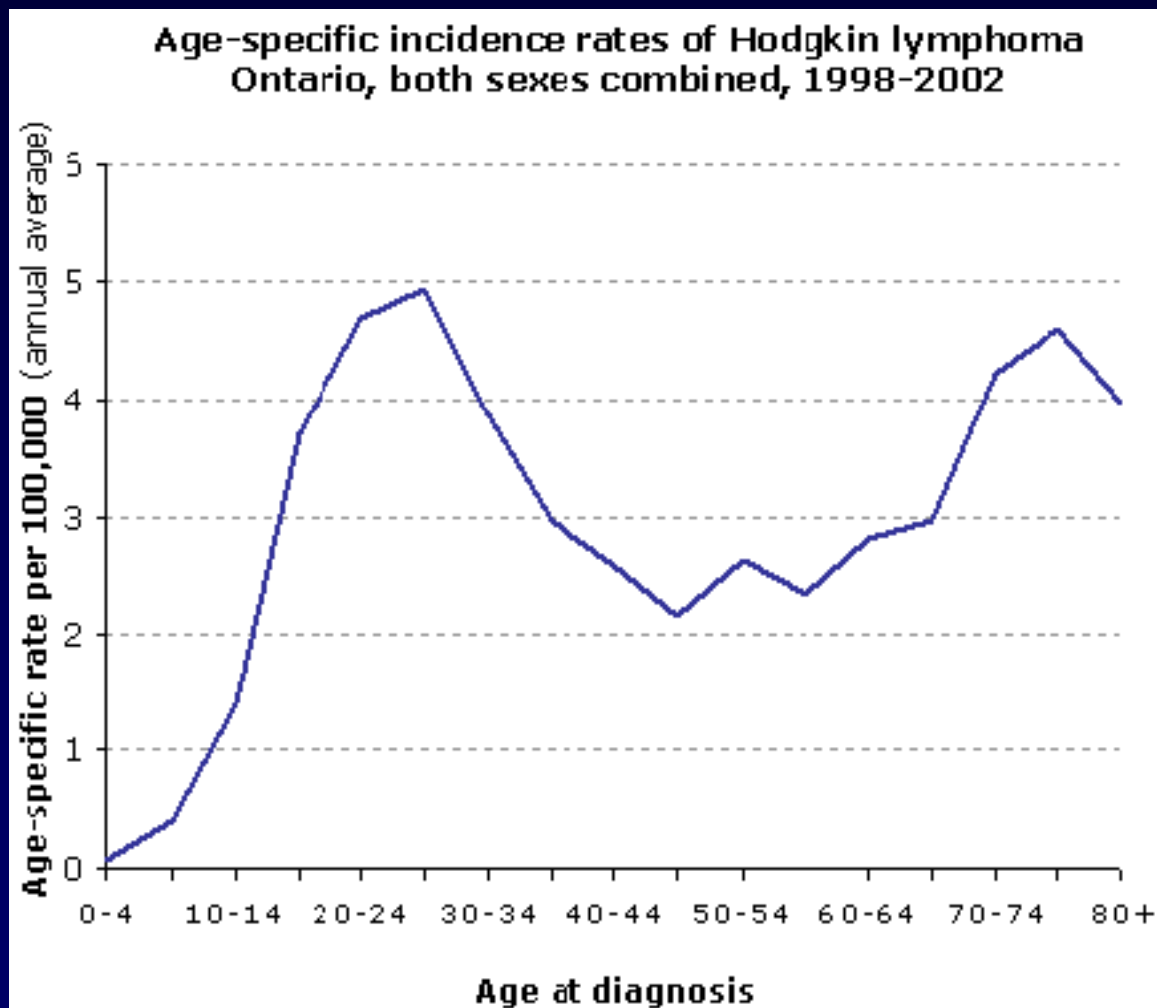
Source: Cancer Care Ontario (Ontario Cancer Registry, 2010)  
Dashed lines are estimates.

Estimates:  
2012 – 3000 cases  
2032 – 4500 cases

# Increasing age is a risk factor for NHL.



Hodgkin's lymphoma is a bit unusual in that it has two different age peaks.



2012 – 600 cases

Source: Cancer Care Ontario (Ontario Cancer Registry, 2006)

# The current lymphoma classification

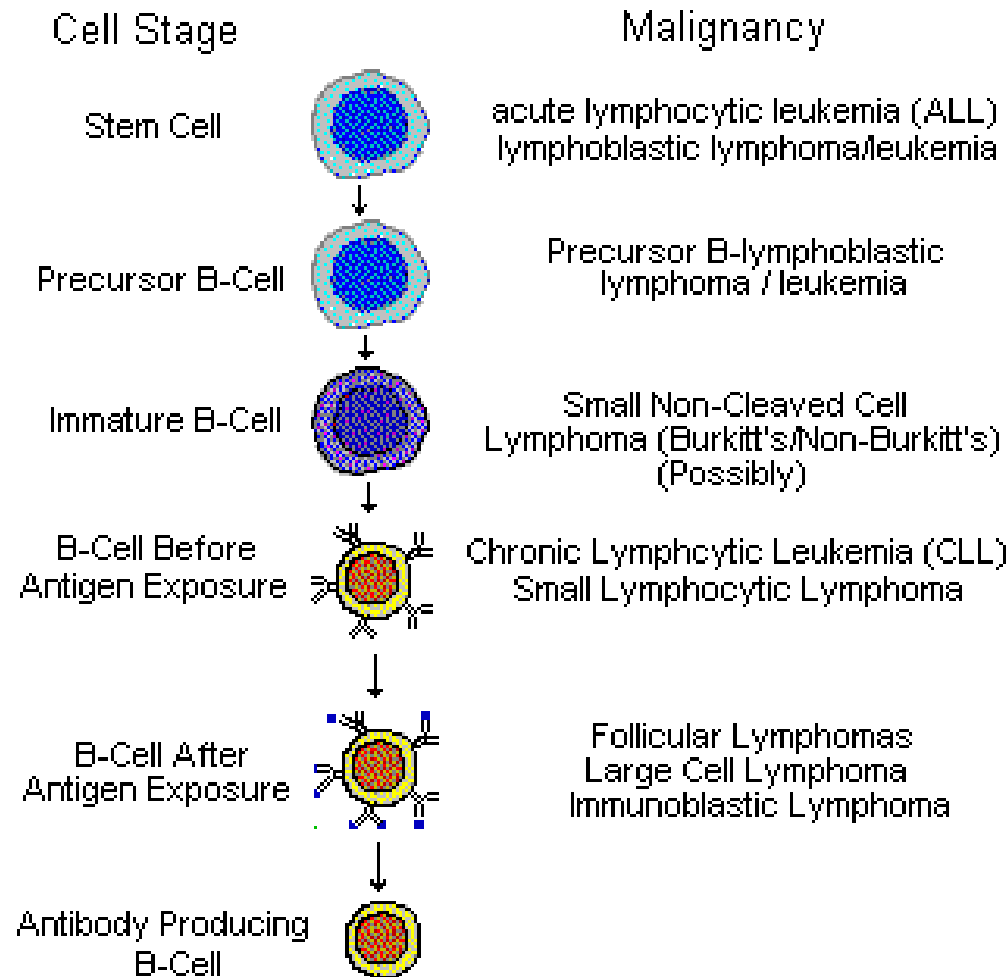
(based on 2001 WHO – updated 2008)

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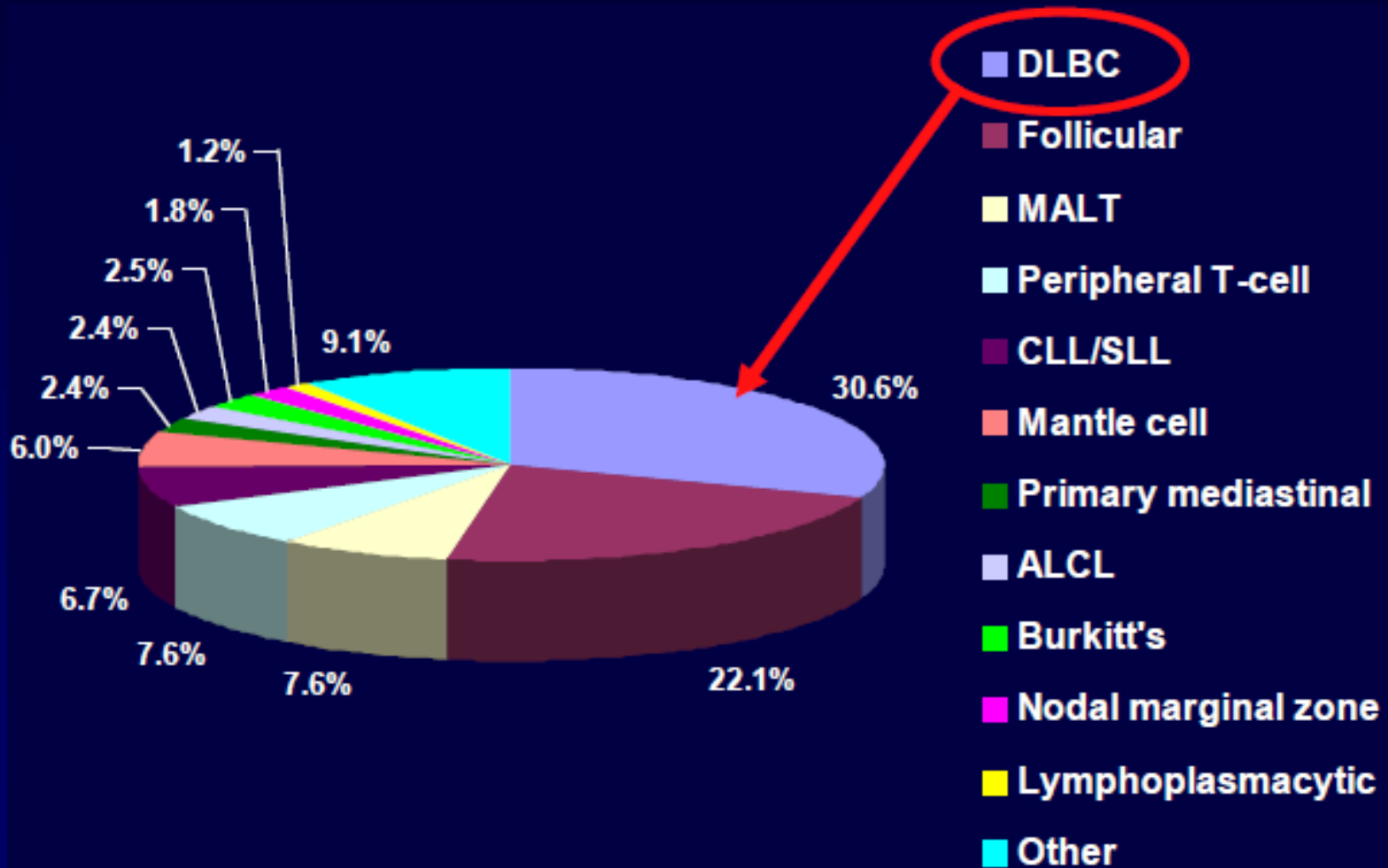
- B-cell neoplasms
  - Precursor B-cell neoplasms (2 types)
  - Mature B-cell neoplasms (19)
  - B-cell proliferations of uncertain malignant potential (2)
- T-cell & NK-cell neoplasms
  - Precursor T-cell neoplasms (3)
  - Mature T-cell and NK-cell neoplasms (14)
  - T-cell proliferation of uncertain malignant potential (1)
- Hodgkin lymphoma
  - Classical Hodgkin lymphomas (4)
  - Nodular lymphocyte predominant Hodgkin lymphoma (1)

# The different lymphomas originate at different levels of lymphocyte maturation.

## B Cell Cancers by Cell Development

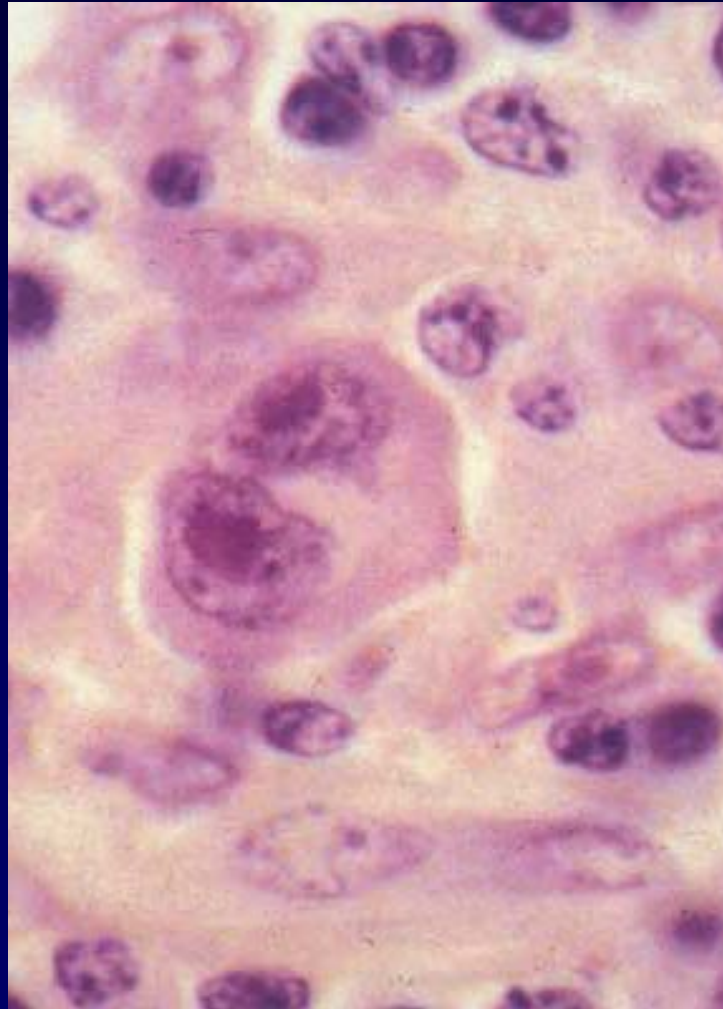


# The current lymphoma classification (based on 2008 WHO)



Hodgkin's Disease occurs at about 1/5 the frequency of the NHLs.

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# The lymphomas can present with many different clinical manifestations.

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- Variable
  - Severity: asymptomatic to extremely ill
  - Time course: evolution over weeks, months, or years
- Systemic manifestations
  - fever, night sweats, weight loss, anorexia, pruritis
- Local manifestations
  - lymphadenopathy, splenomegaly most common
  - any tissue potentially can be infiltrated

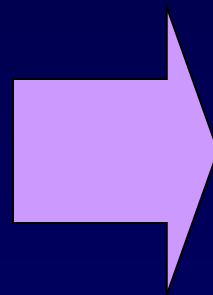
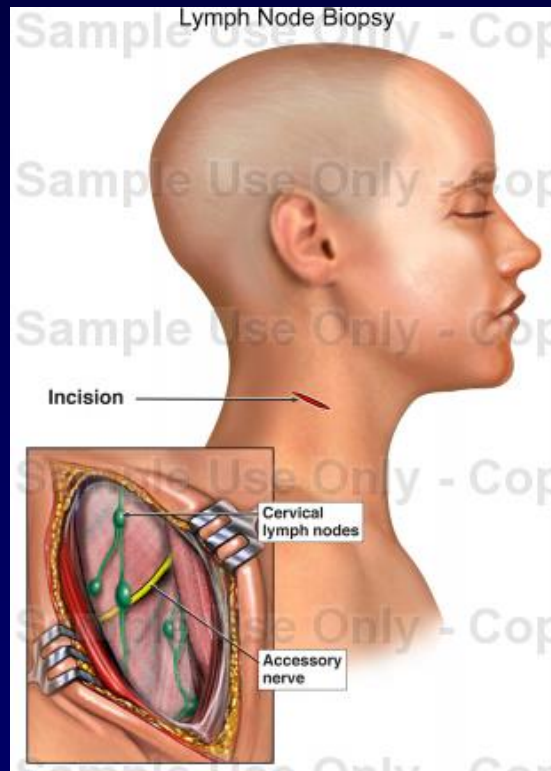
# Other complications of lymphoma

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- Bone marrow failure (infiltration)
- CNS infiltration
- Immune hemolysis or thrombocytopenia
- Compression of structures (eg spinal cord, ureters) by bulky disease
- Pleural/pericardial effusions, ascites

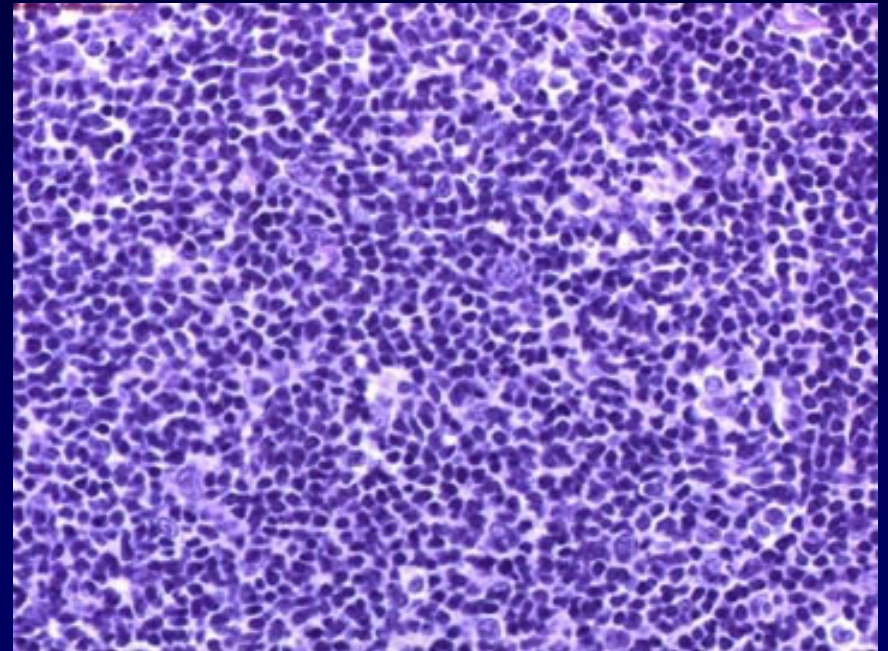
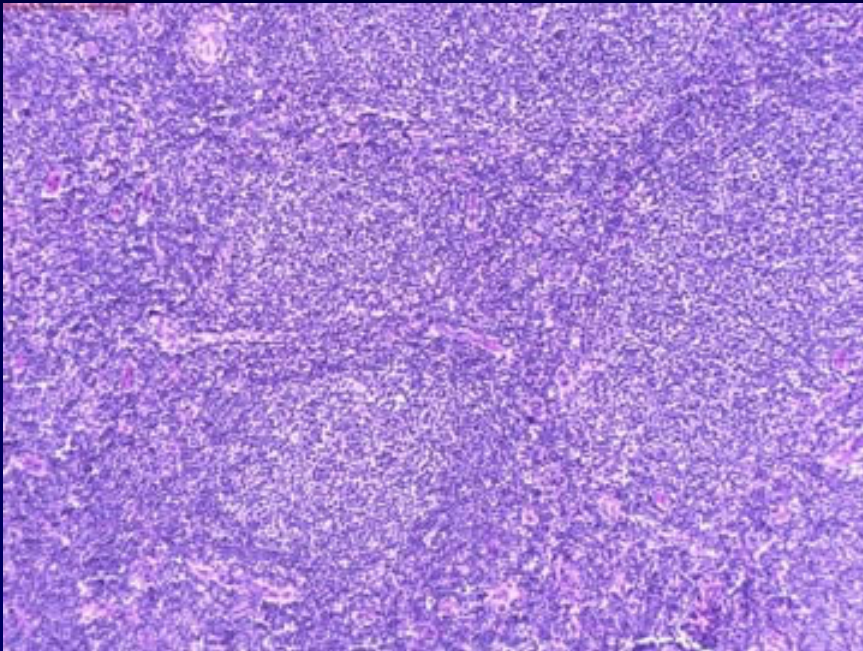
# Pathology remains the absolute most critical piece of the diagnostic work-up....

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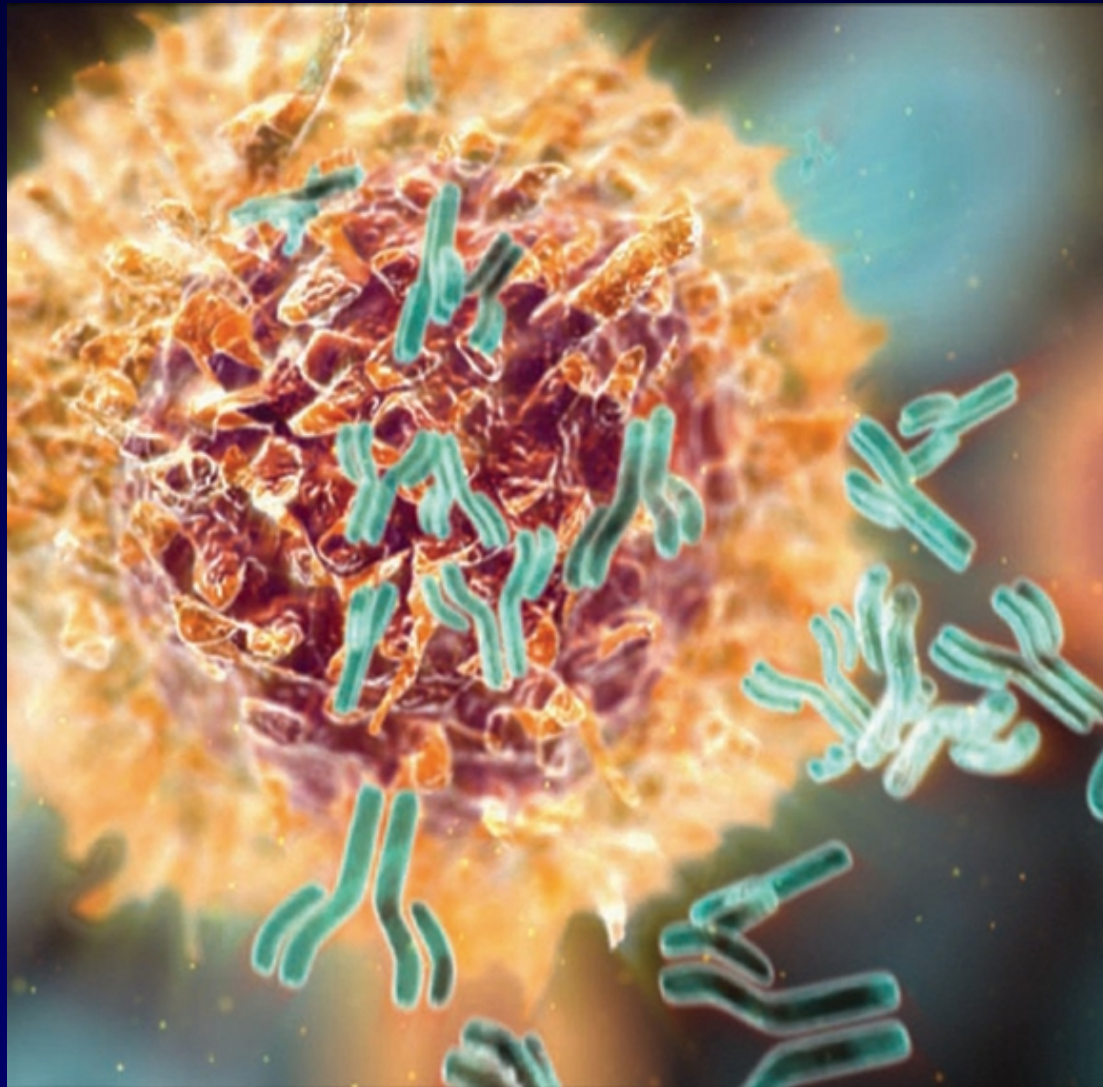
Biopsies are examined to classify the lymphoma.

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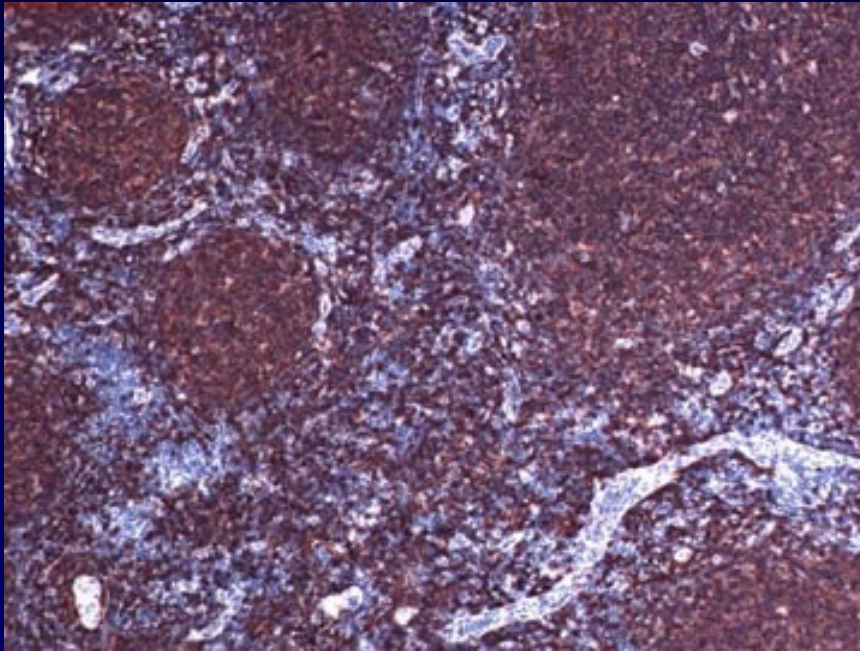
The individual lymphomas are distinguished in part by the proteins expressed on their surface.

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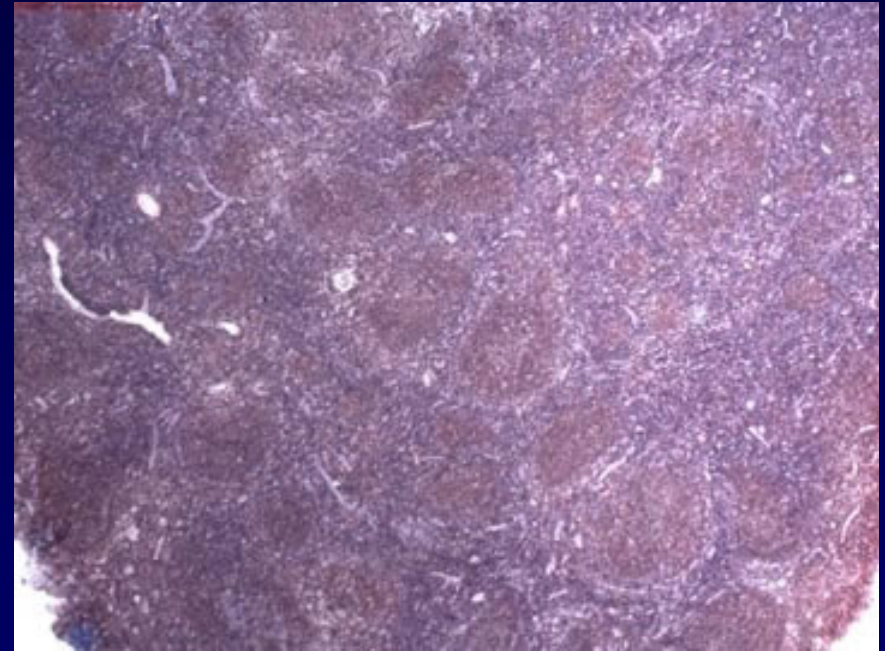


# Immunohistochemical stains help to classify the lymphoma.

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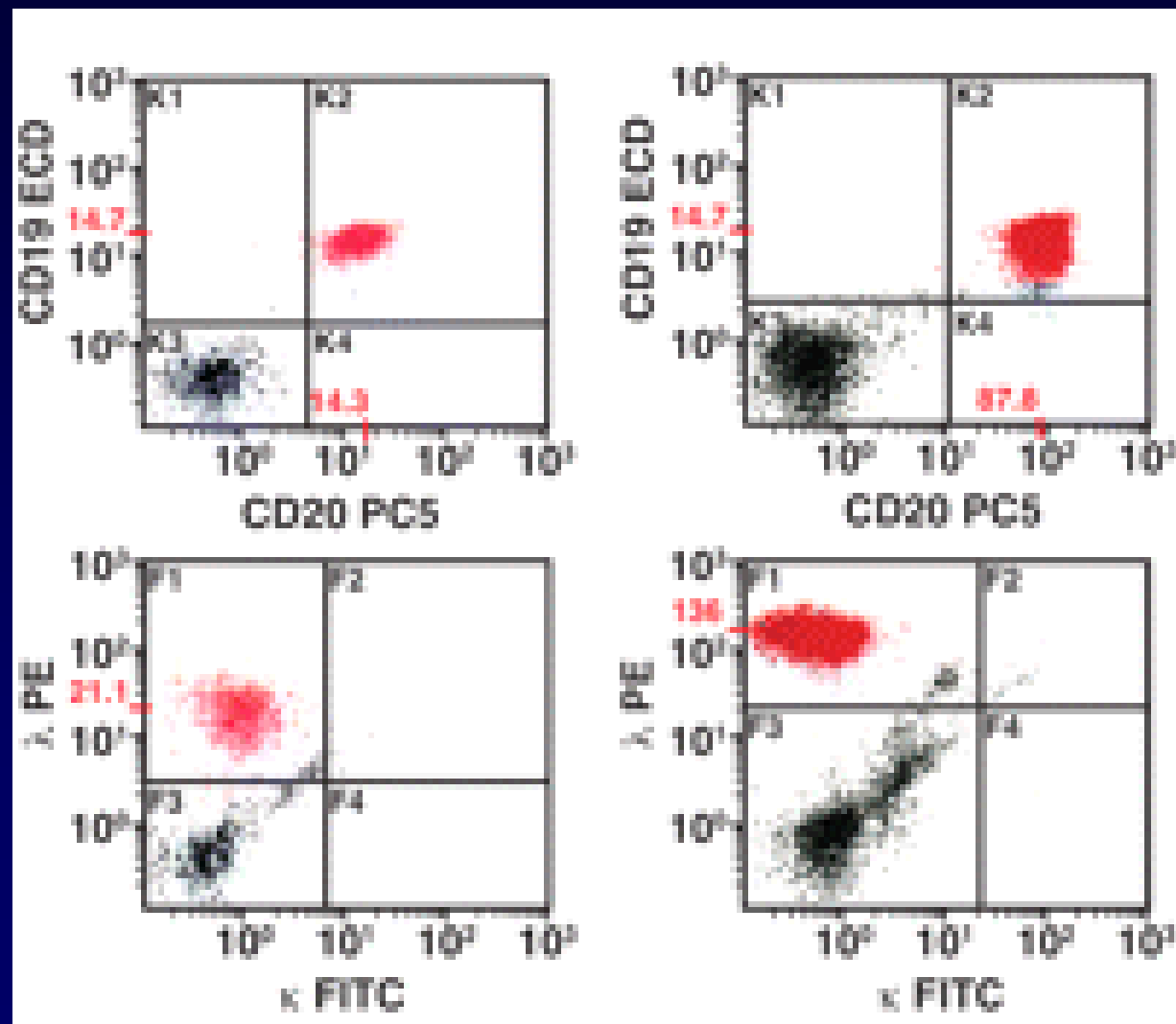


CD20



BCL2

Flow cytometry studies help also to classify the “immunophenotype” of the tumour.



# Molecular techniques such as FISH aid in sub-classifying the lymphomas

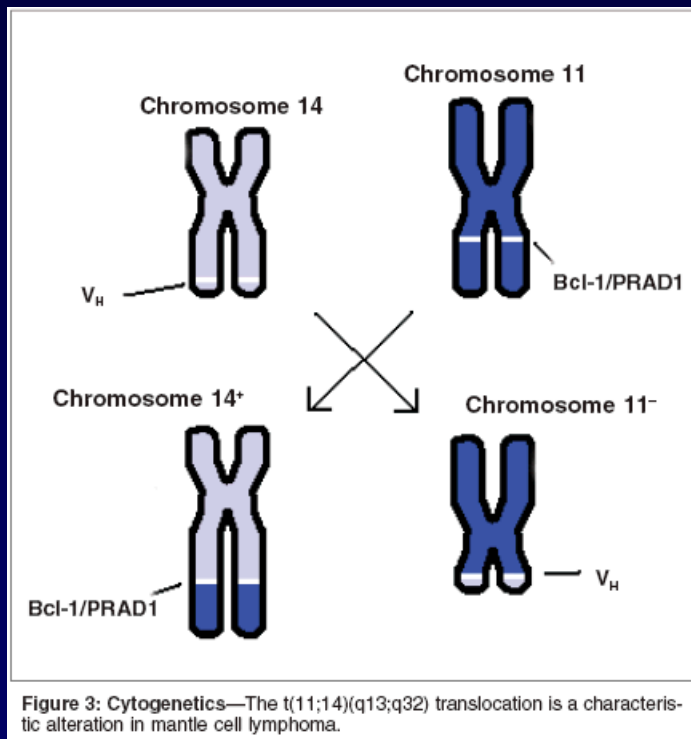
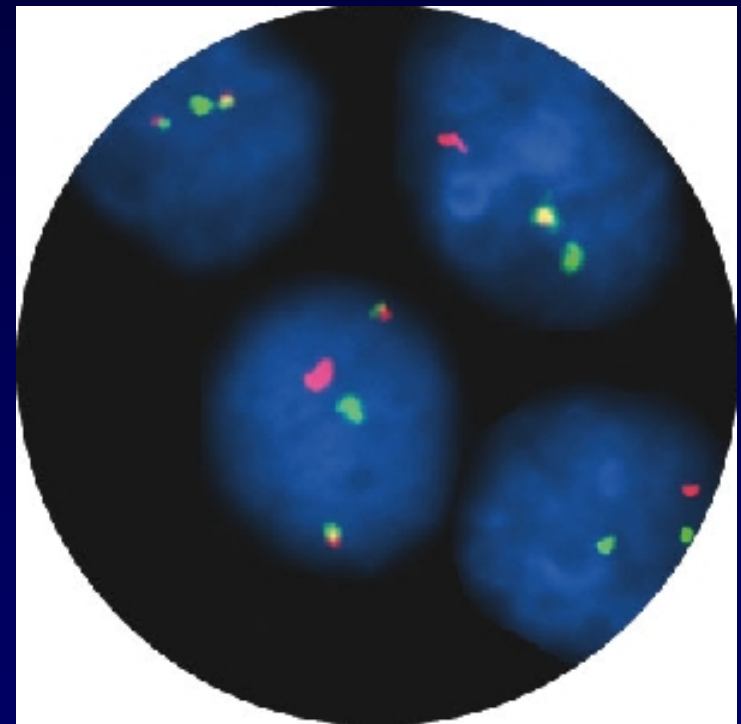
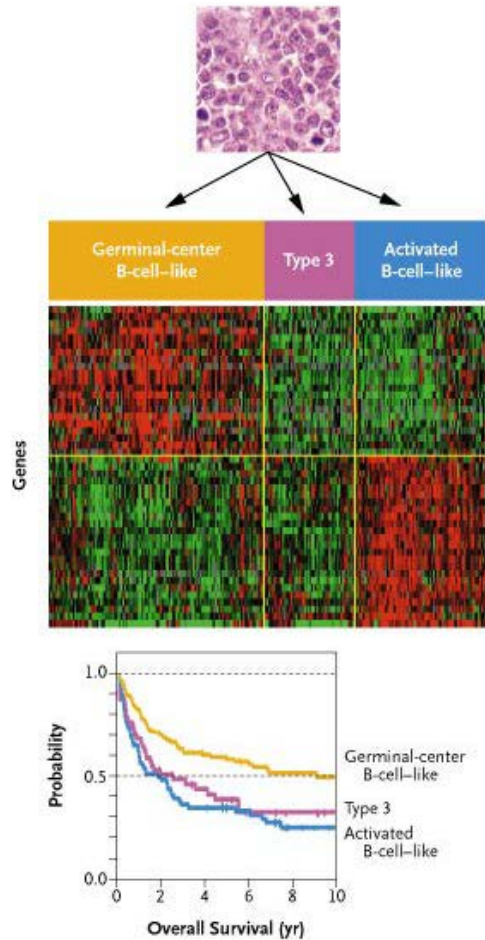


Figure 3: Cytogenetics—The t(11;14)(q13;q32) translocation is a characteristic alteration in mantle cell lymphoma.

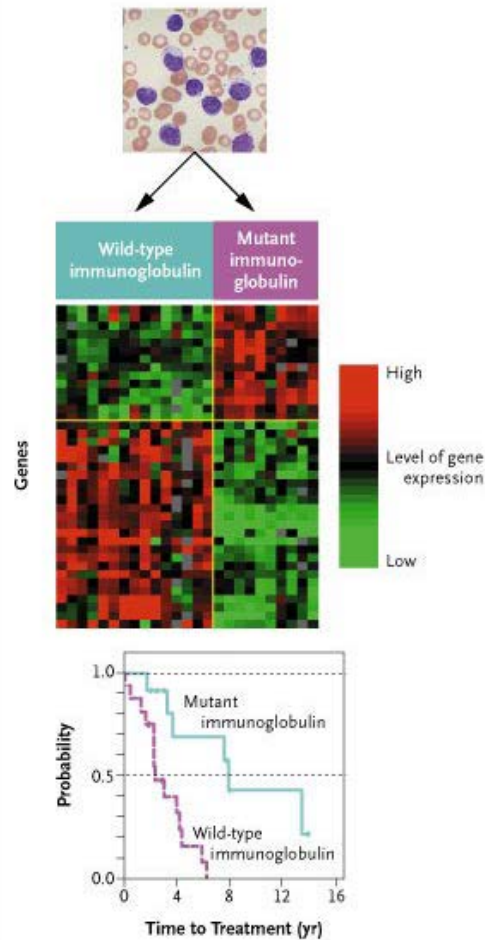


# Newer techniques such as gene expression profiling will allow give more prognostic information

**A** Diffuse Large-B-Cell Lymphoma



**B** B-Cell Chronic Lymphocytic Leukemia

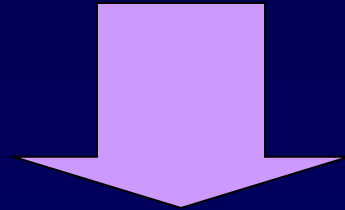


## Gene Expression Profiling

# The initial evaluation of a patient with newly diagnosed lymphoma shapes treatment and prognosis

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**Initial Evaluation:**  
Specific Histologic Sub-type  
Extent of disease  
General health status of patient



**Treatment Plan**  
**Prognosis**

The # of staging investigations is dependent on the type of lymphoma and goals of therapy.

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- Blood tests
- Bone marrow examination
- Imaging
  - CT scans
  - Gallium scan
  - PET scan
- CSF sampling

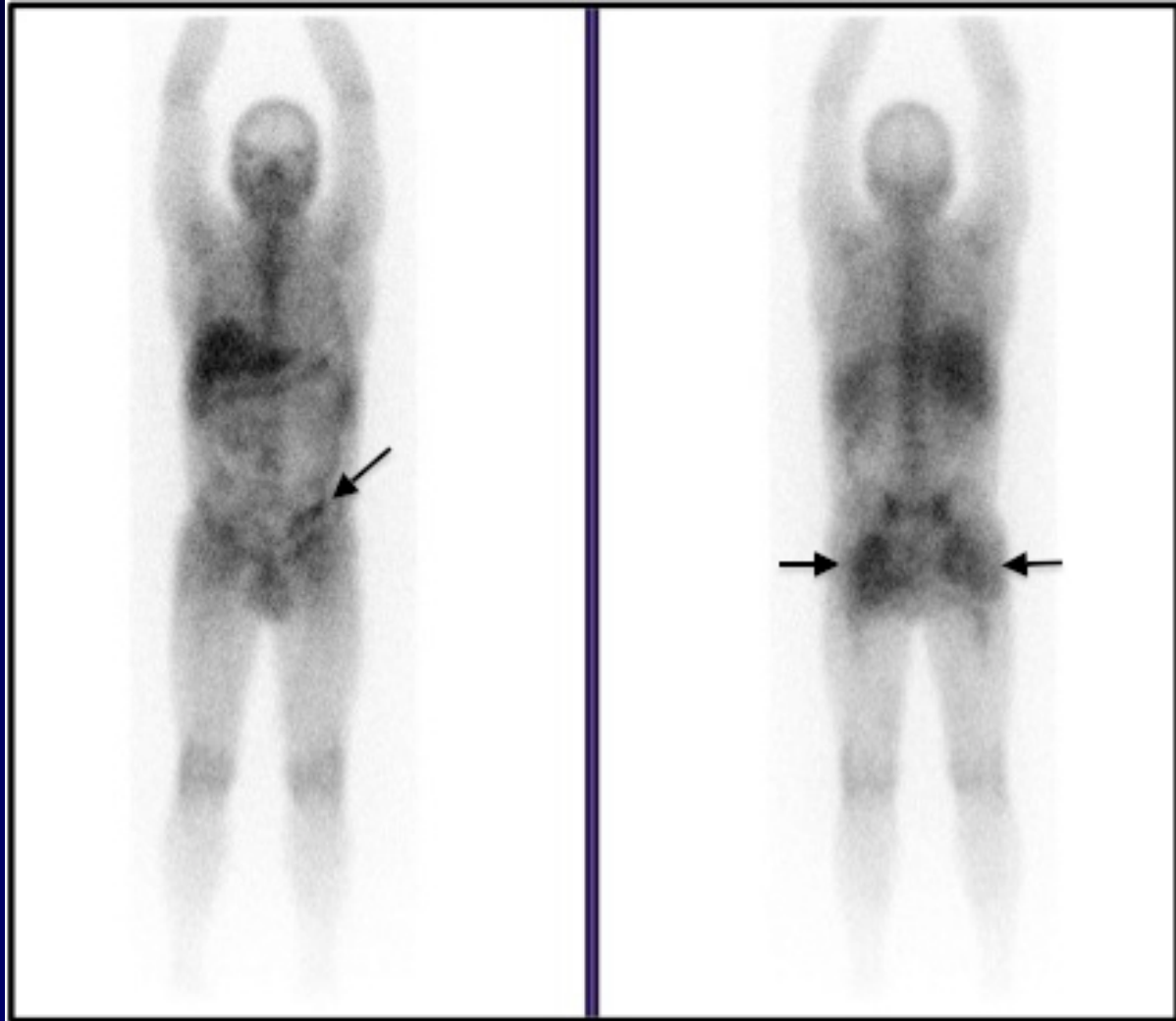
# CT scans can demonstrate masses not evident on clinical examination

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Gallium scanning may find areas of unknown disease in aggressive histology lymphoma.

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# PET scanning.....



**A PET Scan confirms the squeaking  
in Bob's head is his lost hamster...**

# PET scanning is being utilized more in the lymphomas especially for post treatment assessment

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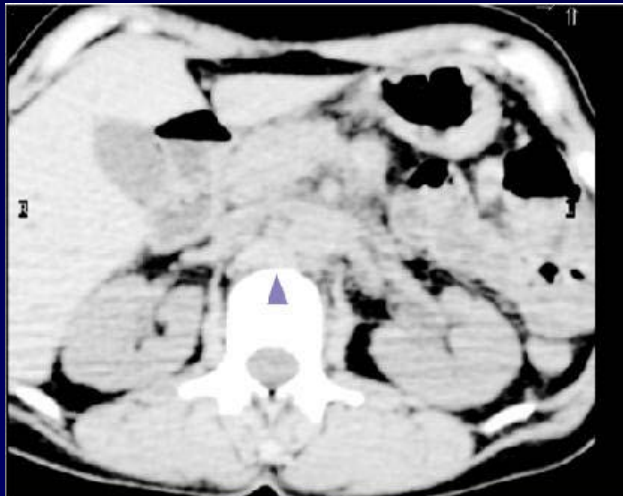


Figure 4a CT scan through the abdomen. Arrowhead points to a residual mass in the abdomen following chemotherapy. It was uncertain or not whether this was active lymphoma

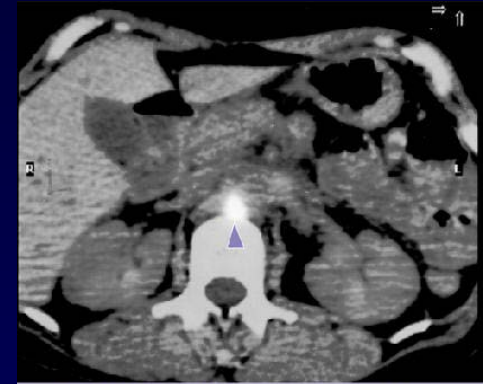
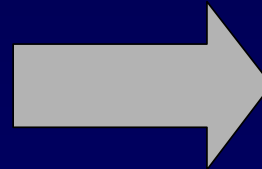


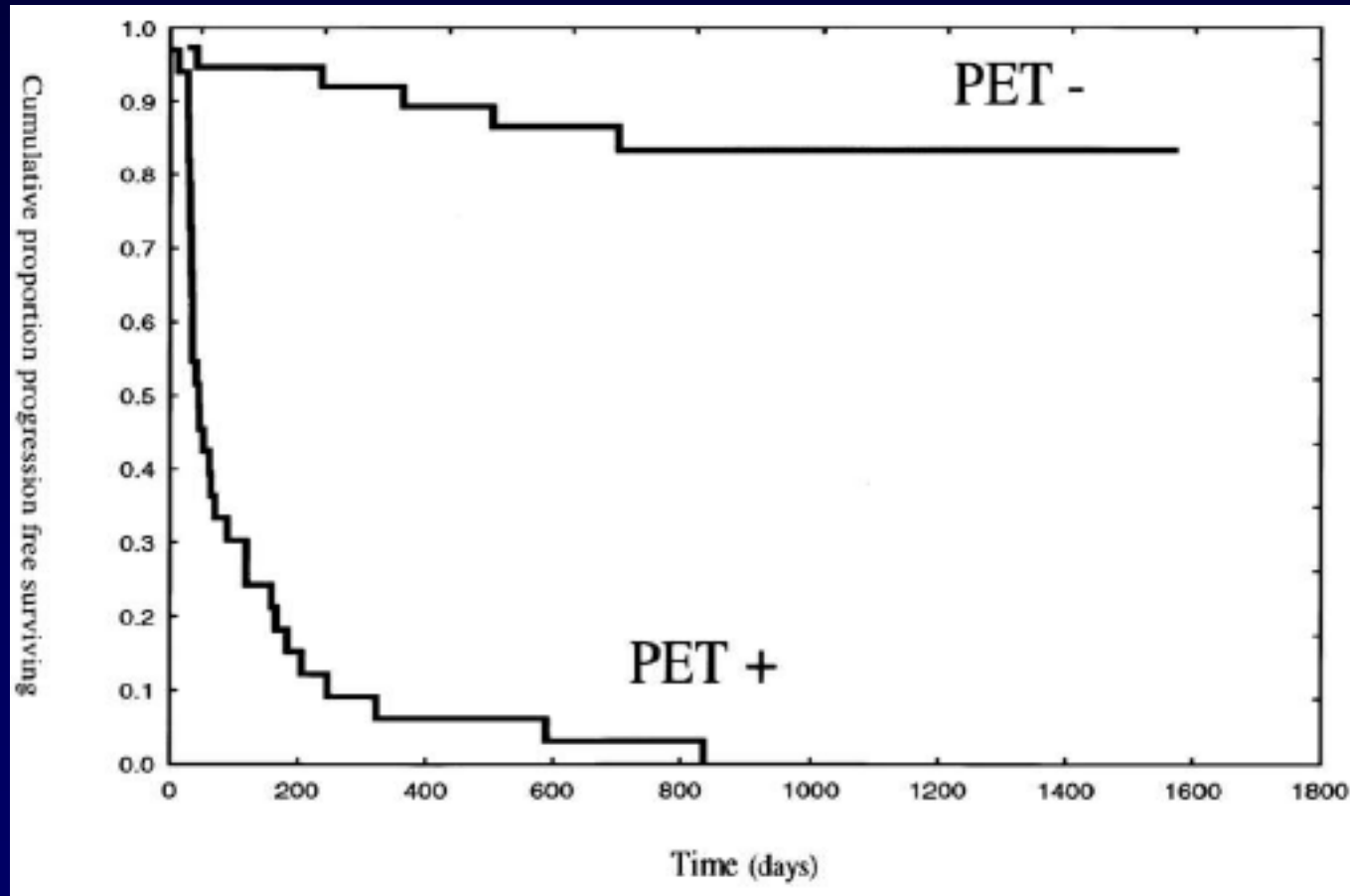
Figure 4 b FDG PET confirms residual mass is active disease (arrowhead)



Figure 4 c Side view showing site of active disease (arrowhead)

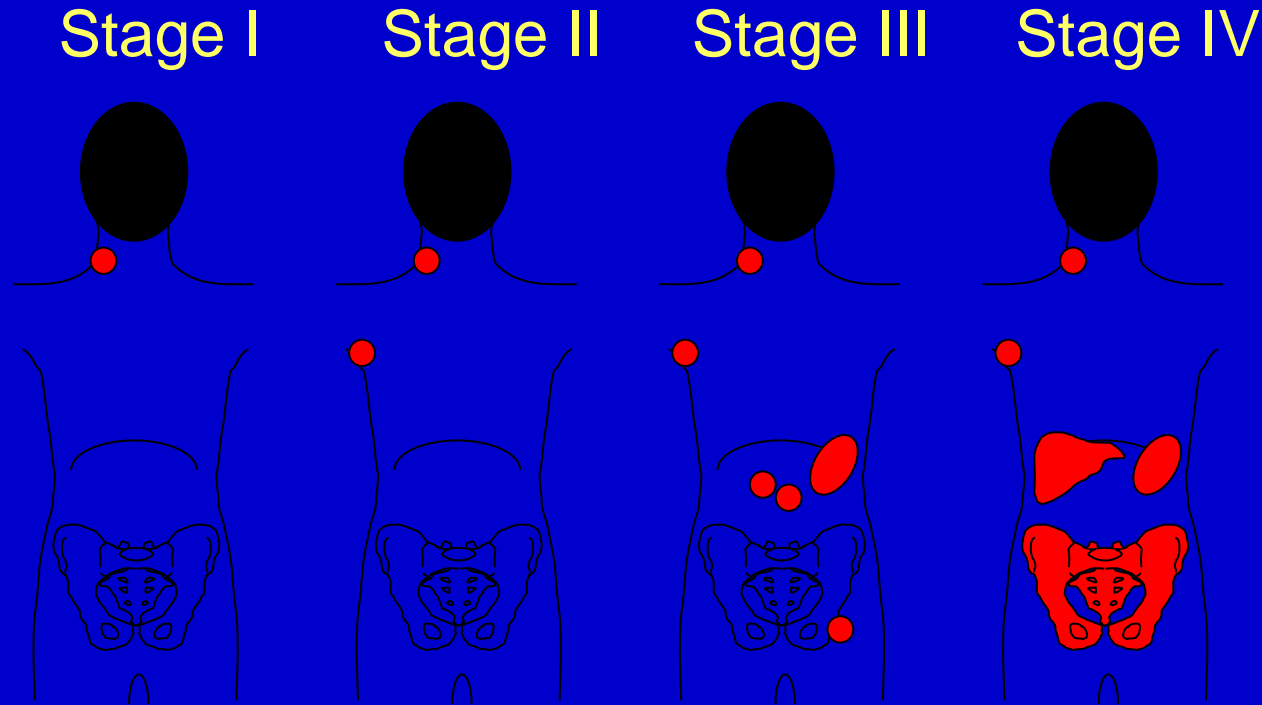
PET scanning may provides prognostic information on how patients will do.

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# Staging of the lymphomas

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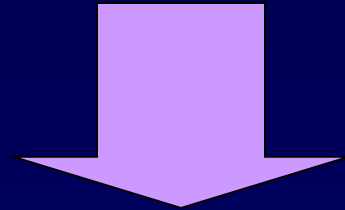
A: absence of B symptoms

B: fever, night sweats, weight loss

With all of the information we are now able to formulate a treatment plan and discuss prognosis.

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**Initial Evaluation:**  
Specific Histologic Sub-type  
Extent of disease  
General health status of patient



**Treatment Plan  
Prognosis**

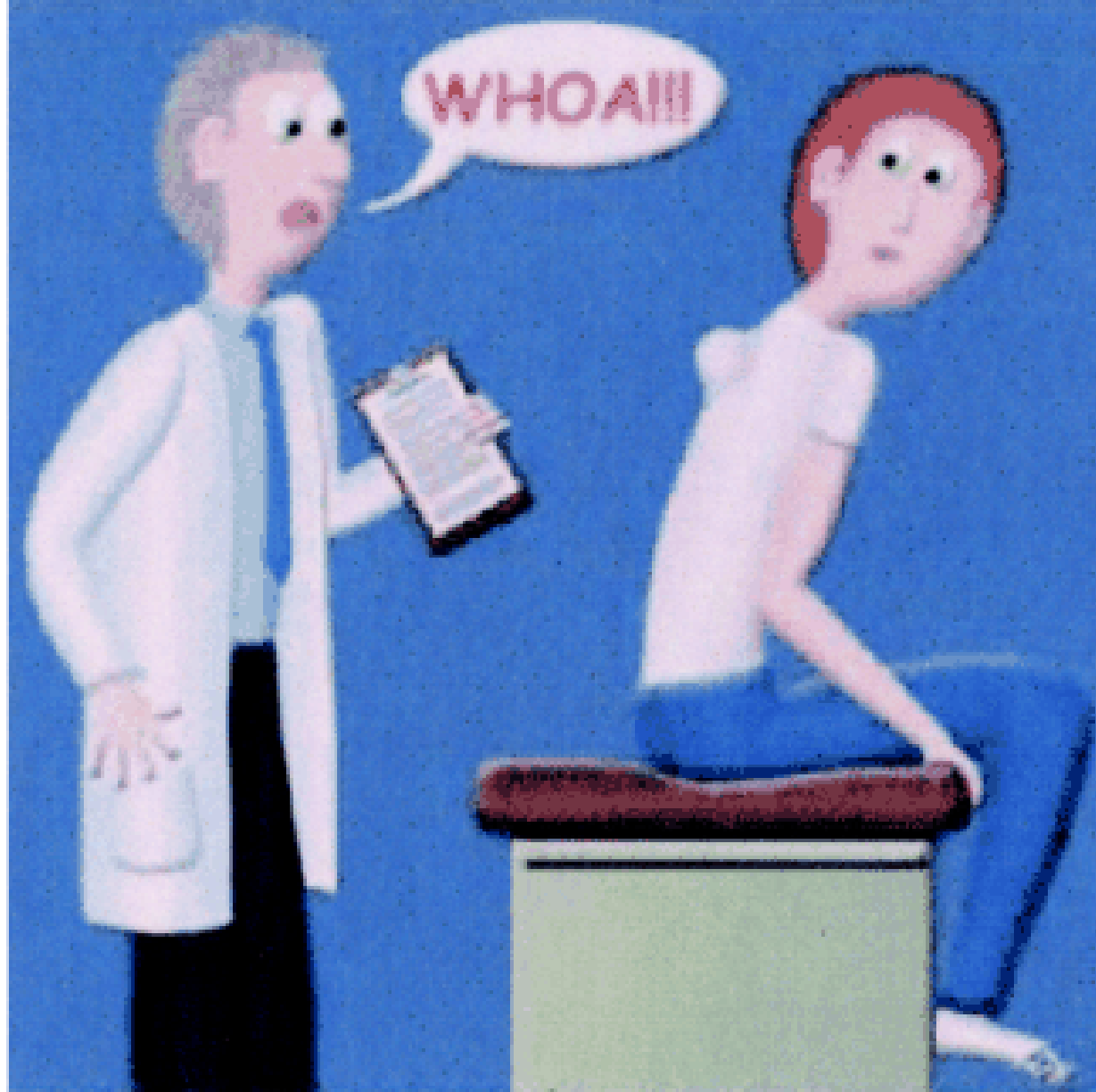
# Many of the lymphomas have prognostic schemas to predict prognosis

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- IPI for large cell NHL
- FLIPI for follicular NHL
- IPS for advanced Hodgkin's lymphoma

Most lymphomas other than the indolent forms are treated at diagnosis.

Category		Survival of untreated patients	Curability	To treat or not to treat
<b>Non-Hodgkin's lymphoma</b>	Indolent	Years	Generally not curable	Generally defer Rx if asymptomatic
	Aggressive	Months	Curable	Treat at Dx
	Very aggressive	Weeks	Curable	Treat at DX
<b>Hodgkin's lymphoma</b>	All types	Variable – months to years	Curable	Treat at Dx



**Stuff to do when you have cancer...  
#16: Use a Nerf Ball™ to see if your  
oncologist has a sense of humor.**

# Questions/Discussion

