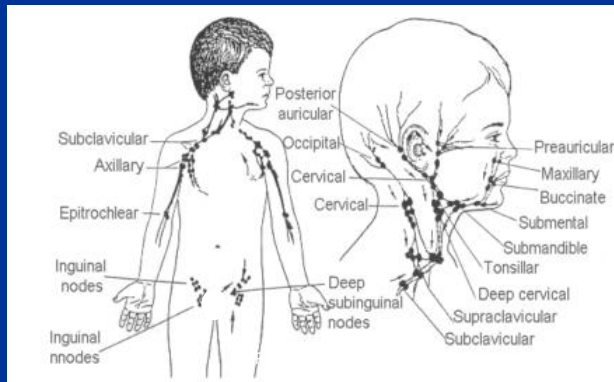


# Lymphadenopathy in Children

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## Definition

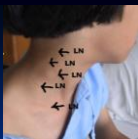
- Palpable lymph nodes are normal in anterior cervical, axillary and inguinal regions in healthy children.
- **Lymphadenopathy** is enlargement of the lymph nodes beyond this normal state. Practically this is any node  $>1.0$  cm in greatest diameter
- **Certain nodes should be considered enlarged at different sizes** (i.e. epitrochlear nodes  $> 0.5$  cm, inguinal nodes  $> 1.5$  cm, submandibular nodes  $> 1.5$  cm)



## History & Physical Exam

- The history and physical examination are particularly important in determining the differential diagnosis and ultimately the timing, workup and treatment of lymphadenopathy.

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## History

### Duration

- Short (< 2 weeks) - likely to be infectious
- Long (> 2 weeks but < 1 year) - likely to be infectious, malignancy, autoimmune, drug reaction
- Very long (> 1 year) likely to be pathologic but not malignancy

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## Cont. History

### Location

- Localized - likely to be infectious
- Regional - likely to be infectious
- Generalized - more likely pathologic (e.g. malignancy, autoimmune, etc.)
- Head and Neck - likely infectious
- Mediastinal - likely pathologic
- Abdominal - likely pathologic
- Inguinal - likely infectious

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## Cont. History

**Associated symptoms** - each may be associated with infectious, malignant, autoimmune, **or** immunodeficiency diseases:

- Pain
- Fever
- Weight loss (> 10% over 6 months)
- Night sweats
- Pruritis
- Myalgia/arthritis
- Rashes
- Malaise

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## Other history

- Pets - especially cats for Cat Scratch Disease
- Travel - including Tuberculosis exposure
- Possible immunodeficiency risk such as HIV
- Family history of similar problems
- Previous treatments (such as antibiotics and how patient responded)
- What do parents think might be going on?  
What are parents most worried about?

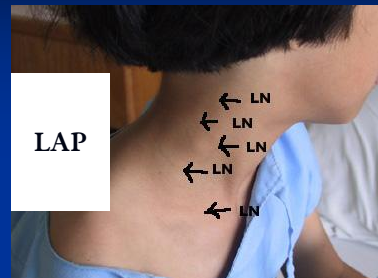
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## Physical Examination

### ■ Nodes

- Location - local, regional, generalized
- Size
- Character - e.g. firm, rubbery, etc. (may be subjective)
- Fixed or non-fixed
- Erythema and tenderness



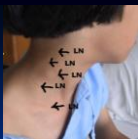
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## Note:

- Generalized, firm, discrete, non-tender, fixed tend to be more ominous causes such as malignancy
- Localized, warm, tender, matted, erythematous - tend to be associated with infections

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## Other Signs

- Signs of anemia - tachycardia, pale conjunctiva - may be associated with malignancy, autoimmune diseases
- Dermatological changes - petechiae, bruising, bleeding - may be associated with malignancy
- Weight/growth - poor growth may be associated with malignancy

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## Differential Diagnosis

- **Infectious**
- **Bacterial** - Staphylococcus, Streptococcus, Cat Scratch Disease, Toxoplasmosis, Syphilis, Tuberculosis, Atypical mycobacterium, Brucellosis, Tularemia, Leptospirosis
- **Viral** - Epstein Barr Virus, Cytomegalovirus, HIV, Rubella, Hepatitis B
- **Fungal** - Aspergillosis, Candida, Histoplasmosis

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## Cont. Differential Diagnosis

- **Malignant** - Leukemia, Lymphoma, Metastatic
- **Autoimmune** - Rheumatoid arthritis, Systemic Lupus Erythematosus, Serum Sickness, Sarcoidosis
- **Immunodeficiency** - HIV

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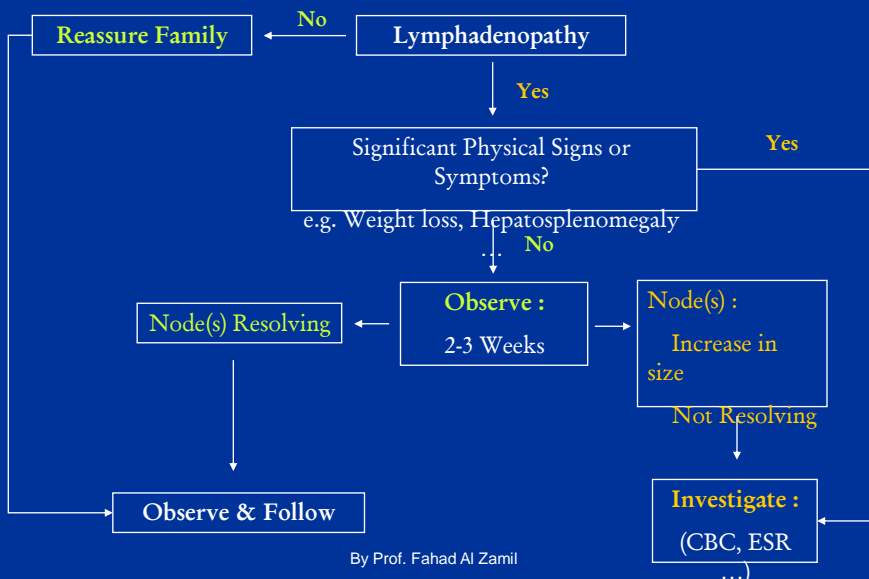


## Cont. Differential Diagnosis

- Drug Reactions - Phenytoin, Hydralazine, Allopurinol
- Other benign/pathologic processes - Storage diseases, Embryological cysts

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## Approach to Lymphadenopathy



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## When to Investigate ?

Patients generally should be considered for investigation and/or referral if:

- Unexplained generalized lymphadenopathy
- Any palpable supraclavicular or popliteal node
- Significant constitutional symptoms
- Hepatic or splenic enlargement
- Anemia or bleeding
- ? Unresponsiveness to antibiotic treatment
- Not decreasing in size after appropriate period of observation

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## Investigations

These may include:

- **Laboratory**
  - CBC with differential
  - ESR or C-reactive protein
  - lactate dehydrogenase
  - uric acid
  - liver function tests

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## Cont. Investigations

- Purified Protein Derivative skin test
- Viral titers
- Other titers - Toxoplasmosis, *Bartonella henselae*
- Imaging studies: e.g. Chest radiograph
- Biopsy
- Consultation with Oncology, Infectious Disease, Rheumatology, Surgery, Radiology

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## Further Readings

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