

## Lymphadenopathy and Lymphadenitis

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### Skip straight to lymphadenitis guideline

### Background

- Most lymphadenopathy is due to benign self-limited disease, such as viral or bacterial infection
- Lymph nodes < 1cm are normal in children aged < 12 years. Axillary nodes up to 1 cm and inguinal nodes up to 1.5 cm also usually normal.
- If swelling is near the jaw line consider a **dental infection** – will need referral to Max-Facs, antibiotics, and OPG x-ray. See dental infections guideline.
- **Supraclavicular nodes of any size at any age warrant further investigation**

### Definitions

**Lymphadenopathy:** enlarged lymph node(s). LN > 2cm have increased chance of being caused by serious pathology.

**Lymphadenitis:** enlarged lymph node that is due to an inflammatory / infective process; usually warm, tender, erythematous +/- systemically unwell

**Generalised lymphadenopathy:** lymph nodes enlarged in 2 or more non-contiguous areas

**Localised lymphadenopathy:** lymph nodes enlarged in only one area

**Acute lymphadenopathy:** < 2 weeks

**Subacute lymphadenopathy:** 2 – 6 weeks

**Chronic lymphadenopathy:** > 6 weeks

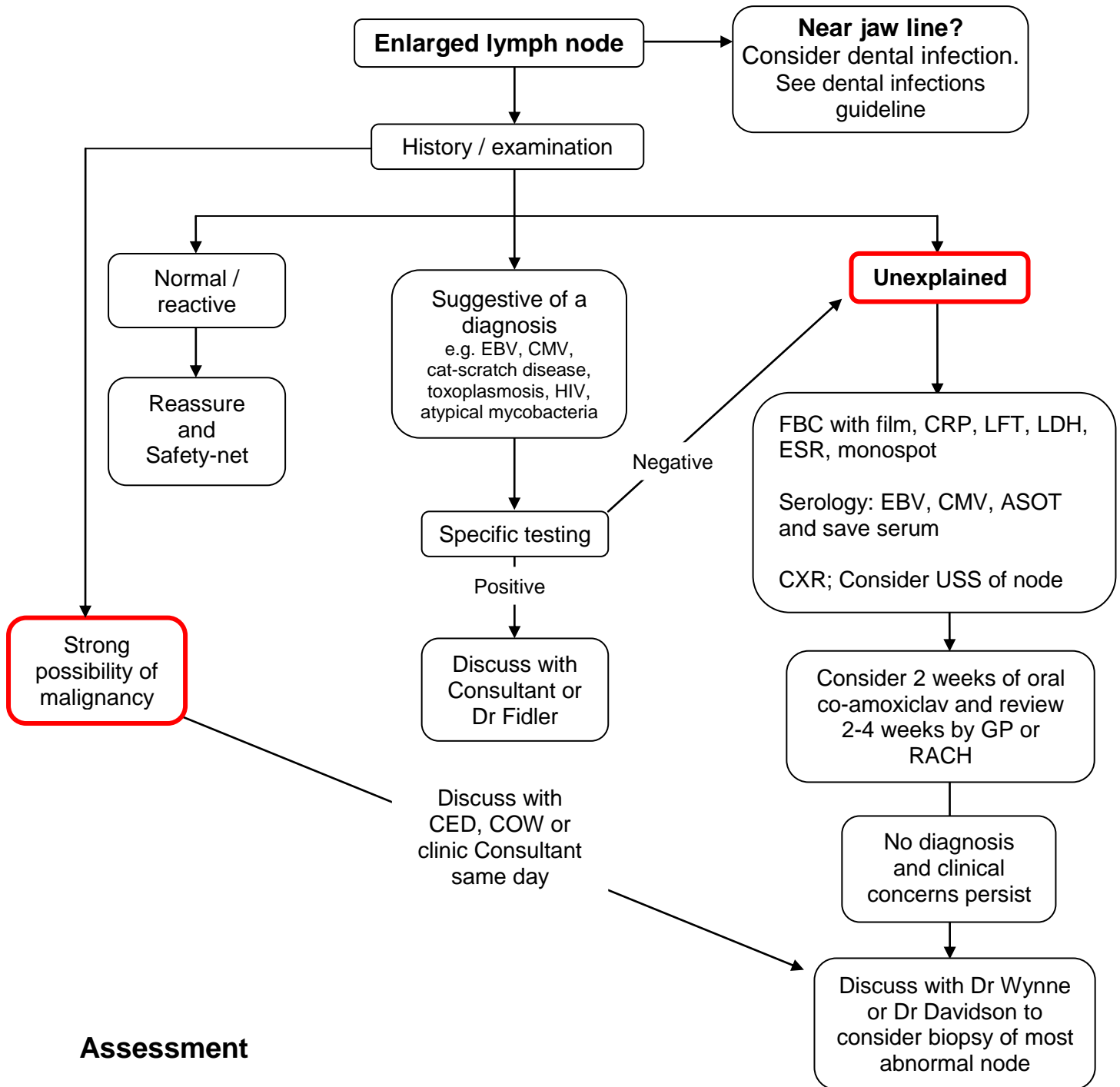
### Aetiology

See endnotes for a quick guide to infections.

Timing	Symmetry	Common	Less common	
Acute	Unilateral	Lymphadenitis – staph aureus and group A strep Newborn: staph aureus	GBS (age 3 – 7 wks) Anaerobes	Kawasaki Malignancy LCH*
	Bilateral	Viral URTI – adenovirus, influenza, RSV Group A strep (age >3yrs) EBV	CMV Malignancy	LCH*
Chronic	Unilateral	Non-tuberculous mycoplasma (age <5yrs) Cat scratch disease Malignancy – lymphoma, leukaemia	Toxoplasmosis TB	LCH*
	Bilateral	EBV CMV Malignancy – lymphoma, leukaemia	Toxoplasmosis HIV	TB LCH*

\*LCH = Langerhans cell histiocytosis

Management flowchart:



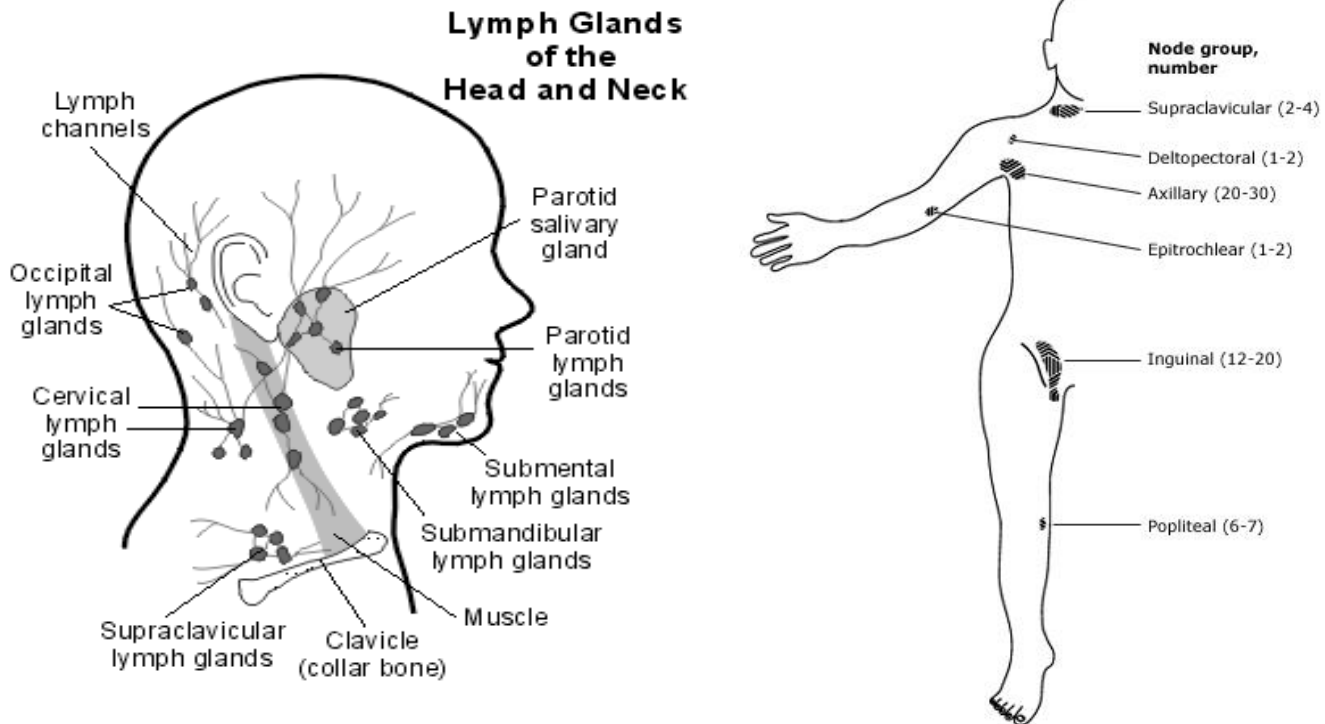
**Assessment**

**History** – ask about:

- Characteristics of lymph node – onset, size, duration, pain, distribution
- Recent infections – sore throat, earache, rash
- Constitutional symptoms – fever, night sweats, weight loss
- Ill contacts
- Recent travel and exposure to TB
- Food – unpasteurised milk, undercooked meats
- Immunisation - BCG
- Pets – most importantly cats
- Sexual history in adolescents

## Examination

- Lymph node – size, site, colour, tender/non-tender, mobile, distribution, fluctuant, consistency
- Examine all lymph nodes regions
- Head and neck – oropharynx, conjunctiva, ears, scalp
- Abdomen – hepatosplenomegaly
- Skin – rashes, pallor



## Investigations

### First line

- Blood tests
  1. **FBC, blood film, ESR, CRP** (inflammatory markers usually raised in malignancy), **LFT, LDH** (can be useful if very high or normal), monospot. Add **blood culture** if febrile.
  2. Serology – **EBV, CMV, ASOT** and save serum
  3. Consider HIV, toxoplasmosis, B henselae (Cat scratch) serology based on consideration of immunosuppression and risk
- **CXR** – if concerned about malignancy or TB
- **Ultrasound of node** - may be used to diagnose abscess. Discuss with Radiologist prior to requesting.

### Second line:

- Mantoux test – Done in clinic Mon / Wed by TB Nurse.
- Quantiferon test – blood test done Mon – Fri 9 am – 4 pm (must be in lab before 4pm)
- Consider biopsy – discuss with Dr Davidson, Dr Fidler or Dr Wynne as well as ENT or general paediatric surgeon. If biopsy is performed locally, the samples must be sent for **microbiology, mycobacteria and histopathology**.

**It is important to ensure a clear follow up plan is made to review child with results.**

## Management (see pathway)

\*\*If you think a patient needs a biopsy, d/w Dr Wynne / Dr Davidson\*\*

\*\*If they need TB investigation, d/w Dr Katy Fidler or Respiratory Team\*\*

1. **Acute** – usually reactive lymphadenopathy secondary to clear pathology e.g. acute tonsillitis / otitis media / eczema flare OR lymphadenitis. Consider malignancy.

- Treat underlying cause.

### Management of lymphadenitis

- Severe – massive lymphadenopathy, systemically unwell (fever, vomiting), evidence of abscess formation.
  - Admit
  - I.V co-amoxiclav
  - Consider USS (discuss with Radiology) and Surgical referral for abscess – fluctuance / persistence of fever despite oral antibiotics
- Mild
  - Oral co-amoxiclav
  - GP follow up 2 days
  - Oral antibiotics can have limited penetration into lymph node and take some time to work – consider I.V if no resolution of fever 48 hours

2. **Sub-acute** – likely secondary to recent infection. Must consider malignancy / serological disease / mycobacterium

- Investigate - bloods and CXR.
- If unexplained, consider course of oral co-amoxiclav for 2 weeks and arrange follow up with GP or at RACH to ensure resolution – d/w CED Senior doctor, COW or Consultant in clinic depending on where patient is seen.
- Safety-net for malignancy – rapid growth of nodes, systemic upset (night sweats / fever / weight loss) or signs of SVC obstruction.

3. **Chronic** – rule out malignancy or mycobacterium

- Benign looking lymphadenopathy:
  - Investigate - bloods and CXR.
  - Safety-net for malignancy – rapid growth, systemic upset or signs of SVC obstruction.
- Bigger nodes not obviously infected:
  - Investigate - bloods and CXR. Consider ultrasound of node (discuss with Radiology prior to requesting).
  - Consider course of oral co-amoxiclav for 2 weeks and arrange follow up. Safety net for malignancy – rapid growth, systemic upset or signs of SVC obstruction.

- ▶ Lymph node size >2 cm
- ▶ Node increasing in size over 2 weeks
- ▶ No decrease in node size after 4–6 weeks
- ▶ Node not returned to baseline after 8–12 weeks
- ▶ Abnormal chest X-ray
- ▶ Presence of a supraclavicular node
- ▶ Presence of systemic signs and symptoms
  - Fever
  - Weight loss
  - Night sweats
  - Hepatosplenomegaly

Features which may prompt a lymph node biopsy in a child with peripheral lymphadenopathy.  
(King D *et al. Arch Dis Child Educ Pract Ed* 2014;**99**:101-110)

**Notes:** Quick guide to infections

<b>Infection</b>	<b>Common clinical features</b>
Anaerobes	Lymphadenopathy, periodontal disease
Brucellosis	Lymphadenitis, Fever, sweats, malaise, weight loss, ingestion of unpasteurised milk, exposure to cattle/sheep/goats
Cat scratch	Tender, axillary / cervical / submandibular / epitrochlear node, history of cat scratch/lick in previous 2 weeks (90%), possible papule at site
CMV	Fever, malaise, hepatosplenomegaly (occasional), older children
EBV	Tonsillopharyngitis, splenomegaly (>50%), fever, malaise, older children, posterior cervical and / or generalised nodes.
GAS + Staph aureus	Clinical features not useful in distinguishing the two, recent URI or impetigo, node 3-6cm, 25-33% suppurate and fluctuant
GBS	“Cellulitis-adenitis” syndrome, febrile, irritable, poor feed, submandibular, node with overlying cellulitis, bacteraemia common. Exclude concurrent meningitis in neonates.
HIV	Recurrent bacterial infection, opportunistic infection, fever, diarrhoea, encephalopathy, failure to thrive, hepatosplenomegaly, generalised lymphadenopathy.
Kawasaki	Conjunctivitis, skin peeling on hands, diffuse rash, strawberry tongue, fever, single non-tender non-purulent node
NTM	Signs are very characteristic, submandibular (87%) and preauricular/parotid (9%), mostly unilateral (98.6%), violaceous discoloration of overlying skin, tender, rubbery
Syphilis	Rash, fever, malaise, anorexia, weight loss, hepatomegaly, LN near site of chancre or generalised. Epitrochlear LN.
Toxoplasmosis	Mostly asymptomatic, myalgia, fatigue, fever, splenomegaly, maculopapular rash, cat exposure, ingestion of partially cooked meat
Viral reactive	Diffuse non-tender nodes, may persist for weeks, especially ENT-related.