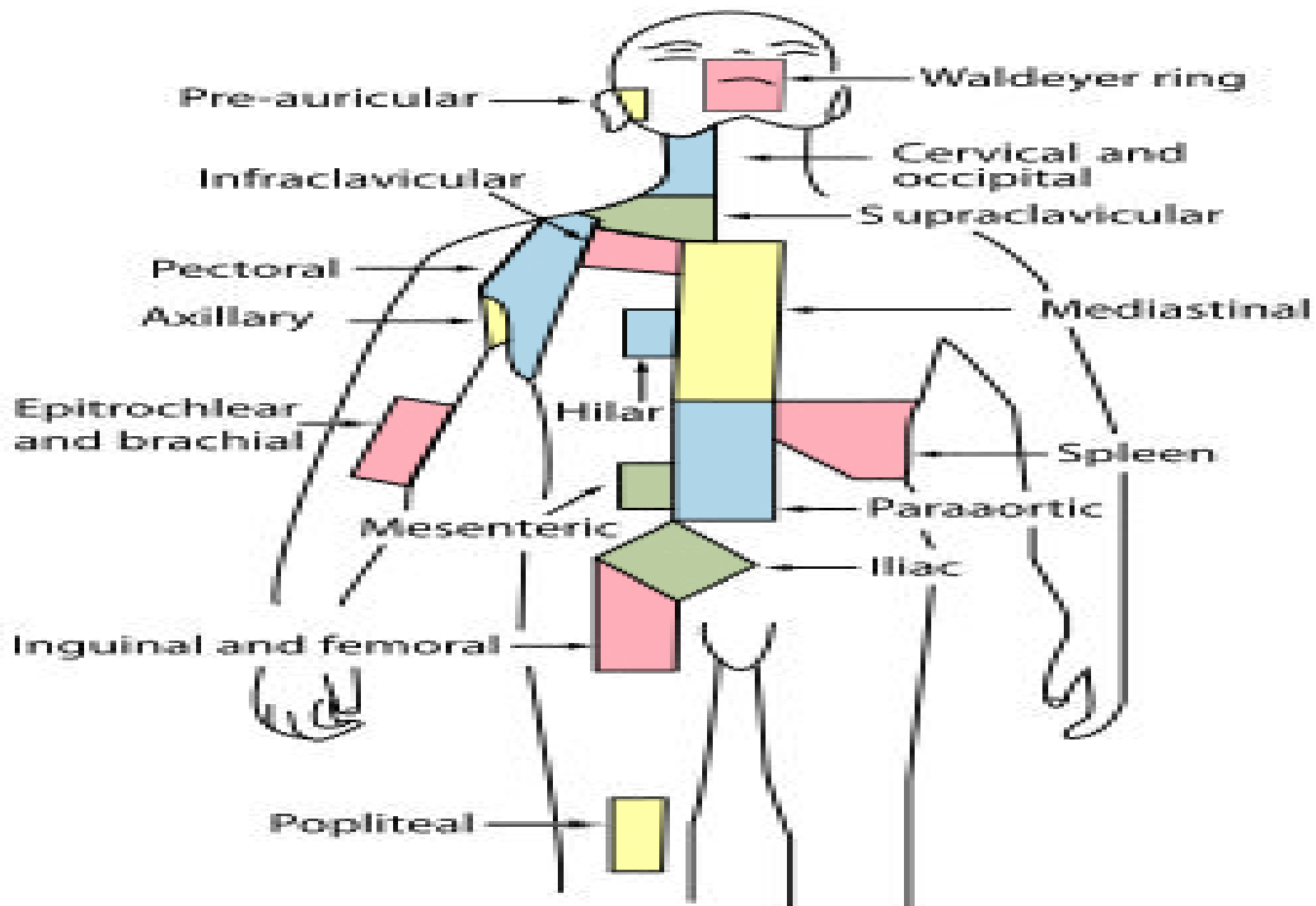


CERVICAL LYMPH NODES

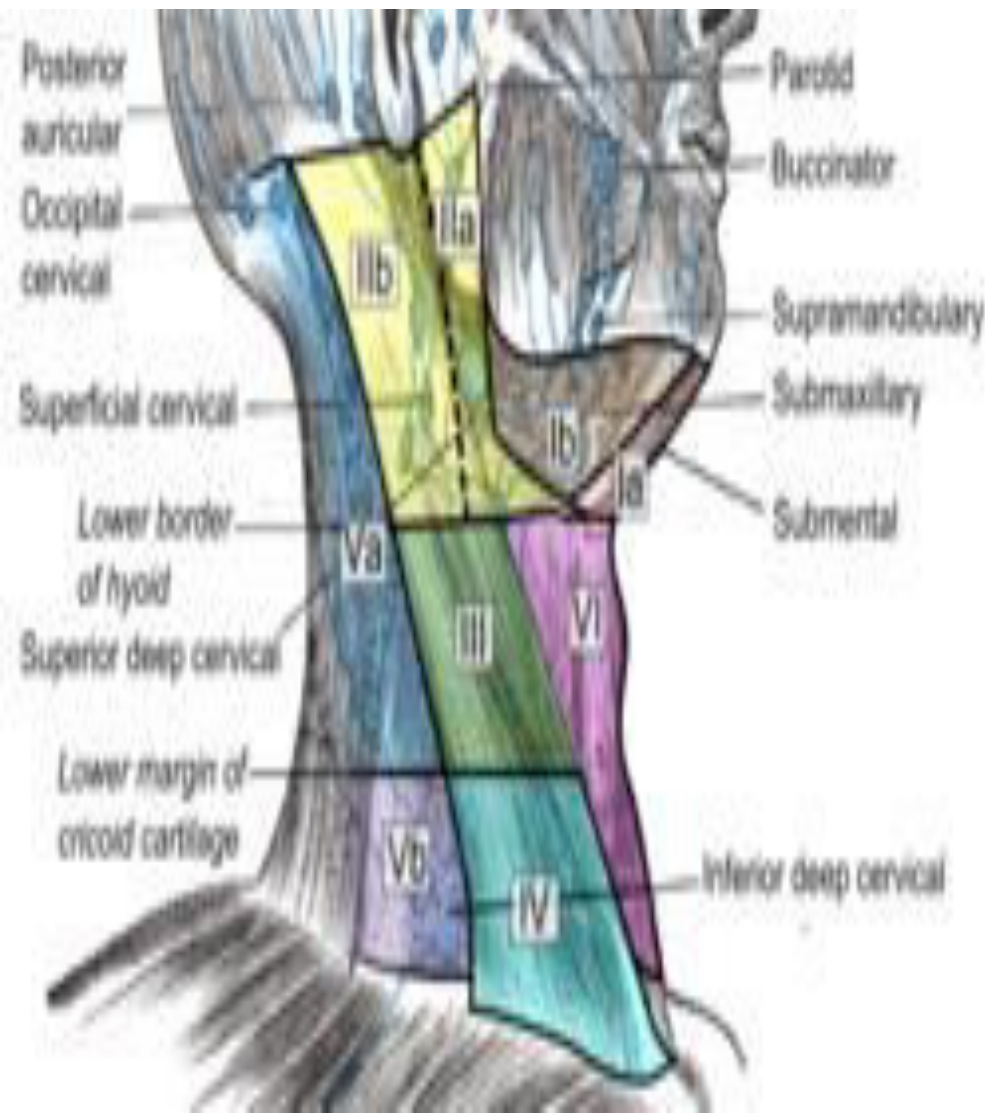
Prof. Shahidul Haque

- **Cervical lymph nodes** are lymph nodes found in the neck.
- Of the 800 lymph nodes in the human body, 300 are in the neck.
- Cervical lymph nodes are subject to a number of different pathological conditions including tumors, infection and inflammation.

CERVICAL LYMPH NODES



CERVICAL LYMPH NODES



Cervical lymph node levels
(American Academy of Otolaryngology system from 2002, and superficial nodes)

Classification

- ◉ There are approximately 300 lymph nodes in the neck, and they can be classified in a number of different ways.

Deep Lymph Nodes

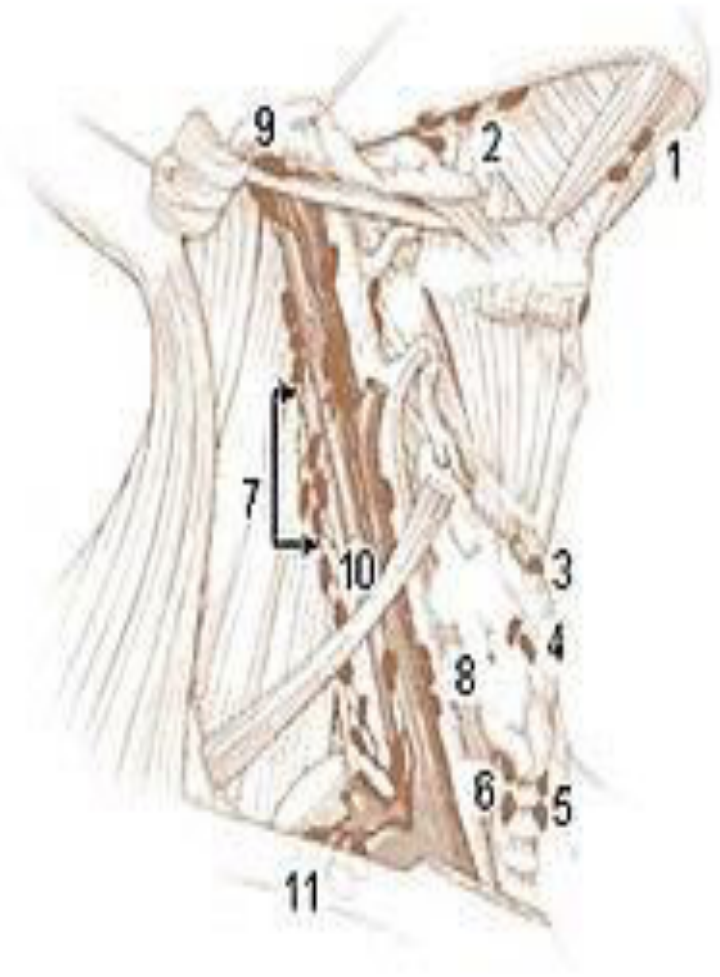
- Submental
- Submandibular (Submaxillary)

Anterior Cervical Lymph Nodes (Deep)

- Prelaryngeal
- Thyroid
- Pretracheal
- Paratracheal

Deep Cervical Lymph Nodes

- Lateral jugular
- Anterior jugular
- Jugulodigastric



- ◉ More recently, classification systems have been proposed organized around what can be observed via diagnostic imaging.
- ◉ In addition to the American Academy of Otolaryngology, systems have been devised by the American Joint Committee on Cancer (AJCC).
- ◉ The AJCC system from the 7th edition of the Staging Manual (2009) remains unchanged in the 8th edition of 2018.

Lymph node levels

- ◉ The American Academy of Otolaryngology system (2002) divides the nodes as follows:
- ◉ **Level I:** Submental and submandibular nodes
 - **Level Ia:** submental- within the triangular boundary of the anterior belly digastric muscle and the hyoid bone.
 - **Level Ib:** submandibular triangle - within the boundaries of the anterior belly of the digastric muscle, the stylohyoid muscle and the body of the mandible.

- ◉ **Level II:** upper jugular nodes (digastric nodes) - around the upper third of the internal jugular vein and adjacent accessory nerve.
- ◉ The upper boundary is the base of the skull and the lower boundary is the inferior border of the hyoid bone.
- ◉ The anterior/medial boundary is the stylohyoid muscle and the posterior/lateral one is the posterior border of the sternocleidomastoid muscle.
- ◉ On imaging the anterior/medial boundary is the vertical plane of the posterior surface of the submandibular gland.
 - **Level IIa:** Anteromedial to the vertical plane of the accessory nerve.
 - **Level IIb:** Posterolateral to this plane.

- ◉ **Level III:** Middle jugular nodes- around the middle third of the internal jugular vein, from the inferior border of the hyoid to the inferior border of the cricoid cartilage. Antero-medially they are bounded by the lateral border of the sternohyoid muscle and postero-laterally by the posterior border of the sternocleidomastoid.
- ◉ **Level IV:** lower jugular nodes- around the lower third of the internal jugular vein from the inferior border of the cricoid to the clavicle, anteromedially by the lateral border of the sternohyoid and posterolaterally by the posterior border of the sternocleidomastoid.

- ◉ **Level V:** Posterior triangle nodes - around the lower half of the spinal accessory nerve and the transverse cervical artery, and includes the supraclavicular nodes.
- ◉ The upper boundary is the apex formed by the convergence of the sternocleidomastoid and trapezius muscle , and inferiorly by the clavicle.
- ◉ The anteromedial border is the posterior border of the sternocleidomastoid and the posterolateral border is the anterior border of the trapezius.

- **Level VA:** Above the horizontal plane formed by the inferior border of the anterior cricoid arch, including the spinal accessory nodes.
- **Level VB:** Lymph nodes below this plane, including the transverse cervical nodes and supraclavicular nodes (except Virchow's nodes which is in IV).
- **Level VI:** Anterior compartment nodes -Pretrachial, paratrachial, precricoid (Delphian) and perithyroid nodes, including those on the recurrent laryngeal nerve. The upper border is the hyoid, the lower the suprasternal notch, and the lateral borders the common carotid arteries.



- ◉ The American Joint Committee on Cancer (AJCC) system differs from the above by including Level VII, but the American Academy considered these to be anatomically mediastinal rather than cervical nodes, and therefore should not be included in the classification of neck nodes.
- ◉ However it is based on the 2002 American Academy system, although the boundaries are defined slightly differently.

- ◉ The boundaries are defined as (Superior, Inferior, Antero-medial, Postero-lateral)
- ◉ **Level IA:** Symphysis of mandible, Body of hyoid, Anterior belly of contralateral digastric muscle, Anterior belly of ipsilateral digastric muscle
- ◉ **Level IB:** Body of mandible, Posterior belly of digastric muscle, Anterior belly of digastric muscle, Stylohyoid muscle
- ◉ **Level IIA:** Skull base, Horizontal plane defined by the inferior border of the hyoid bone, The stylohyoid muscle, Vertical plane defined by the spinal accessory nerve
- ◉ **Level IIB:** Skull base, Horizontal plane defined by the inferior body of the hyoid bone, Vertical plane defined by the spinal accessory nerve, Lateral border of the sternocleidomastoid muscle

- ◉ **Level III:** Horizontal plane defined by the inferior body of hyoid, Horizontal plane defined by the inferior border of the cricoid cartilage, Lateral border of the sternohyoid muscle, Lateral border of the sternocleidomastoid or sensory branches of cervical plexus.
- ◉ **Level IV:** Horizontal plane defined by the inferior border of the cricoid cartilage, Clavicle, Lateral border of the sternohyoid muscle, Lateral border of the sternocleidomastoid or sensory branches of cervical plexus
- ◉ **Level VA:** Apex of the convergence of the sternocleidomastoid and trapezius muscles, Horizontal plane defined by the lower border of the cricoid cartilage, Posterior border of the sternocleidomastoid muscle or sensory branches of cervical plexus, Anterior border of the trapezius muscle.

- ◉ **Level VB:** Horizontal plane defined by the lower border of the cricoid cartilage, Clavicle, Posterior border of the sternocleidomastoid muscle, Anterior border of the trapezius muscle
- ◉ **Level VI:** Hyoid bone, Suprasternal notch, Common carotid artery, Common carotid artery
- ◉ **Level VII:** Suprasternal notch, Innominate artery, strnum, Trachea, esophagus and prevertebral fascia.

- ◉ While an imaging based system was proposed in 1999, these concepts were integrated into the 2002 revision of the American Academy system.
- ◉ In addition to needing a standardized approach to classification of lymph nodes for the purposes of neck dissection, the application of radiation therapy also requires such an approach and has resulted in an international consensus guideline (2013).

CLINICAL SIGNIFICANCE

- ◉ Infectious mononucleosis (*glandular fever*) affects the cervical lymph nodes which become swollen.
- ◉ The characterization of cancerous lymph nodes on CT scan, MRI or ultrasound is difficult, and usually requires confirmation by other nuclear imaging techniques such as PET scans.
- ◉ Tissue diagnosis by fine needle aspiration (which has a high rate of accuracy), may also be required. Involvement of the cervical lymph nodes with metastatic cancer is the single most important prognostic factor in head and neck squamous cell carcinoma and may be associated with a halving of survival.
- ◉ Where the cancer has penetrated the capsule of the lymph gland (extracapsular extension) survival may be decreased by a further 50%. Other important factors are the level, the number of nodes and their size, which are also correlated with the risk of distant metastases.
- ◉ Cervical lymph node metastasis is also a common feature of papillary thyroid carcinoma.^{[14][15]}

- ◉ Cervical Lymph Node
- ◉ **4.1.1 Cervical lymph nodes**
- ◉ Cervical lymph nodes are involved in draining the skin of the scalp face tissues of the nasal cavity, and the pharynx. These are located along the lower border of the jaw, anterior and posterior sites of ears, and deep in the neck along the larger blood vessels. These are further classified into three groups depending upon their locations: upper horizontal chain, lateral cervical nodes and anterior cervical nodes (Fig. 2). They can serve as ideal target for the sublingual, transmucosal and pulmonary vaccine delivery.

