



# EAR, NOSE AND THROAT

## **Pharynx and Larynx**

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# Mouth & Oral Examination

## 1 Introduce yourself to the patient who is sitting in front of you

2 Explain to patient what you are going to do

## 3 Equipment

a. Source of light: bull's eye lamp or torch

b. Head mirror or fiber optic light

c. Tongue depressor; wooden or metallic

d. Gloves: essential for every examination

e. Xylocaine spray to abolish gag reflex - if needed

4 Preparation: Remove denture (if any) so that gingival mucosa can be examined

## 5 Inspection:

a. **Lips:** note their color, any fissures, cracking, ulceration or any mass.

b. **Oral vestibule:** ask the patient to open his mouth. Retract cheek mucosa with tongue depressor and look for color, ulcers, white patches and nodules. Look for opening of parotid duct (opposite crown of second upper molar). Do massaging of the parotid gland and note flow of saliva from Stensen's duct).

c. **Gums:** note color of gums (normally pink). There may be brown patches in dark races. Look for black lines (in lead poisoning) and red swollen inter-dental papillae in gingivitis.

d. **Teeth:** count them and note any missing tooth or discoloration. Use your gloved finger to test for looseness of teeth.

e. **Roof of oral cavity:**(hard palate): look for any cleft, oro-nasal fistula, high arched palate, mass bony growth or ulcer.

### f. Tongue and floor of mouth:

i. Ask patient to protrude his tongue: inspect it for symmetry (a test for CN XII).

ii. Note color and texture of dorsum of tongue.

iii. Inspect sides, undersurface of tongue & floor of the mouth.

iv. Note any white or reddened area, nodules, or ulceration.

g. Palpate any suspicious lesions especially in smokers and alcoholic individuals above 50 years of age

### h. Pharynx:

i. Ask patient to open mouth without protruding the tongue

ii. Use a tongue depressor to get a good exposure of the posterior pharyngeal wall not so far that you induce gagging.

iii. Inspect soft palate, anterior & posterior pillars, and medial surface of the tonsils. Note, congestion, exudes, swelling, ulceration, and tonsillar enlargement.

iv. Inspect posterior and lateral pharyngeal walls and look for any forward or side bulge

v. Ask the patient to say ah. Soft palate will rise which

confirms intactness of Vagus nerve

6 Discard tongue depressors after use.

## Throat Examination

Pre-Exam			
Wash hands!		Bring your own disinfectant	
Introduction		Name + medical student	
Permission		Explain the procedure + patient consent	Also don't forget to explain to the patient what you're going to do before you go ahead and do it
Privacy		Mention if not applicable	
Position of physician		Sides of the patient	
Position of patient		Sitting up right	
Exposure		Head and neck	
General appearance			
Appearance		age/consciousness/alertness/distress	+ Balanced gait
Body built		Normal - thin - obese	
Connections		IV lines / mask / monitors	
Color		Pallor - Jaundice - cyanosis	
Vital Signs			
Pulse Rate		Rate - Rhythm - Character	
Respiratory Rate			
Blood Pressure		Must be mentioned	
Temperature		Must be mentioned	

<b>Inspection</b>			
Neck			Symmetry –Swelling - Masses
breath			If he is breathing from his mouth
Lips			Notes for any color, lesions, symmetry
Oral cavity			breath odour, color, lesions of buccal mucosa
Teeth and gums			redness, swelling, caries, bleeding, dental hygiene
Tongue			color, texture, lesions, tenderness of floor of mouth . ask the patient to stick their tongue out to check for submandibular duct stones or masses ask the patient to touch the roof of their mouth with their tongue to examine the floor of the mouth
Throat and pharynx			color, exudates, uvula is it central or displaced. tonsillar symmetry, size, shape ,color , any discharge or membrane and if their enlargement
			<b>Do not forget tonsil grade</b>
<b>Palpation</b>			
Tongue, Teeth, gums and buccal mucosa			For any lump, tenderness, enlargement .
			You have to wear sterile gloves
Salivary gland			Tenderness, enlargement
Palpate the neck			Tenderness, enlargement, mobility, contour and consistency of nodes and masses - Nodes are Pre and post auricular, occipital, tonsillar, submandibular, submental, anterior and posterior cervical, supraclavicular -Thyroid: size, consistency, contour, position, tenderness
<b>Specials</b>			
tongue depressor + torch			Examine back of tongue and tonsils
mirror or flexible fiberoptic			To examine the nasopharynx and larynx
nasendoscope			To examine the nasopharynx and larynx
Please mention that you'd like to perform a complete ENT examination , thyroid examination and cranial nerve examination.			
<b>Post-Exam</b>			
Thank the patient			+Ask if he/she has any questions or concerns
Wash hands			
Summarize findings			

Very useful website for all ENT physical examination:  
Follow the instructions, download videos and enjoy =)  
<http://www2.webster.edu/~davittdc/index.html>

# History of Swallowing Trouble (Dysphagia)

**Dysphagia** means the feeling of difficulty passing food or liquid from the mouth to the stomach.

- It is common among all age groups, especially the elderly.
- This may be caused by many factors, most of which are temporary and not threatening. Difficulties in swallowing rarely represent a more serious disease, such as a tumor or a progressive neurological disorder. When the difficulty does not clear up by itself in a short period of time, you should see an otolaryngologist and head and neck surgeon
- There are two types of dysphagia: Oropharyngeal dysphagia and Esophageal dysphagia

The process of swallowing has four related stages:

- The first stage is the oral preparation stage, where food or liquid is manipulated and chewed in preparation for swallowing.
- The second stage is the oral stage, where the tongue propels the food or liquid to the back of the mouth, starting the swallowing response.
- The third stage is the pharyngeal stage which begins as food or liquid is quickly passed through the pharynx, the region of the throat which connects the mouth with the esophagus, then into the esophagus or swallowing tube.
- In the final, esophageal stage, the food or liquid passes through the esophagus into the stomach.

The first and second stages have some voluntary control, stages three and four occur involuntarily.

**Symptoms of swallowing disorders may include:** (You ask about them under the associated symptoms when taking history of dysphagia)

- drooling
- a feeling that food or liquid is sticking in the throat
- discomfort in the throat or chest (when gastro esophageal reflux is present)
- a sensation of a foreign body or lump in the throat
- weight loss and inadequate nutrition due to prolonged or more significant problems with swallowing
- coughing or choking caused by bits of food, liquid, or saliva not passing easily during swallowing, and being sucked into the lungs
- voice change

**HOW ARE SWALLOWING DISORDERS DIAGNOSED?**

- History
- Examine the mouth and throat:

- This may be done with the aid of mirrors
- Small tube (flexible laryngoscope) is placed through the nose and the patient is then given food to eat while the scope is in place in the throat.

Examination of the oral cavity and pharynx is essential to assess any oropharyngeal causes of dysphagia. Dental problems, inflammation of the lining of the mouth and throat, sores, plaques and masses need to be identified. Anatomical abnormalities, like those of the the soft palate, should also be noted.

These procedures provide visualization of the back of the tongue, throat, and larynx (voice box). These procedures are called FEES (Fiber optic Endoscopic Evaluation of Swallowing) or FEESST (Flexible Endoscopic Evaluation of Swallowing with Sensory Testing).

- If necessary, an examination of the esophagus, named Trans Nasal Esophagoscopy (TNE)
- Testing of cranial nerves V (trigeminal), VII (facial), IX (glossopharyngeal), X (vagus) and XII (hypoglossal) is necessary to identify neurological causes of dysphagia. And assess the gag and cough reflex.

#### Trigeminal Nerve (CN V)

The main nerve responsible for controlling the muscles of the mouth for chewing (mastication). Food that is not chewed sufficiently may not pass through the slit created by the palatopharyngeal folds.

Carries impulses back to the swallowing centers in the brain stem to initiate the swallow reflex.

Passes impulses from the swallowing center to the muscles of the throat to initiate swallowing.

#### Facial Nerve (CN VII)

Responsible for controlling the lips which helps to push food into the mouth for chewing and keeping the mouth cavity close during swallowing.

Plays a role in carrying impulses back to the brain stem to initiate the swallow reflex although CN V and CN IX play a larger role in this function.

#### Glossopharyngeal Nerve (CN IX)

Carries impulses from the back of the throat (posterior pharynx) to the swallowing centers in the brain stem.

Transmits motor impulses from the swallowing center back to the throat muscles to initiate the pharyngeal stage of swallowing.

#### Vagus Nerve (CN X) and Hypoglossal Nerve (CN XII)

Carries impulses from the swallowing center to the throat muscles.

- Damage of the swallowing center in the brain stem is seen in diseases like poliomyelitis and encephalitis. Sensory impulses to the swallowing centers may therefore not trigger the swallowing reflex, although the cranial nerves are intact.

## **Diagnostic Investigation:**

- Chest and neck x-ray
- Ultrasound
- CT (Computed Topography)
- MRI (Magnetic Resonance Imaging)

These investigations may show Consolidated areas of the lung due to pneumonia may arise as a result of aspiration. Also structural abnormalities or masses that may be responsible for dysphagia.

- Barium swallow and chest X-ray
- Barium swallow and videofluoroscopy (also known as a modified barium swallow, videofluoroscopy swallow study or videoesophagography)

These investigations provide still and dynamic images to assist with identifying any obstructions or dilated gullet (megaesophagus) as is seen in achalasia.

- Swallowing electromyography
- Laryngeal EMG
- Manometry

These investigations are used to assess muscle activity, either with oropharynx or esophagus, to assess impairment of pharyngeal or esophageal motility.

- Transnasal laryngoscope
- Upper GI endoscopy

These investigations allow the doctor intraluminal visualization to assess the lining of the pharynx and esophagus. A fiberoptic endoscopic examination of swallowing utilizes a transnasal laryngoscope will assess pharyngeal swallowing. An upper GI endoscopy allows the doctor to assess the alimentary tract all the way from the pharynx to lower end of the esophagus.

**Causes of dysphagia:** (remember to ask about them under risk factors when you take the history)

- It can be something as simple as poor teeth, ill-fitting dentures, or a common cold.
- One of the most common causes of dysphagia is gastro esophageal reflux. This occurs when stomach acid moves up the esophagus to the pharynx, causing discomfort.
- Other causes may include: hypertension; diabetes; thyroid disease; stroke; progressive neurologic disorder; the presence of a tracheotomy tube; a paralyzed or unmoving vocal cord; a tumor in the mouth, throat, or esophagus (smokers) ; or surgery in the head, neck, or esophageal areas.
- Swallowing difficulty can also be connected to some medications including:



Nitrates

Anticholinergic agents found in certain anti-depressants and allergy medications

Calcium tablets

Calcium channel blockers

Aspirin

Iron tablets

Vitamin C

Antipsychotic

Tetracycline (used to treat acne)

When a patient present to you with dysphagia, think of how to classify and ask the following questions, keeping in mind all the conditions that predispose to or cause dysphagia, asking about these in the systemic inquiry: (Follow what's suitable from SOCRATES and add the associated symptoms, risk factors, other histories)

- Site: Exact location where the patient feels that the food gets 'stuck' ask the patient to point.
- Onset: When did it start? Sudden or gradual?
- Course: continuous or on and off?
- Duration: for how long?
- Any history of previous similar episodes? Recurrence? First time?
- What substances are difficult to swallow? Liquids, solids or both?
- Aggravating or relieving factors?
- Associated symptoms:
  1. Any pain along with the dysphagia? (Odynophagia),
  2. drooling
  3. discomfort in the throat or chest (when gastro esophageal reflux is present),
  4. a sensation of a foreign body or lump in the throat,
  5. weight loss and inadequate nutrition due to prolonged or more significant problems with swallowing
  6. coughing or choking caused by bits of food, liquid, or saliva not passing easily during swallowing and being sucked into the lungs
  7. voice change
- Constitutional symptoms: Fever, nausea and vomiting, weight loss, loss of appetite, headache.
- Medical history: Teeth problems, inflamed tonsils, cold, gastro esophageal reflux, hypertension, diabetes, thyroid disease, stroke, myasthenia gravis, Multiple sclerosis, progressive neurologic disorder, a tumor in the mouth, throat, or esophagus (smokers)
- Surgical history: any surgery in the oral cavity (complications: paralyzed or unmoving vocal cord) or surgery in the head, neck, or esophageal areas. The presence of a tracheotomy tube.
- Medication history: mentioned above, herbal medications and over the counter drugs.
- Social history: life style, Diet, smoking, alcohol

- Family history: DM, HTN, Cholesterol, MS, any member with similar problem.

In the systemic review, take a detailed history of all the conditions that can cause dysphagia such as multiple sclerosis, myasthenia gravis, stroke, etc. (if any of these conditions are present, other findings and appropriate history of these diseases will also be present. For example, a patient with myasthenia gravis might give you a history of muscle weakness over the face, ptosis of the lids, nasal regurgitation, etc.). The following three findings suggest serious disease and should never be taken lightly:

- Dysphagia accompanied by weight loss (indicator of malignancy)
- Severe and complete Dysphagia (showing signs such as drooling or complete failure to swallow anything at all, all of which indicate total obstruction) (indicators of malignancy)
- The development of a recent neurological deficit (this indicates a stroke).

## History of Sore Throat

Sore throat results from infection; the most common cause is **tonsillopharyngitis** or **pharyngitis**. Rarely, an abscess or epiglottitis is involved; although uncommon, these are of particular concern because they may compromise the airway.

Pharyngitis is defined as an infection or irritation of the pharynx or tonsils. The etiology is usually infectious, with most cases being of **viral origin** and most bacterial cases attributable to group A streptococci (GAS). Other causes include allergy, trauma, toxins, and neoplasia.

### Viral pharyngitis:

The respiratory viruses (rhinovirus, adenovirus, influenza, coronavirus, respiratory syncytial virus) are the most common viral causes, but occasionally Epstein-Barr virus (the cause of mononucleosis), herpes simplex, cytomegalovirus, or primary HIV infection is involved.

**Adenovirus:** The distinguishing feature of an adenovirus infection is conjunctivitis associated with pharyngitis (pharyngoconjunctival fever). It is the most common etiology in children younger than 3 years.

### Bacterial pharyngitis:

The main bacterial cause is group A  $\beta$ -hemolytic streptococci (GABHS), which, although estimates vary, causes perhaps 10% of cases in adults and slightly more in children. GABHS is a concern because of the possibility of the poststreptococcal sequelae of rheumatic fever, glomerulonephritis, and abscess. Uncommon bacterial causes include gonorrhea, diphtheria, mycoplasma, and chlamydia.

## **Personal data:**

- Name
- Age
- Occupation

## **Chief complaint:**

- What brought you here today?
- When did you first notice the problem?
- Route: ER/elective
- Time of admission

## **History of presenting illness:**

- **Site.**
- **Onset:** gradual or sudden.
- **Character:** describe the character of pain.
- **Course:** continuous or intermittent:
- **Radiation.**
- **Severity:**
  - 1) From a scale of 0-10, how severe is your symptom?
  - 2) Does it affect your swallowing?
  - 3) Does it affect your breathing in any way?
- **Relieving & aggravating factors.**
- **Progression:** same, progressing, improving?
- **Frequency:** is this your first episode or did it happen before?
- **Diagnosis and medication:** have been seen by a doctor? What have you been diagnosed with? Are you taking any medications for this problem?

## **Associated symptoms:**

Symptoms arising from the mouth, throat and neck:

- Drooling
- Odynophagia (pain on swallowing)
- Dysphagia (difficulty in swallowing)
- Hoarseness and changes in the voice (eg. Muffled voice)
- Halitosis (bad breath)
- Mouth breathing, snoring during sleep or sleep disturbances
- Trismus "lock-jaw" (spasm of jaw muscles)
- Any swelling or lumps in the head or neck
- Stiffness in the neck
- Presence of skin rash

Symptoms arising from the nose and sinuses:

- Sneezing
- Itching
- Runny, congested nose
- Discharge or bleeding from the nose (epistaxis)
- Difficulty breathing or blocked nose
- Headache and heaviness

Symptoms arising from the ear: pain, discharge, hearing loss, tinnitus, vertigo.

Respiratory symptoms:

- Cough: dry or productive.
- Shortness of breath

- Chest pain
- **Constitutional symptoms:** fever, fatigue, nausea, vomiting, changes in weight or appetite.

### **Risk factors:**

- Recent/recurrent upper respiratory tract infections: rhinitis/sinusitis.
- History of ingestion of chemical irritants or foreign bodies.
- Recent travel or contact with sick people.
- Dental status: recent dental procedures, enquire about dental hygiene and presence of dental abscesses.
- Recent oropharyngeal procedures or endotracheal intubation.
- Seasonal allergies and allergic reactions to dust, mold and pet dander.
- Gastroesophageal reflux disease (GERD).
- Smoking.
- Risk factors for gonorrhoea transmission (eg, recent oral-genital sexual contact).
- Risk factors for HIV acquisition (eg, unprotected intercourse, multiple sex partners, IV drug abuse).
- 

### **Past medical history:**

- Chronic illnesses: diabetes, hypertension or asthma.
- Granulomatous diseases, connective tissue diseases, malignancies → all are possible causes of chronic pharyngitis.

### **Past surgical:**

- Previous hospital admissions.
- Previous surgical procedures.
- Blood transfusions.

### **Family history:**

- Family members with similar complaints.
- Chronic diseases.

### **Social History:**

- Smoking.
- Alcohol consumption.

### **Summary:**

- Personal data.
- Chief complaint.
- Important +ves and -ves.

### **Bacterial vs. Viral Pharyngitis:**

Viral and bacterial causes of pharyngitis are similar, and the differentiation of the etiology is difficult based on history and physical examination alone. Signs and symptoms alone cannot be used to rule out or diagnose group A streptococcal (GAS) pharyngitis. Despite this, classic presentations are described below.

- GAS infection is most common in children aged 4-7 years.
- Sudden onset is consistent with a GAS pharyngitis. Pharyngitis following several days of coughing or rhinorrhoea is more consistent with a viral etiology.

- Person has been in contact with others diagnosed with GAS or rheumatic fever presenting with symptoms consistent with GAS are more likely to have GAS pharyngitis.
- Headache is consistent with GAS infection.
- Cough is not usually associated with GAS infection.
- Vomiting is associated with GAS infection but may be present in other types of pharyngitis.
- A history of recent orogenital contact suggests the possibility of gonococcal pharyngitis.

## Key Points



- Most sore throats are caused by viral tonsillopharyngitis.
- It is difficult to clinically distinguish viral from bacterial causes of tonsillopharyngitis.
- Abscess and epiglottitis are rare but serious causes.
- Severe sore throat in a patient with a normal-appearing pharynx should raise suspicion of epiglottitis.

## History of Hoarseness (Dysphonia)

**Dysphonia** is the medical term for a speech disturbance (phonation), usually resulting in a hoarse voice or whispering voice, due to problems with the larynx (voice box).

**Spasmodic dysphonia** is a form of dystonia where there is involuntary spasms of the vocal cords. This causes interruptions in speech, or the voice may appear to be strained.

it is usually indicative of pathology isolated to the larynx or affecting the function of the larynx in producing sound (phonation). Most cases of hoarseness of the voice is due to laryngitis as a result of an infection, injury or strain. However, smokers should be cautious about the structural changes of the vocal cords that occur with long term tobacco smoking. This also increases the risk of developing cancer of the larynx.

### Causes of Voice Hoarseness

- ❖ Newborn Babies

This would be detected when the infant is crying.

1-Congenital abnormality like laryngomalacia, where the immature larynx folds inwards due to an abnormality in the laryngeal cartilages.

2-Neurological disorder affecting the vagus nerve or its branches (laryngeal branches).

## ❖ Toddlers and Children

### 1-Infection:

- Croup
- Laryngitis – bacterial, viral, in childhood diseases like mumps, measles and chickenpox

### 2-Voice strain (screamer's nodes)

## ❖ Adults

### 1-Infection

- The entire upper respiratory tract may be infected or only the larynx (laryngitis).
- Viral infections are more common and often associated with the common cold or influenza.
- Bacterial infections are the second most common infectious cause and includes infections with S.aureus, H.influenzae and in tuberculosis.
- Fungal infections, while rare, may be related to the spread of oral infections like candidiasis. This is common in immunocompromised patients, especially in HIV/AIDS.

### 3-Trauma

- This may be due to mechanical or chemical injury.
- Cigarette smoking and air pollution cause a combination of mechanical and chemical injury.
- Gastroesophageal reflux disease (GERD) – reflux laryngitis.
- Prolonged strain – vocal cord nodules (singer's nodes)

### 4-Allergies

### 5-Age-related changes

- Atrophy of the vocal folds seen with age (presbylarynx).

### 6-Medication

- Asthma inhalers

### 7-Cancer

- Laryngeal carcinoma
- Lung cancer

### 8-Neuromuscular

- Myasthenia gravis
- Dystonia (spasmodic dysphonia)

### 9-Vagal/laryngeal nerve disorders or lesions may result in unilateral or bilateral paralysis.

- Unilateral laryngeal paralysis is more likely to result in persistent dysphonia and other symptoms associated with laryngeal obstruction may be absent.

- Bilateral paralysis will lead to an obstruction of air flow within the larynx.

Causes:

-Neuropathies

-Hypothyroidism

-Idiopathic (unknown)

10-Obstruction

(Breathlessness, cyanosis and stridor may also be present) Causes:

- Allergic edema
- Spasm of laryngeal muscles
- Foreign body including inhaled blood clots or food
- Bilateral laryngeal paresis

11-Psychogenic

- May present as aphonia, which is a loss of the voice, or dysphonia, which is hoarseness or whispering speech.

## Diagnosis and Treatment

**Table 1**  
**Interventions considered in hoarseness guideline development**

Diagnosis	Targeted history Physical examination Laryngoscopy Stroboscopy Computed tomography (CT) Magnetic resonance imaging (MRI)
Treatment	Watchful waiting/observation Education/information Voice therapy Anti-reflux medications Antibiotics Steroids Surgery Botulinum toxin (BOTOX)
Prevention	Voice training Vocal hygiene Education Environmental measures

## History of Dysphonia

### Pertinent medical history for assessing a patient with hoarseness<sup>48-50</sup>

#### Voice-specific questions

- Did your problem start suddenly or gradually?
- Is your voice ever normal?
- Do you have pain when talking?
- Does your voice deteriorate or fatigue with use?
- Does it take more effort to use your voice?
- What is different about the sound of your voice?
- Do you have a difficult time getting loud or projecting?
- Have you noticed changes in your pitch or range?
- Do you run out of air when talking?
- Does your voice crack or break?

#### Symptoms

- Globus pharyngeus (persisting sensation of lump in throat)
- Dysphagia
- Sore throat
- Chronic throat clearing
- Cough
- Odynophagia (pain with swallowing)
- Nasal drainage
- Post-nasal drainage
- Non-anginal chest pain
- Acid reflux
- Regurgitation
- Heartburn
- Waterbrash (sudden appearance of salty liquid in the mouth)
- Halitosis ("bad breath")
- Fever
- Hemoptysis
- Weight loss
- Night sweats
- Otalgia (ear pain)
- Difficulty breathing

#### Medical history relevant to hoarseness

- Occupation and/or avocation requiring extensive voice use (ie, teacher, singer)
- Absenteeism from occupation due to hoarseness
- Prior episode(s) of hoarseness
- Relationship of instrumentation (intubation, etc) to onset of hoarseness
- Relationship of prior surgery to neck or chest to onset of hoarseness
- Cognitive impairment (requirement for proxy historian)
- Anxiety
- Acute conditions
  - Infection of the throat and/or larynx: viral, bacterial, fungal
  - Foreign body in larynx, trachea, or esophagus
  - Neck or laryngeal trauma
- Chronic conditions
  - Stroke
  - Diabetes
  - Parkinson's disease
  - Diseases from the Parkinson's Plus family (progressive supranuclear palsy, etc)
  - Myasthenia gravis
  - Multiple sclerosis
  - Amyotrophic lateral sclerosis (ALS)
  - Testosterone deficiency

**Table 6**  
**Medications that may cause hoarseness**

Medication	Mechanism of impact on voice
Coumadin, thrombolytics, phosphodiesterase-5 inhibitors	Vocal fold hematoma <sup>51-53</sup>
Biphosphonates	Chemical laryngitis <sup>54</sup>
Angiotensin-converting enzyme inhibitors	Cough <sup>55</sup>
Antihistamines, diuretics, anticholinergics	Drying effect on mucosa <sup>56,57</sup>
Danocrine, testosterone	Sex hormone production/utilization alteration <sup>58,59</sup>
Antipsychotics, atypical antipsychotics	Laryngeal dystonia <sup>60,61</sup>
Inhaled steroids	Dose-dependent mucosal irritation, <sup>62</sup> fungal laryngitis

- Surgical history: recent surgery, or any previous surgeries to the head or neck or chest, intubation..etc
- Social history: smoking, alcohol, Job
- Family history: DM ,parkinsonism ,MG,MS...etc

**For mistakes or feedback**

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