BMJ Best Practice

Laryngitis

Straight to the point of care

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Summary

Laryngitis is inflammation of the larynx, which can lead to oedema of the true vocal folds. Causes may be infectious or non-infectious (e.g., vocal strain, reflux laryngitis, chronic irritative laryngitis).

Acute laryngitis is usually a clinical diagnosis, characterised by hoarseness arising over <7 days, preceded by a viral upper respiratory tract infection. It is usually self-limiting. Patients may present with airway distress due to oedema and high fever. Exudative tonsillopharyngitis with fever and anterior cervical lymphadenitis is highly suggestive of a bacterial origin. Laryngitis can also be secondary to post nasal drip and/or sinus infection and bacterial aetiologies should be ruled out in a patient with nasal symptoms.

Chronic laryngitis is the presence of laryngeal inflammatory symptoms including hoarseness, globus, pain, dysphagia, throat clearing, or cough lasting >3 weeks. A thorough evaluation and specialist consultation, including laryngeal examination, should be obtained because chronic laryngitis can mimic symptoms of laryngeal malignancy.

Treatment for viral laryngitis consists of voice rest and hydration. For bacterial causes, antibiotics are used along with supportive measures. Vocal strain is managed with voice therapy and vocal hygiene.

Definition

Laryngitis refers to inflammation of the larynx. This can lead to oedema of the true vocal folds, resulting in hoarseness. Laryngitis can be acute or chronic, infectious or non-infectious. Accompanying signs of infectious laryngitis include odynophagia, cough, fever, and respiratory distress.

The most common variant is acute viral laryngitis, which is self-limiting and usually related to an upper respiratory infection. Bacterial laryngitis can be life-threatening. *Haemophilus influenzae* is one of the most frequently isolated bacteria. Other causes include tuberculosis, diphtheria, syphilis, and fungi.

Non-infectious causes of laryngitis heavy voice use and chronic irritant laryngitis (e.g. cigarette smoking).

THEORY

Epidemiology

Accurate figures with regard to acute laryngitis are difficult to collect, because it is generally unreported.

Sore throat accounts for 1% to 2% of all patient visits to a primary care physician in the US. This accounts for approximately 7.3 million annual visits for children and 6.7 million for adults.[3] One review conducted by the Royal College of General Practitioners in the UK in 2010 reported an average incidence of 6.6 cases of laryngitis and tracheitis per 100,000 patients (all ages) per week.[4]

In addition, the incidence of chronic laryngitis is not well established but has been estimated as 3.47 diagnoses per 1000 people per year.[5]

Laryngitis is most common in children between 6 months and 3 years old.[6]

Most cases of acute laryngitis are caused by viral infections. Viral agents tend to have annual periods of peak prevalence, such as rhinovirus infections in autumn and spring, and influenza virus infection epidemics generally from December to April. Laryngitis may occur due to croup or epiglottitis. The recorded incidence of epiglottitis in the US declined between 1980 and 1990. These epidemiological changes have been ascribed to the introduction of the Haemophilus influenzae type B (Hib) vaccination.[7]

Diphtheria is encountered rarely in developed nations but can still infect children and adults who are immunocompromised or have not received vaccinations. Worldwide, diphtheria is still endemic in areas such aAfrica, Latin American, Asia, the Middle East, and parts of Europe where immunisation coverage with diphtheria toxoid-containing vaccines is suboptimal. Since 2011, large outbreaks have been reported in Indonesia, Laos, Haiti, Venezuela, Yemen, Bangladesh, and west Africa. In 2022, the World Health Organization (WHO) reported 5856 global cases of diphtheria; although that number may under-represent the true number recorded given the COVID-19 pandemic.[8]

Tuberculous laryngitis is historically a sequela of pulmonary tuberculosis (TB), but can present without pulmonary involvement. In developed countries, TB is associated with people who have emigrated from endemic areas (e.g., China and India) or have a history of HIV infection.[9] The WHO estimates that there were 10.8 million cases of TB in 2023, with over 80% of cases and deaths occurring in low- and middle-income countries.[10] However, over 95% of cases and deaths are in developing countries.[10] Approximately 8 million people worldwide are co-infected with HIV and TB, the majority of whom live in sub-Saharan Africa, the Indian subcontinent, and South East Asia.[11] Laryngeal candidiasis is more common in immune-suppressed patients, as well as among immune-competent patients using inhaled corticosteroids or prolonged courses of antibiotics.[12]

Both acute and chronic laryngeal inflammation can be caused by phonotrauma, and/or exposure to environmental irritants.[4]

Aetiology

Infectious laryngitis

This may be caused by viral, bacterial, or fungal infection.

Virus infection:

- Generally the most common cause of infectious laryngitis

- Rhinovirus is the most common virus that is aetiologically associated with upper respiratory infections
- Other causative viruses include parainfluenza virus, respiratory syncytial virus, influenza, and adenoviruses
- Parainfluenza viruses type 1 and type 2, as well as influenza viruses, are the most common pathogens responsible for croup.

Bacterial infection:

- Pathogens consist of *Moraxella catarrhalis* , *Haemophilus influenzae* , *Streptococcus pneumoniae* , *Staphylococcus aureus* , and *Klebsiella pneumoniae*
- Epiglottitis is most frequently caused by *Haemophilus influenzae* type B
- Diphtheria is caused by *Corynebacterium diphtheriae* . Occasional cases may be caused by *Corynebacterium ulcerans*
- Tuberculous laryngitis is caused by *Mycobacterium tuberculosis*
- Syphilis is an uncommon cause.

Fungal infections:

- Generally caused by *Candida albicans* , *Blastomyces dermatitis* , *Histoplasma capsulatum* , and *Cryptococcus neoformans* .

Non-infectious laryngitis

These include the following:

- Irritant laryngitis (e.g., due to toxic exposure)
- Allergic
- Traumatic, especially due to heavy vocal use
- Reflux laryngitis
- Autoimmune.

Pathophysiology

In acute infectious laryngitis a viral, bacterial, or fungal infection leads to inflammation of the endolaryngeal structures. This results in tissue oedema and erythema. Tissue oedema decreases the pliability of the true vocal fold mucosa over the lamina propria and increases the bulk of the vocal folds. This leads to lowered vocal pitch, more strain, and a rougher voice or even aphonia. In bacterial infection, there is increased mucus, as well as purulence. In more pronounced cases, especially in children in whom the larynx is already small, oedema may lead to narrowing of the airway and airway compromise.[13] Tuberculosis infection may lead to chronic laryngitis.

Reflux laryngitis results in irritation of the laryngeal mucosa from a repetitive exposure of refluxate containing hydrochloric acid and pepsin.[14]This leads to an oedematous, erythematous, and chronically inflamed larynx. With patients presenting with excessive throat clearing, coughing, hoarseness, and globus pharyngeus (i.e., the sensation of a lump in the throat).[15]

Patients with heavy vocal use such as teachers, singers, lawyers, sales people, etc, can put a great strain on their vocal folds in terms of repeat mechanical collisions.[14] Vocal folds experience intense friction, thermal agitation, and activation of inflammatory markers from physical trauma. This has been described as an inertial whiplash injury.[16] [17] This phonotrauma results in oedematous vocal folds, with increased risk of scarring and vocal fold haemorrhage.

THEORY

Classification

Infectious and non-infectious types

Infectious:

- Viral: most common causative agent is the rhinovirus. Others include influenza A, B, C, adenoviruses, croup due to the parainfluenza viruses, measles, varicella-zoster
- Bacterial: examples include epiglottitis due to *Haemophilus influenzae* type B, beta-haemolytic *Streptococcus*
- Fungal: examples include candidiasis, blastomycosis, histoplasmosis, and cryptococcosis.

Non-infectious:

- Irritative laryngitis (e.g., due to toxic exposure)
- Allergic
- Traumatic, especially due to heavy vocal use
- Reflux laryngitis
- Autoimmune.

Onset and duration of symptoms

- Acute: usually lasts <7 days
- Chronic: persistence of symptoms for 3 weeks or longer[1] [2]
- Subacute: when the clinical presentation lies between 1 and 3 weeks. There is little clinical utility in using this definition.

Case history

Case history #1

A 45-year-old man presents with hoarseness for 5 days, cough, and pain on swallowing. He has no fever but complains of increased mucus in his throat and occasional difficulty breathing. He has no prior history of hoarseness, surgery to the larynx, intubation, or vocal abuse. He has slight throat pain but denies reflux symptoms. On examination, there is no acute respiratory distress. His oral cavity is within normal limits, but the oropharynx shows hyperaemia. The tonsils are slightly enlarged and erythemic. Mirror examination of the larynx reveals diffuse oedema and erythema of the laryngeal structures, with increased mucus in the glottis. The airway is patent. There are no lesions involving the true vocal folds, and they are both mobile.

Case history #2

A 45-year-old man has hoarseness for the past 3 weeks, accompanied by painful swallowing and cough. He has no fever and states that he has lost 2.5 kg over the last 3 months. He is known to be HIV positive. Indirect laryngoscopy reveals an exophytic lesion on the left true vocal fold, with oedema of both true vocal folds.

Other presentations

Diphtheria is encountered rarely in developed nations but can still infect children and adults who are immunocompromised or have not received vaccinations. Initial symptoms include hoarseness and sore throat. There is progressive shortness of breath as the patient becomes generally ill. On examination, the patient is toxic. Oral examination reveals white-grey exudates on the tonsils and the soft palate, extending down to the base of the tongue.

Other less common causes of infectious laryngitis include syphilis and fungal infection. In patients who are using corticosteroid inhalers, the onset of hoarseness should raise the suspicion of possible laryngeal candidiasis. Patients with laryngitis due to vocal trauma will have an accompanying history of increased voice use and high vocal demands.

Approach

Symptoms of acute infectious laryngitis may range from very subtle features to high-grade fever with airway compromise. Subtle features may include short-lived mild hoarseness and upper respiratory infection symptoms. The clinical presentation of laryngitis depends on:

- Causative pathogen
- Amount of tissue oedema
- Region of larynx primarily involved
- Age and comorbidities.

Evaluation of the airway is important as an initial step. Further evaluation then follows.

Urgent considerations

Upon presentation of acute laryngitis, the first system assessed should be the airway. If there is respiratory distress, the patient should be assessed in a controlled environment with the facility to perform safe intubation. Emergency tracheotomy may be required if, through swelling, a normal intubation is not possible.

Children presenting with symptoms and signs of epiglottitis (e.g., high fever, sore throat, toxic appearance, drooling, tripod positioning, difficulty breathing, and irritability) should be examined in a controlled setting, such as the operating room. Intubation is performed if there is any doubt about the airway. See Epiglottitis .

If the patient is an adult, flexible laryngoscopy may be performed, depending on the level of distress. If the patient is in severe respiratory distress, or if supraglottitis is suspected, then flexible laryngoscopy may trigger laryngospasm and airway demise. In these patients laryngeal examination should be performed only by an otolaryngologist, and preferably in the operating room where a surgical airway can be secured if needed. Any manipulation of the supraglottic area should be avoided. If necessary, intubation can be performed during flexible laryngoscopy with direct visualisation.[19]

History

Once the airway is assessed and, if necessary, secured, the remainder of the history and examination can be performed. A thorough history should include information about voice, breathing, and swallowing patterns. Concomitant systemic problems, such as allergies, exposures, immune deficiencies, and systemic illnesses, are considered. History of intubations, radiation exposures, and neck surgery should be taken, as should a smoking history.

Knowledge of recent travel to areas where diphtheria or tuberculosis are endemic, or of contact with people with infectious symptoms, may aid in diagnosis.[12] Other risk factors for acute infectious laryngitis include incomplete or absent Haemophilus influenzae type B (Hib) or diphtheria vaccination. Laryngeal candidiasis is more common in patients using inhaled corticosteroids or prolonged courses of antibiotics, and in those who are immune compromised.[12]

Patients with acute infectious laryngitis can present with symptoms ranging from very subtle features to high-grade fever and airway compromise. There is often a preceding upper respiratory tract infection with sore throat, fever, cough, and rhinitis. This is followed by odynophagia, dysphagia, and hoarseness. Fatigue and malaise can occur. Laryngeal oedema can lead to dyspnoea.

A challenge for the clinician is to decide which patients may have bacterial infection and require specific antibiotic treatment, because presentation of viral and bacterial laryngitis may be similar.[14] Viral laryngitis is common, and symptoms generally arise over a period of <7 days. Evidence of a bacterial infection elsewhere (e.g., pneumonia, streptococcal pharyngitis) supports a bacterial aetiology.[4] Diphtheria is uncommon in the US and has a prodrome of several days, with hoarseness progressing to airway compromise. See Diphtheria .

Chronic laryngitis is defined as throat inflammation of at least 3-week duration that encompasses a broad range of inflammatory, infectious, and autoimmune conditions resulting in alteration of phonation, breathing, and swallowing. Symptoms include dysphonia, throat pain, globus sensation, frequent throat clearing, cough, and dysphagia.[1] The symptoms of chronic laryngitis due to TB are prolonged (>3 weeks) and patients typically complain of dysphonia, but may also experience odynophagia, dysphagia, coughing, and rarely dyspnoea.[1]

Symptoms generally mimic symptoms of laryngeal malignancy, which needs to be ruled out. Patients may have symptoms of cough and weight loss, but they are usually referred to an otolaryngologist due to persistent hoarseness.

Patients with traumatic laryngitis will present with hoarseness that has been going on for a prolonged duration and generally have a history of heavy vocal use. These patients tend to be professional voice users such as teachers, lawyers, people in sales, or singers. The hoarseness is usually worse with increased voice use, therefore, they have more complaints towards the end of the day and are better in the morning. If they do voice rest, they tend to have improved voice quality. If there is an acute trauma, they can present with sudden onset loss of voice, which could be a sign of a vocal fold haemorrhage.

Physical examination

Generally, an adult with acute laryngitis will not be toxic in the absence of acute epiglottitis or diphtheria. Patients may have hyperaemia of the oropharynx and possibly enlarged tonsils. There may be post-nasal drip on oropharyngeal examination. Exudative tonsillopharyngitis, anterior cervical lymphadenitis, and fever are highly suggestive of a bacterial origin.[14]

A patient with diphtheria can present with a sore throat, difficulty swallowing, malaise or be in acute respiratory distress. Oropharyngeal examination can reveal white-grey exudates, which may extend to the soft palate and vallecula. These pseudomembranes may also be found covering the laryngeal structures, leading to airway compromise. Exudates are firmly adherent to the underlying mucosa, which bleed when the exudate is removed. There is cervical lymphadenopathy, profound malaise, and stridor. The diphtheria toxin also causes cardiomyopathy and neuropathies.[20] Paralysis of the vocal folds or palate can be seen. Early diagnosis is imperative. See Diphtheria .

Young boy presenting with acute diphtheria infection

Image courtesy of CDC

Head and neck examination is usually normal in vocal trauma.

Patients with chronic laryngitis secondary to reflux may demonstrate laryngeal oedema, pseudosulcus, hyperaemia, increased mucus, granuloma, or thickening of the posterior interarytenoid tissue.[21]

Diagnostic tests

Laryngitis is a diagnosis of history and examination, rather than laboratory testing. A thorough examination includes laryngoscopy. This is performed if the patient presents initially to an otolaryngology specialist, but most primary care physicians are not experienced in the technique and diagnose most cases of viral laryngitis clinically. Some primary care physicians may use mirror indirect laryngoscopy, depending on experience. Laryngoscopy shows oedema and erythema of the laryngeal structures, especially the true vocal folds. Thick, copious, white-yellow secretions are also seen in the glottis. If indirect laryngoscopy cannot be performed, the patient may be referred to an otolaryngology specialist. Indications for referral to an otolaryngologist include:

- Uncertain diagnosis.
- Persistent hoarseness (lasting longer than 2-3 weeks) with failed treatment. It is important to refer these patients rather than treat them with further courses of antibiotics if symptoms do not improve or resolve within 4 weeks, or earlier if a serious underlying cause is suspected.[22]
- Ill patients with suspected airway compromise. These patients are referred to hospital for urgent management and assessment.
- Patients whose profession relies on their voice.

Videostroboscopy allows for simultaneous evaluation of voice quality, laryngeal anatomy, and vocal fold vibratory function.[23] Guidelines on dysphonia encourage the use of videostroboscopic examination when the voice symptoms are out of proportion to the indirect laryngoscopy.[22] Videostroboscopy can reveal vocal fold sulcus or vibratory pathologies such as stiffness, or help differentiate between benign vocal lesions.[22]

In case of suspected bacterial origin, oropharyngeal cultures and full blood countcan be obtained, as well as a rapid antigen detection test. If diphtheria is suspected, cultures of nose and throat swabs are

obtained and Loeffler or Tindale selective media used. Definitive diagnosis can also be made by the demonstration of toxin production by immunoprecipitation or polymerase chain reaction.

The work-up for patients with chronic laryngitis suspected to be due to tuberculosis includes a chest x-ray, sputum cultures, and sputum smear for the detection of acid-fast bacilli. See Pulmonary Tuberculosis . Indirect laryngoscopy generally reveals exophytic or nodular lesions. Most commonly, the posterior glottis is involved, but the lesions can be seen anywhere in the larynx. Because the laryngeal lesions look similar to carcinoma of the larynx, a direct laryngoscopy should be performed, and biopsies should be obtained.[22] This procedure is usually performed under general anaesthesia by an otolaryngologist.

In vocal strain, history and examination to exclude other causes is usually sufficient to make the diagnosis. However, other aetiologies may exist in heavy voice users (including laryngeal malignancy); therefore, any hoarseness that does not improve or resolve within 4 weeks should be evaluated by an otolaryngologist with a laryngoscopy. If a serious underlying cause is suspected, the patient should be referred irrespective of duration.[22]

History and exam

Key diagnostic factors

presence of risk factors (common)

- Risk factors associated with laryngitis include a recent history of upper respiratory infection, incomplete or absent Haemophilus influenzae type B (Hib) or diphtheria vaccination, contact with a virally infected individual, travel to an area where diphtheria or tuberculosis is endemic, immunocompromise, residence in a nursing home, HIV infection.
- Laryngeal candidiasis is more common in patients using inhaled corticosteroids or on prolonged courses of antibiotics.[12]

hoarseness (common)

- The most characteristic symptom of laryngitis.
- In acute laryngitis, history of hoarseness is generally <7 days.
- There can be periods of aphonia.
- Due to increased oedema, the bulk of the vocal folds increases, and normal pitch is lowered.
- In TB, the patient will present with chronic hoarseness (>3 weeks).

dysphagia (common)

- Common symptom associated with sore throat.

sore throat (common)

- Common symptom of upper respiratory infections.

odynophagia (common)

- Pain on swallowing is a common symptom of upper respiratory infections.

cough (common)

- Common symptom of upper respiratory infections.
- Post-nasal drainage and increased laryngeal mucus exacerbate the cough.
- Chronic cough with weight loss are symptoms of laryngitis due to tuberculosis.

hyperaemia of the oropharynx (common)

- Feature of acute infectious laryngitis.

history of heavy vocal use (common)

- Patients with vocal strain will usually present with a history of prolonged or excessive vocal use.

gastro-oesophageal reflux (common)

- Untreated reflux can lead to chronic changes in the larynx resulting in chronic inflammation.

oropharyngeal white-grey exudates (uncommon)

- Seen on oropharyngeal examination in patients with diphtheria.
- May extend to the soft palate and vallecula.
- These pseudomembranes in diphtheria may also be found covering the laryngeal structures, leading to airway compromise.
- Firmly adherent to the underlying mucosa, which bleed when the exudate is removed.

Other diagnostic factors

rhinitis (common)

- Common symptom of upper respiratory infections.
- Post-nasal drainage and increased laryngeal mucus may exacerbate cough.

fatigue and malaise (common)

- May accompany more localised laryngeal symptoms.
- Malaise is profound in diphtheria infection.

fever (common)

- Patients with acute infectious laryngitis can present with symptoms varying from very subtle features to high-grade fever.
- Fever presenting with exudative tonsillopharyngitis and anterior cervical lymphadenitis is highly suggestive of bacterial origin.

enlarged tonsils (common)

- May occur in acute infectious laryngitis.

enlarged, tender anterior cervical lymph nodes (common)

- When accompanied by exudative tonsillopharyngitis and fever, it is highly suggestive of bacterial origin.

post-nasal drip (common)

- May be detected on oropharyngeal examination and may exacerbate cough.

dyspnoea (common)

- May occur due to laryngeal oedema.

weight loss (uncommon)

- Weight loss and chronic cough are symptoms of laryngitis due to tuberculosis.

tonsillopharyngeal exudate (uncommon)

- When accompanied by anterior cervical lymphadenitis and fever, it is highly suggestive of bacterial origin.

acute respiratory distress (uncommon)

- Generally seen in cases of acute epiglottitis, croup, or diphtheria.
- Uncommon with uncomplicated acute laryngitis in adults.

toxic appearance (uncommon)

- Generally seen in cases of acute epiglottitis or diphtheria.
- Uncommon with uncomplicated acute laryngitis.

drooling (uncommon)

- Generally seen in cases of acute epiglottitis. Uncommon with uncomplicated acute laryngitis.

stridor (uncommon)

- Generally seen in cases of acute epiglottitis, croup, or diphtheria.
- Uncommon with uncomplicated acute laryngitis.

Risk factors

Strong

recent history of upper respiratory infection

- Symptoms of acute infectious laryngitis are usually preceded by a viral upper respiratory infection and are self-limiting.

incomplete or absent Haemophilus influenzae type B (Hib) vaccination

- Epiglottitis is most frequently caused by *Haemophilus influenzae* type B.

incomplete or absent diphtheria vaccination

- Diphtheria as a cause of laryngitis is encountered rarely in developed nations but can still infect children and adults who are immunocompromised or have not received vaccinations.

contact with infected individual

- Most cases of acute infectious laryngitis are caused by viruses that are spread by respiratory droplet transmission.

travel to area where diphtheria or tuberculosis are endemic

- Worldwide, diphtheria is endemic in areas such as Africa, Latin America, Asia, the Middle East and Europe. Tuberculosis (TB) is endemic in China and India.

HIV or other immunocompromise

- Particularly increases risk of tuberculous and fungal laryngitis. TB is a cause of chronic laryngitis.

use of inhaled corticosteroids or prolonged courses of antibiotics

- Increases risk of laryngeal candidiasis.[12]
- Risk may be reduced in patients on inhaled corticosteroids if they rinse the throat with water before and after taking their medication, and by using the lowest therapeutic dose. Oral candidiasis can be a side effect of antibiotic use.

heavy vocal use

- Patients with laryngitis caused by vocal strain will usually present with a history of prolonged or excessive vocal use.

tobacco use

- Patients with tobacco use are at increased risk of having a dry, chemically irritated larynx, and altered vocal fold epithelium contributing to recurrent episodes of laryngitis.[18]

Investigations

1st test to order

Test	Result
laryngoscopy • Mainstay of diagnosis. • Can be performed by the use of a rigid or flexible laryngoscope. • Performed if the patient presents initially to an otolaryngology specialist, but most primary care physicians are not experienced in the technique and diagnose most cases of viral laryngitis clinically. • Some primary care physicians may use mirror indirect laryngoscopy, depending on experience.	**acute infectious laryngitis: oedema and erythema of the true vocal folds; thick, copious, white-yellow secretions in the glottis; chronic tuberculous laryngitis: exophytic or nodular laryngeal lesions commonly involving the posterior glottis; reflux laryngitis: no exudative changes in the larynx, may show hyperaemia of the arytenoids and the posterior true vocal folds**

Other tests to consider

Test	Result
biopsy • Biopsies should be obtained in cases where tuberculosis is suspected. • Procedure is usually performed with a general anaesthetic.	**chronic tuberculous laryngitis: granulomatous necrosis, positive stain for acid-fast bacilli**
oropharyngeal cultures • Cultures should be obtained if bacterial infection, diphtheria, or TB are suspected. • Loeffler or Tindale selective media are used when diphtheria is suspected.[24]	**positive cultures in bacterial infection**
nasal swab for culture • Cultures should be obtained if diphtheria is suspected. • Loeffler or Tindale selective media are used when diphtheria is suspected.[24]	**positive cultures in bacterial infection**
serum immunoprecipitation or polymerase chain reaction for diphtheria • Definitive diagnosis of diphtheria can also be made by the demonstration of toxin production.	**positive in diphtheria**
full blood count • May be performed if acute bacterial infection is suspected.	**may be a leukocytosis with left shift in bacterial infection**
rapid antigen detection test • May be performed if bacterial laryngitis due to group A streptococcal infection is suspected.	**positive in bacterial infection**
chest x-ray • Should be obtained in cases where tuberculosis is suspected.	**cavitary lesions in tuberculosis**
sputum cultures • Performed routinely in patients with suspected tuberculosis.	**may be positive for mycobacteria in cases of tuberculosis**
videostroboscopy • Hoarseness is not always due to laryngitis, and therefore careful examination using videostroboscopy to evaluate the vocal folds and rule out a more serious vocal fold injury (haemorrhage or vocal mucosal tear) in heavy voice users is essential. • Videostroboscopy allows for simultaneous evaluation of voice quality, laryngeal anatomy, and vocal fold vibratory function.[23] • Guidelines on dysphonia encourage the use of videostroboscopic examination when the voice symptoms are out of proportion to the indirect laryngoscopy.[22]	**reveals vocal fold sulcus or vibratory pathologies such as stiffness, or helps differentiate between benign vocal lesions**

Differentials

Condition	Differentiating signs / symptoms	Differentiating tests
Tonsillitis	• There may be no significant difference in signs and symptoms, but hoarseness is more pronounced in laryngitis.	• Indirect laryngoscopy will not show erythema and oedema of the laryngeal structures in acute tonsillitis.
Infectious mononucleosis	• Hepatomegaly and splenomegaly usually present. • Rash and generalised fatigue may occur. • Exudates are creamy in colour and usually do not extend beyond the tonsils. • There is no bleeding when the exudates are removed.	• Positive heterophile antibody test or positive serology test.
Allergic rhinitis	• No sign or symptom of an acute infection. • Other allergy-related history or symptoms (e.g., sneezing, nasal pruritus, and allergic conjunctivitis) are present.	• Improvement with a therapeutic trial of antihistamines or intranasal corticosteroid medication. • Allergy skin prick testing or in vitro-specific IgE determination may detect allergic response to a specific allergen.
Laryngeal carcinoma	• There may be no difference in signs and symptoms between laryngeal cancer and tuberculous laryngitis.	• A direct laryngoscopy should be performed and biopsies obtained. • Biopsy will demonstrate malignancy in patients with laryngeal carcinoma, whereas biopsy may show granulomatous necrosis and acid-fast bacilli in patients with tuberculosis infection.
GORD	• Presenting symptoms commonly include heartburn and acid regurgitation.	• Oesophagogastroduodenoscopy (OGD) may show oesophagitis (erosion, ulcerations, strictures) or Barrett oesophagus. • Patients may respond to a therapeutic trial of a proton pump inhibitor.

Approach

Treatment of acute infectious laryngitis will vary depending on the severity of the illness. Particular care must be taken with patients with any degree of airway compromise. Certain types of infection require urgent and specialised care, such as epiglottitis and diphtheria.

Treatment for viral laryngitis relies on a thorough understanding of the natural course of the disease. There is a paucity of data on this. Most physicians therefore approach viral laryngitis as a usually self-limiting illness, requiring supportive treatment alone.[4]

Antibiotics

The challenge for the physician is to decide when antibiotics may be required for possible bacterial infection. One 2021 Cochrane review concluded that antibiotics should be prescribed for sore throat only after assessing each patient individually and determining that the sore throat is likely of bacterial origin.[25] One 2015 Cochrane review addressed the question of antibiotics for acute laryngitis in adults.[26] The review found three randomised controlled trials: one trial compared penicillin V with placebo, the second compared erythromycin with placebo, and the third compared fusafungine (no longer available) with or without clarithromycin to no treatment. It found that the erythromycin group had significantly better voice results at 1 week only, and significantly better cough at 2 weeks only. Additionally, patients treated with inhaled fusafungine had a higher rate of clinical cure by day 5, but no difference at day 8 or after. All other voice and outcome measures did not demonstrate significant improvement for either treatment group. The Cochrane review concluded that there appears to be no clinically significant benefit to the use of antibiotics to treat acute laryngitis; however, no definitive recommendations could be made. The use of antibiotics could lead to increased rates of resistant organisms as well as undue adverse risks and costs.[26] [27]

Corticosteroids

Evidence for corticosteroid use for acute laryngitis is incomplete.[17] [28] [29] [30] [31] [32] [33] One study compared inhaled corticosteroid versus oral corticosteroid. There was a significant improvement in oedema in the inhaled corticosteroid cohort compared with the oral corticosteroid cohort.[29] In another study, oral corticosteroid therapy was shown to reduce pro-inflammatory markers and increase anti-inflammatory markers in a human phonotrauma model.[17] The authors of the study concluded that this provides a biological basis supporting the use of corticosteroids in acute vocal fold inflammation associated with phonotrauma.

Patients with potential airway compromise

If there is respiratory distress, the patient should be assessed in a controlled environment with the facility to perform safe intubation. Emergency tracheotomy may be required if, through swelling, a normal intubation is not possible. Children presenting with symptoms and signs of epiglottitis (e.g., high fever, sore throat, toxic appearance, drooling, tripod positioning, difficulty breathing, and irritability) should be examined in a controlled setting, such as the operating room, where intubation is performed if there is any doubt about the airway. If the patient is an adult, flexible laryngoscopy may be performed. Any manipulation of the supraglottic area should be avoided. If necessary, intubation can be performed during flexible laryngoscopy with direct visualisation.[19]

Acute respiratory distress is unlikely in the setting of uncomplicated acute laryngitis unless there is an underlying risk factor, such as a condition that limits the airway. Conditions such as subglottic stenosis or

bilateral vocal fold paralysis greatly increase the risk of respiratory failure in acute laryngitis. Even slight inflammation and oedema of the endolaryngeal structures can cause airway compromise and can be detrimental for the patient. Therefore, upper respiratory infections (URIs) and acute laryngitis should be treated with diligence. Corticosteroids are administered to alleviate oedema in all patients with potential airway compromise. Early antibiotic treatment should be considered in patients with suspected diphtheria. The airway should be monitored closely to assess the need for tracheotomy.[19]

Patients with diphtheria may appear on the verge of airway compromise. The patient needs to be hospitalised and observed closely. Serial fibre-optic indirect laryngoscopies are performed. The airway should be secured in case of developing obstructions from progression of the exudates.

Acute infectious laryngitis (non-diphtherial)

Most cases of acute infectious laryngitis are viral, and the treatment is supportive with analgesics and cough suppressants as required. Vocal hygiene is the most important component of the treatment regimen. It includes, but is not limited to, voice rest, increased hydration, humidification, and limited caffeine intake.[14] Voice rest for viral laryngitis, in particular, cannot be overemphasised. The duration of voice rest suggested may differ depending on each physician's usual practice, but is usually between 3 and 14 days.[34] Singers should not sing or do vocal exercises during this period. Voice rest is important because heavy voice use in an already injured larynx can lead to the formation of further pathology, such as scarring or haemorrhage of the vocal folds and muscle tension dysphonia. Caffeine should be avoided because it has diuretic effects and will cause further volume depletion. Decongestants are not recommended. There is no evidence supporting the use of corticosteroids for these patients.

Despite a lack of conclusive trials, mucolytics have been used widely to decrease the viscosity of the secretions. Mucolytics may restore the watery quality of the mucus in the glottis that is essential for lubrication of the true vocal folds.[35] Thick mucus also triggers throat clearing, which in turn increases vocal fold oedema and injury, leading to vocal fold pathologies.

Antibiotics are indicated only when a bacterial infection is suspected.[25] [26][27] Antibiotics and corticosteroids should not be used for the empirical treatment of laryngitis.[2] Most acute laryngitis cases are viral.

Acute laryngitis due to diphtheria, following successful airway management

Medical management is started as soon as the diagnosis is suspected, with antibiotics and antitoxin. Administration of diphtheria antitoxin is a crucial step in the treatment of diphtheria and can be administered before laboratory confirmation.[36] Antibiotics are essential for eradicating the organism and eliminating its spread, but they are not a substitute for antitoxin treatment.[27]

See Diphtheria.

Patients should be isolated until two cultures from the nasopharynx and throat taken at least 24 hours apart and more than 24 hours after completing antibiotics are negative.[27] [37] Analgesics, mucolytics, and cough medications may be used as supportive care following urgent therapy.

Laryngitis due to tuberculosis or fungal infection

Detailed discussions of tuberculous laryngitis or fungal laryngitis are beyond the scope of this topic. Patients with suspected tuberculosis require referral to an infectious disease or pulmonary specialist for

antituberculosis therapy and care. See Pulmonary Tuberculosis .Vocal hygiene, analgesics, mucolytics, and cough medications may be used as supportive care.

Patients with fungal laryngitis are managed by otolaryngology specialists. Patients using inhaled corticosteroids should be advised to rinse their mouth with water before and after inhalation. The dose of corticosteroid should be reduced if at all possible to the lowest dose required. Referral to an otolaryngology specialist may be required.[38]

Chronic laryngitis due to tuberculosis or fungal infection

Chronic tuberculous laryngitis is treated with an antituberculosis regimen and care provided by an infectious disease specialist. Chronic laryngitis may also be due to fungal infection. Patients with fungal laryngitis are managed by otolaryngology specialists. The detailed treatment of fungal laryngitis is beyond the scope of this topic.

Non-infectious laryngitis

The mainstay of treatment for laryngitis due to chronic phonotrauma is speech therapy by an experienced voice therapist.[2] [22] For these patients with vocal strain, vocal hygiene is essential. This includes, but is not limited to, voice rest, increased hydration, humidification, and limited caffeine intake.[14] Voice rest is important because heavy voice use in an already injured larynx can lead to the formation of further pathology, such as scarring or haemorrhage of the vocal folds and muscle tension dysphonia. The duration of voice rest suggested may differ depending on each physician's usual practice, but is usually between 3 and 14 days.[34] Singers should not sing or do vocal exercises during this period.

Professional voice users

In professional voice users such as singers, multiple factors can be addressed including vocal hygiene, reflux, and social habits.[31] Treatment options that can be considered include therapy with a singing voice specialist, oral or nasal corticosteroids for rhinitis or other inflammation, as well as antibiotics for cases of bacterial sinusitis that inflame the larynx. Hoarseness is not always due to laryngitis, and therefore careful examination using videostroboscopy to evaluate the vocal folds and rule out a more serious vocal fold injury (haemorrhage or vocal mucosal tear) is essential. If there is a serious vocal injury, voice rest and avoidance of heavy voice use should be recommended. Where acute viral laryngitis is present, the patient should be evaluated by an otolaryngologist. If there is no serious vocal injury, intramuscular corticosteroids, aggressive hydration, and essential voice use may salvage a performance in this setting. The patient must be counselled about an increased risk of haemorrhage, more permanent damage, or reduced vocal abilities with an inflamed larynx if there is continued vocal use.

Treatment algorithm overview

Please note that formulations/routes and doses may differ between drug names and brands, drug formularies, or locations. Treatment recommendations are specific to patient groups: see disclaimer

Initial		(summary)
with potential airway compromise		
	1st	secure airway + supportive care
	plus	corticosteroid
with suspected diphtheria	plus	isolation + antibiotics + diphtheria antitoxin

Acute		(summary)
viral		
	1st	supportive care + vocal hygiene
	adjunct	mucolytic and/or cough suppressant
suspected bacterial: non-diphtheria and non-tuberculous		
	1st	antibiotics
	plus	supportive care + vocal hygiene
	adjunct	mucolytic and/or cough suppressant
confirmed diphtheria		
	1st	continued isolation + antibiotics + diphtheria toxoid
	adjunct	analgesia
	adjunct	mucolytic and/or cough suppressant
tuberculosis		
	1st	isolation and antituberculosis therapy
	plus	supportive care + vocal hygiene
	adjunct	mucolytic and/or cough suppressant
fungal		
	1st	referral to otolaryngology specialist
vocal strain		
	1st	speech therapy + vocal hygiene

Treatment algorithm

Please note that formulations/routes and doses may differ between drug names and brands, drug formularies, or locations. Treatment recommendations are specific to patient groups: see disclaimer

Initial

with potential airway compromise

1st **secure airway + supportive care**

» If there is respiratory distress, the patient should be assessed in a controlled environment with the facility to perform safe intubation. Emergency tracheotomy may be required if, through swelling, a normal intubation is not possible.

» Children presenting with symptoms and signs of epiglottitis (e.g., high fever, sore throat, toxic appearance, drooling, tripod positioning, difficulty breathing, and irritability) should be examined in a controlled setting, such as the operating room, where intubation is performed if there is any doubt about the airway.

» If the patient is an adult, flexible laryngoscopy may be performed. Any manipulation of the supraglottic area should be avoided. If necessary, intubation can be performed during flexible laryngoscopy with direct visualisation.[19]

» Acute respiratory distress is unlikely in complicated acute laryngitis in the absence of an underlying risk factor, such as subglottic stenosis or bilateral vocal fold paralysis.

» Patients with diphtheria are at imminent threat of airway compromise. They require hospitalisation, close observation, and serial fibre-optic indirect laryngoscopies. The airway should be secured in case of developing obstructions from progression of the exudates. Palatal and pharyngeal paralysis may necessitate nasogastric tube feeding.

plus **corticosteroid**

Treatment recommended for ALL patients in selected patient group

Primary options

» dexamethasone sodium phosphate: children and adults: consult specialist for guidance on dose

» Corticosteroids are administered to alleviate oedema in all patients with potential airway

Initial

compromise. Evidence in the literature for corticosteroid use for acute laryngitis is incomplete.[17] [28] [29] [30] [31] [32] [33] One study compared inhaled corticosteroid versus oral corticosteroid. There was a significant improvement in oedema in the inhaled corticosteroid cohort compared with the oral corticosteroid cohort.[29] In another study, oral corticosteroid therapy was shown to reduce pro-inflammatory markers and increase anti-inflammatory markers in a human phonotrauma model.[17] The authors of the study concluded that this provides a biological basis supporting the use of corticosteroids in acute vocal fold inflammation associated with phonotrauma.

» Practice may vary between physicians, but some patients may continue on a tapering dose of oral corticosteroid as the intravenous dose is discontinued.

» Duration of therapy varies according to symptoms and response.

with suspected diphtheria **plus** **isolation + antibiotics + diphtheria antitoxin**

Treatment recommended for ALL patients in selected patient group

» Once the diagnosis is suspected, treatment should be started without delay. Patients should be isolated.

» Early administration of diphtheria antitoxin is crucial. It can be administered before laboratory confirmation of infection.[36] Antibiotics are essential for eradicating the organism and eliminating its spread. See Diphtheria.

Acute

viral

1st **supportive care + vocal hygiene**

Primary options

» paracetamol: children: 10-15 mg/kg orally every 4-6 hours as required, maximum 75 mg/kg/day; adults: 500-1000 mg orally every 4-6 hours as required, maximum 4000 mg/day

» Supportive care includes analgesics as required.

» Vocal hygiene is the most important component of the treatment regimen. It includes, but is not limited to, voice rest, increased hydration, humidification, and limited caffeine intake.[14]

» Voice rest for viral laryngitis, in particular, cannot be overemphasised. Advice regarding the duration of voice rest suggested may differ among physicians but is usually between 3 and 14 days.[34]

» Singers should not sing or do vocal exercises during this period.

» Heavy voice use in an already injured larynx can lead to the formation of further pathologies, such as scarring or haemorrhage of the vocal folds and muscle tension dysphonia.

adjunct **mucolytic and/or cough suppressant**

Treatment recommended for SOME patients in selected patient group

Primary options

» guaifenesin: children ≥2 years of age: 12 mg/kg/day orally (immediate-release) given in 4-6 divided doses; adults: 1200 mg orally (extended-release) twice daily
-and/or-
» codeine phosphate: adults: 15-30 mg orally every 6-8 hours when required, maximum 120 mg/day

» Despite a lack of conclusive trials, mucolytics have been used widely to decrease the viscosity of the secretions.

» This may restore the watery quality of the mucus in the glottis that is essential for lubrication of the true vocal folds.[35]

Acute

» Thick mucus also triggers throat clearing, which in turn increases vocal fold oedema and injury, leading to vocal fold pathologies.

» Patients with cough may be prescribed cough suppressants. Cough and cold medications that include opioids, such as codeine or hydrocodone, should not be used in children aged 18 years or younger as the risks (slowed or difficult breathing, misuse, abuse, addiction, overdose, and death) outweigh the benefits when used for cough in these patients.[39]

suspected bacterial: non-diphtheria and non-tuberculous

1st **antibiotics**

Primary options

» phenoxymethylpenicillin: children: 25-50 mg/kg/day orally given in divided doses every 6-8 hours, maximum 3000 mg/day; adults: 500 mg orally twice daily

Secondary options

» erythromycin base: children: 30-50 mg/kg/day orally given in divided doses every 6-8 hours, maximum 2000 mg/day; adults: 500 mg orally twice daily

» Antibiotics are indicated only when a bacterial infection is suspected.[25] [26]

» A Cochrane review on antibiotics for acute laryngitis in adults found that there appears to be no clinically significant benefit to the use of antibiotics to treat acute laryngitis, although no definitive recommendations could be made.[26] The use of antibiotics could lead to increased rates of resistant organisms as well as undue adverse risks and costs.[26]

» Most acute laryngitis cases are viral.

» Treatment course: 14 days (10 days in adults).

plus **supportive care + vocal hygiene**

Treatment recommended for ALL patients in selected patient group

Primary options

» paracetamol: children: 10-15 mg/kg orally every 4-6 hours as required, maximum 75 mg/kg/day; adults: 500-1000 mg orally every 4-6 hours as required, maximum 4000 mg/day

MANAGEMENT

Acute

» Supportive care includes analgesics as required.

» Vocal hygiene is an important component of the treatment regimen. It includes, but is not limited to, voice rest, increased hydration, humidification, and limited caffeine intake.[14]

» Advice regarding the duration of voice rest suggested may differ among physicians but is usually between 3 and 14 days.[34]

» Singers should not sing or do vocal exercises during this period.

» Heavy voice use in an already injured larynx can lead to the formation of further pathologies, such as scarring or haemorrhage of the vocal folds and muscle tension dysphonia.

adjunct **mucolytic and/or cough suppressant**

Treatment recommended for SOME patients in selected patient group

Primary options

» guaifenesin: children ≥2 years of age: 12 mg/kg/day orally (immediate-release) given in 4-6 divided doses; adults: 1200 mg orally (extended-release) twice daily
-and/or-
» codeine phosphate: adults: 15-30 mg orally every 6-8 hours when required, maximum 120 mg/day

» Despite a lack of conclusive trials, mucolytics have been used widely to decrease the viscosity of the secretions.

» This may restore the watery quality of the mucus in the glottis that is essential for lubrication of the true vocal folds.[35]

» Thick mucus also triggers throat clearing, which in turn increases vocal fold oedema and injury, leading to vocal fold pathologies.

» Patients with cough may be prescribed cough suppressants. Cough and cold medications that include opioids, such as codeine or hydrocodone, should not be used in children aged 18 years or younger as the risks (slowed or difficult breathing, misuse, abuse, addiction, overdose, and death) outweigh the benefits when used for cough in these patients.[39]

confirmed diphtheria

Acute

1st **continued isolation + antibiotics + diphtheria toxoid**

» Patients should be isolated during the treatment period and remain isolated until two cultures from the nasopharynx and throat taken at least 24 hours apart and more than 24 hours after completing antibiotics are negative.[27] [37]

» Antibiotic regimen, started presumptively, should be completed.

» See Diphtheria.

adjunct **analgesia**

Treatment recommended for SOME patients in selected patient group

Primary options

» paracetamol: children: 10-15 mg/kg orally every 4-6 hours as required, maximum 75 mg/kg/day; adults: 500-1000 mg orally every 4-6 hours as required, maximum 4000 mg/day

» Supportive care may include analgesics.

adjunct **mucolytic and/or cough suppressant**

Treatment recommended for SOME patients in selected patient group

Primary options

» guaifenesin: children ≥2 years of age: 12 mg/kg/day orally (immediate-release) given in 4-6 divided doses; adults: 1200 mg orally (extended-release) twice daily
-and/or-
» codeine phosphate: adults: 15-30 mg orally every 6-8 hours when required, maximum 120 mg/day

» Despite a lack of conclusive trials, mucolytics have been used widely to decrease the viscosity of the secretions.

» This may restore the watery quality of the mucus in the glottis that is essential for lubrication of the true vocal folds.[35]

» Thick mucus also triggers throat clearing, which in turn increases vocal fold oedema and injury, leading to vocal fold pathologies.

» Patients with cough may be prescribed cough suppressants. Cough and cold medications that include opioids, such as codeine or hydrocodone, should not be used in children

Acute

aged 18 years or younger as the risks (slowed or difficult breathing, misuse, abuse, addiction, overdose, and death) outweigh the benefits when used for cough in these patients.[39]

tuberculosis

1st **isolation and antituberculosis therapy**

» Full respiratory isolation is needed.

» The detailed treatment of tuberculosis is beyond the scope of this topic. See Pulmonary tuberculosis .

» Patients with suspected tuberculosis require referral to an infectious disease or pulmonary specialist for antituberculosis therapy and care.

plus **supportive care + vocal hygiene**

Treatment recommended for ALL patients in selected patient group

Primary options

» paracetamol: children: 10-15 mg/kg orally every 4-6 hours as required, maximum 75 mg/kg/day; adults: 500-1000 mg orally every 4-6 hours as required, maximum 4000 mg/day

» Vocal hygiene is a component of the treatment regimen.

» It includes increased hydration, humidification, and limited caffeine intake.[14]

» Supportive care may include analgesics.

adjunct **mucolytic and/or cough suppressant**

Treatment recommended for SOME patients in selected patient group

Primary options

» guaifenesin: children ≥2 years of age: 12 mg/kg/day orally (immediate-release) given in 4-6 divided doses; adults: 1200 mg orally (extended-release) twice daily
-and/or-
» codeine phosphate: adults: 15-30 mg orally every 6-8 hours when required, maximum 120 mg/day

» Despite a lack of conclusive trials, mucolytics have been used widely to decrease the viscosity of the secretions.

Acute

		» This may restore the watery quality of the mucus in the glottis that is essential for lubrication of the true vocal folds.[35] » Thick mucus also triggers throat clearing, which in turn increases vocal fold oedema and injury, leading to vocal fold pathologies. » Patients with cough may be prescribed cough suppressants. Cough and cold medications that include opioids, such as codeine or hydrocodone, should not be used in children aged 18 years or younger as the risks (slowed or difficult breathing, misuse, abuse, addiction, overdose, and death) outweigh the benefits when used for cough in these patients.[39]
fungal		
	1st	**referral to otolaryngology specialist** » The detailed treatment of fungal laryngitis is beyond the scope of this topic. » Patients with fungal laryngitis are managed by otolaryngology specialists. » Patients using inhaled corticosteroids should be advised to rinse the mouth with water before and after inhalation. » The dose of corticosteroid should be reduced if at all possible to the lowest dose required. Referral to an otolaryngology specialist may still be required.[38]
vocal strain		
	1st	**speech therapy + vocal hygiene** » The mainstay of treatment for vocal strain, including for professional voice users, is generally speech therapy by an experienced voice therapist.[2] [22] For these patients with vocal strain, vocal hygiene is essential. This includes, but is not limited to, voice rest, increased hydration, humidification, and limited caffeine intake.[14] » Voice rest is important because heavy voice use in an already injured larynx can lead to the formation of further pathology, such as scarring or haemorrhage of the vocal folds and muscle tension dysphonia. The duration of voice rest suggested may differ depending on each physician's usual practice, but is usually between 3 and 14 days.[34] Singers should not sing or do vocal exercises during this period.

Primary prevention

Vaccination for diphtheria has reduced the incidence in developed countries. The recorded incidence of epiglottitis in the US declined between 1980 and 1990. These epidemiological changes have been ascribed to the introduction of the Hib vaccination.[7]

Preventive drug therapy for asymptomatic infection with *Mycobacterium tuberculosis* is used in some countries, notably the US, where tuberculosis is uncommon and where the BCG vaccine is not administered. See Pulmonary tuberculosis .

Secondary prevention

Prophylactic antibiotics should be given to close contacts of any individual with diphtheria.[27] People who have not completed the full vaccination regimen for diphtheria, or those in whom the history of vaccination is unclear, should complete their vaccination schedule.

Patient discussions

Importance of vocal hygiene cannot be overemphasised. [American Academy of Otolaryngology-Head and Neck Surgery: Keeping your voice healthy] (https://www.enthealth.org/be_ent_smart/tips-for-maintaining-a-healthy-voice) One of the most important components of this therapy is adequate hydration. Patients should be advised to:

- Drink 6 to 8 glasses (8 oz) of water/day
- Avoid smoking
- Avoid caffeine
- Avoid voice abuse (e.g., shouting).

Voice rest is invaluable, especially in professional voice users (e.g., singers, lawyers, teachers). Advice regarding the duration of voice rest suggested differs among physicians but is usually between 3 and 14 days.[34]

FOLLOW UP

Monitoring

Monitoring

No long-term monitoring is necessary unless there is persistent hoarseness. In the case of continued hoarseness, the patient should be referred to an otolaryngologist in order to rule out vocal fold pathologies and muscle tension dysphonia. It is important to note that any hoarseness that does not improve or resolve within 4 weeks requires a referral for evaluation by an otolaryngologist for a visual laryngoscopy exam. If a serious underlying cause is suspected, the patient should be referred irrespective of duration.[22]

Complications

Complications	Timeframe	Likelihood
airway compromise	**short term**	**low**
Risk is low in uncomplicated acute infectious laryngitis but high in diphtheria. Close follow-up with serial laryngoscopies is of utmost importance. A multidisciplinary approach should be employed (including ear, nose, and throat; infectious diseases; and anaesthesia).		
formation of true vocal fold lesions	**long term**	**low**
Acute infectious laryngitis is generally viral and self-limiting, and complications are rare. In case of heavy voice use, injury to the vocal folds is possible. It can be prevented by voice rest and hydration. In case of persistent hoarseness that does not improve or resolve within 4 weeks, the patient should be referred to an otolaryngologist. If a serious underlying cause is suspected, the patient should be referred irrespective of duration.[22]		
laryngeal stenosis (TB)	**long term**	**low**
Untreated TB can lead to scarring and laryngeal stenosis.		
muscle tension dysphonia	**long term**	**low**
Extensive voice use may lead to compensatory behaviour and, as a result, muscle tension dysphonia. Patient education is important, and, in cases of persistent dysphonia, the patient should be referred to a laryngologist.		

Prognosis

Acute infectious laryngitis

This is often a self-limiting disease. With adequate voice rest and hydration the voice will return to normal within days. Continued extensive voice use can result in injury to the true vocal folds and formation of pathologies. It may lead to the development of compensatory behaviour and can result in muscle tension dysphonia. Therefore, the patient needs to be counselled on the importance of voice rest and hydration.

Diphtheria

Patient age and immunisation status are important factors in terms of likely prognosis. Older adults and very young patients generally have a poorer prognosis, whereas past history of immunisation usually leads to a better prognosis. Any delay in administration of diphtheria antitoxin is more likely to result in associated toxic complications. Therefore, it is important to give diphtheria antitoxin as soon as possible.

Tuberculosis

Once appropriate treatment is started, laryngeal lesions should regress. If left untreated, progressing lesions can cause fibrosis, scarring, and, as a result, laryngeal stenosis. This may necessitate tracheotomy.

Diagnostic guidelines

Europe

Clinical practice guideline: hoarseness (dysphonia) (http://www.entnet.org/content/clinical-practice-guidelines)

Published by: American Academy of Otolaryngology - Head and Neck Surgery Foundation **Last published:** 2018

Treatment guidelines

United Kingdom

Sore throat (acute): antimicrobial prescribing (https://www.nice.org.uk/guidance/ng84)

Published by: National Institute for Health and Care Excellence **Last published:** 2018

Europe

Finnish guidelines for the treatment of laryngitis, wheezing bronchitis and bronchiolitis in children (https://www.kaypahoito.fi/suositukset)

Published by: Finnish Medical Society Duodecim **Last published:** 2015

Online resources

1. American Academy of Otolaryngology-Head and Neck Surgery: Keeping your voice healthy (https://www.enthealth.org/be_ent_smart/tips-for-maintaining-a-healthy-voice) *(external link)*

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Images

Figure 1: Young boy presenting with acute diphtheria infection

Image courtesy of CDC

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This approach is in line with the guidance of the International Bureau of Weights and Measures Service.

Figure 1 – BMJ Best Practice Numeral Style

5-digit numerals: 10,000

4-digit numerals: 1000

numerals < 1: 0.25

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