

## **The Professional Voice**

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When considering professional voice users one should not only include singers or entertainers who use their voices as a primary means of communication, but one should include the myriad actors, teachers, clergy, television personalities, politicians, lawyers and telephone operators whose occupation depends upon the good quality of their voice.

### **Production of voice**

Voice production depends on three components:

- bellows - lungs, diaphragm, abdominal and back muscles, rib cage
- vibratory source - glottis (vocal folds)
- resonators - pharynx, oral cavity, nasal cavity and sinuses.

The air stream from the lungs passes through the glottis and a mucosal wave is set up as the vocal folds vibrate. The resulting 'pulsatile' stream translates into sound, the fundamental frequency depending on the number of oscillations per second. Vocal fold length, tension, stretch and mass (thickness) therefore dictate the pitch of the voice and any abnormality of the folds, or the control of their function, affects pitch and quality of the voice.

The resonators are then employed to amplify, dampen and mould the resulting sound, which is finally produced as recognisable language by the tongue and lips.

### **Common problems for the professional voice user**

The frequent use of air conditioning in cars, planes and buildings results in dry, recirculated air containing irritants (such as allergens and smoke) being inhaled. Interaction with the public also exposes the upper respiratory tract to assorted viral particles and the chance of infection. Caffeine has been noted in a pilot study to have deleterious effects on voice production, through drying of the vocal fold mucosa. The professional voice is thus more at risk of being overused or abused when vulnerable - when the mucosa is dry or inflamed.

Commonly overused medications to be avoided in the professional voice user are aspirin and other non-steroidal anti-inflammatory agents that alter platelet function and increase the likelihood of mucosal haemorrhage. Sympathomimetics and antihistamines dry the mucosa and thicken secretions of the laryngotracheal tract, again increasing the likelihood of injury.

The common problem of gastroesophageal reflux in the general population is no less common in the professional voice user and may result in laryngitis, cough, throat pain and dysphonia.

The potential damage caused to the mucosa by smoking is indisputable. It results in erythema, oedema and inflammation - as a consequence of the chemical irritant and the heat of the inhaled smoke. Marijuana is a particular irritant and burns at a higher temperature than tobacco so the serious voice user should not smoke either of them.

Surprisingly, voice abuse is not uncommon, even in professional singers - the will to continue despite illness, the belief that the 'show must go on...' and the lack of awareness of risk factors mean that the clinician needs to be aware and educate the voice user.

The importance of adequate hydration cannot be overstressed especially if the voice is used in a dry and/or smoky environment. The wise use of medication that puts the mucosa of the larynx at risk and the avoidance of smoking at all times should also be emphasised. Perhaps most importantly is resting (or minimal use) of the voice in the presence of respiratory infection or untreated gastro-oesophageal reflux as well as during menstruation. The laryngeal mucosa is mildly oedematous at this time and should not be subjected to overuse, particularly in professional singers.

## **Treatment options**

### ***Speech therapy***

Voice therapy aims to restore and maintain normal function and enhance vocal efficiency. This necessitates involvement of a speech therapist, voice coach and clinician (otolaryngologist). The process is primarily educational and certain points should be clearly communicated to the patient:

- vocal abuse (throat clearing, loud talking and forced whispering) should be avoided at all times
- relaxation techniques, breath control and abdominal support should be taught to the voice user
- warming up and cooling down routines are important
- correct use and placement of voice projection techniques to optimise quality, diction and volume
- avoidance of irritants (smoking, dryness, caffeine, etc).

## **Medical treatment**

Humidification, hydration (minimum 3 litres daily) and glycerine lozenges should be used in the acute situation, together with voice rest (complete silence for 2-3 days followed by gradual re-introduction of normal use then use as advised by a speech therapist) and avoidance of irritants. Prolonged rest can result in atrophy of the vocalis muscle and should be avoided.

## ***Surgical treatment***

Any surgery involving the 'bellows', 'vibratory source' or 'resonators' can affect the unique vocal quality and even endotracheal intubation puts the vocal folds at risk. The voice user, surgeon and anaesthetist should be aware of the risks and a laryngeal mask is recommended wherever possible.

Surgery for benign (if conservative management has failed) or malignant laryngeal disease should always be embarked upon with due consideration for optimising function and voice quality while not compromising correct medical care.

Postoperative voice rest and intensive voice therapy are vital with gentle re-introduction of voice use.

Treating the professional voice user requires knowledge of the particular use in each individual, understanding, empathy, and insight into the function of the voice and the risk factors and stresses affecting voice production. Most importantly, the management is necessarily multidisciplinary.