**Flexible Endoscopy Workshop: Basic Course**

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**Flexible Scope Workshop: Basic Course**

Basic Instruction  Demonstration  Hands-On Practice

Learn by doing

<table>
<thead>
<tr>
<th>Practice indirect laryngoscopy on mannequin</th>
<th>Practice indirect laryngoscopy on simulated patient</th>
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<tbody>
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<td>Perform flexible endoscopy on mannequin</td>
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<td>Demonstrate proper sterilization and handling technique</td>
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**Introduction**

There are multiple methods and techniques available to successfully complete all the topics presented in this workshop. Some are based on patient request, available equipment or supervising physician’s preference.

The goal of this workshop is to correctly demonstrate the most common methods and give participants time for hands-on training.
Flexible Scope Workshop:
Basic Course

Learning objectives
• Discuss normal anatomy visible via flexible nasopharyngoscopy
• Practice the use of the flexible nasopharyngoscope on mannequins.
• Practice the use of the flexible nasopharyngoscope on simulated patient
• Understand and practice proper endoscope use and care.
• Normal variants and abnormal findings will be discussed in Advanced Course.

Examining the Larynx

The simplest form of laryngeal examination is called "indirect laryngoscopy". The examiner can place a small mirror in the back of the throat and angle it down towards the larynx. Light can be reflected downward and the larynx can be seen in the mirror. Indirect laryngoscopy can be quick and gives a good three dimensional view of the larynx in true color. However, some individuals have a strong gag reflex and cannot tolerate the mirror exam. Normal speech cannot be assessed since the mirror must remain in the back of the throat.

Laryngeal Anatomy (Mirror*)

1. True vocal cords
2. False cords
3. Epiglottis
4. Aryepiglottic folds
5. Arytenoids
6. Pyriform sinuses
7. Tongue base

*Mirror Laryngoscopy, image is inverted.
Indirect Laryngoscopy

Interactive, live demonstration of indirect laryngoscopy

Task: Practice indirect laryngoscopy
Indications: Asses vocal cords on mannequin and simulated patient.

1. Explain Procedure. Prepare supplies
2. Position patient
3. Apply topical anesthetic soft palate.
4. Stabilize tongue with non-dominant hand.
5. Place warm dental mirror in the back of the throat and angle it down towards the larynx. Light can be reflected downward and the larynx can be seen in the mirror.
6. Indirect laryngoscopy can be quick and gives a good three dimensional view of the larynx in true color.

Mirror laryngoscopy image is inverted.

Types of Scopes

There are two special optical instruments that can be used to examine the larynx during an office visit; Flexible and Rigid Endoscopes.

The curved part of the scope is a flexible cable that can be passed through the nose and through the pharynx until it gives a view of the vocal folds. The flexible scope causes very little gagging and is actually quite comfortable. Using the flexible endoscope, the larynx can be examined during normal speech.
Components of Scope

Eyepiece/lens
Light cable
Light Source
Up/Down Angulation control
Bending section
Objective lens

Flexible endoscope exam on Adults

- Generally well tolerated by adults.
- Explain procedure in detail.
- Give adequate time for anesthesia.
- Provides better visualization.

Flexible scope exam on infants & children

- Generally well tolerated by infants and children.
- Explain procedure in detail.
- Secure patient (papoose vs. cradle)
- Anesthesia vs. decongestant?
- Give adequate time for anesthesia.
- Provides better visualization
Indications for Flexible Endoscopy

- Sinusitis
- Epistaxis
- Nasal obstruction
- Foreign body
- Strong gag reflex*
- Failed mirror exam*

*Documentation of a strong gag reflex and failed mirror exam should be included in note to justify procedure for billing purposes.

Contraindications for Flexible Endoscopy

- Epiglottitis (by inexperienced)
- Relative:
  - Coagulopathy
  - Craniofacial trauma

Anatomy of the Nose
Examination Nasal Airway

- Bilateral nasal valve collapse
- Septal deviation

Healthy pink mucosa. Inferior and middle turbinate are visualized and airway is patent.

Normal Nasal Endoscopy

Normal anatomy of the middle turbinate and middle meatus, the space into which several sinuses drain.

Septal Deviation/ Turbinate Hypertrophy

[Images of endoscopic views of nasal passages]
Anatomy of Larynx

Base of Tongue

Lingual tonsils

Lingual tonsils

Laryngeal Anatomy

True Vocal Cords abducted
True Vocal Cords adducted

*Flexible Laryngoscopy, image is true.
Tips For Starting the Exam

• Patient informed of the procedure (obtain consent)
• Proper positioning
  – Sniffing, head supported, use non-dominant hand to steady the pts. Head
  – Choose the most patent of the nares
• Appropriate equipment
  – Adult vs. Pedi
  – Decongestant/anesthetic
  – Gloves
  – Chair
  – Photographic/video accessories
  – Biopsy materials if needed
  – Lubricant +/-

Preparation for FOE

• May want patient to blow nose.
• Assess most patent of nares.
• Antifogging solution.
• Apply topical decongestant:
  – 0.05% Oxymetazoline
  – 0.25%-2 % Phenylephrine
• Apply topical anesthetic
  – 4% Lidocaine
  – Pontacaine

Technique

NO lube to distal 2 cm or use anti-fog
Oral respiration vs. nasal?
Slide scope along floor of nose, avoid septum
Visualize turbinates and assess mucoa. Look for secretions, polyps or neoplasms.
At the soft palate, start to direct the scope inferiorly
  – Protrude tongue (visualize vallecula)
  – Puff cheeks
  – Vocalize eeeee (vocal cord movement)
  – Vocalize kkkk (elevates soft palate)
  – Müller’s maneuver (sleep apnea)
Complications

- Tearing
- Epistaxis
- Coughing
- Laryngospasm – rare

Advise patient not to eat or drink anything 1 hour after procedure.

Normal Exam

Flexible Laryngoscopy

Interactive, live demonstration of flexible fiberoptic endoscopy
Task: Practice flexible endoscopy

2. Position patient.
3. Apply topical anesthetic & decongestant nose.
4. Perform flexible naso/laryngeal endoscopy.
5. Direct laryngoscopy provides detail view of nasal passage and vocal cord function.
6. Remove endosheath and maintain clean technique.

Care of the Scope

- Scopes are sturdy, but NOT indestructible
- All scope users should be familiar with care, use, proper cleaning and storage
- The scopes should be stored and cleaned in a specified area with separate cleaner, drying and storing areas.
- Flexible scopes are delicate heat labile instruments, and thus not amenable to autoclave sterilization.
- High-level decontamination is usually adequate.
- Sterilization in normal circumstances is unnecessary as the endoscope does not usually penetrate mucosal barriers but may come into contact with blood through inadvertent trauma.
- As there is little level one evidence published on the decontamination of flexible endoscopes in the ENT literature, much of the evidence and practice is extrapolated from the use of flexible endoscopes by our gastroenterology and pulmonary colleagues. However, in ENT practice, most endoscopes do not possess suction or biopsy channels or accessories: this is the significant difference from the endoscopes used in other procedures.

http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/ReprocessingofSingle‐UseDevices/UCM133514

Daily Care

Endosheaths

Cold Sterilization
### Endosheaths vs. Cold Sterilization

- Sterile disposable sheaths are custom built for a variety of scopes and some models even come with a working channel.
- The tip of the sheath must be fully slid onto the scope so that the special optical element at the end of the sheath is flat against the tip of the scope.
- After using the sheath, it can be slid off and disposed of without the need to re-sterilize the scope.
- These sheaths should never be forcefully removed.
- Flexible scopes are non-autoclavable.
- Clean length of flexible scope with an enzymatic detergent solution like ENZOL® to remove debris and reduce bacterial burden before instruments are disinfected or sterilized.
- Soak flexible scope in a glutaraldehyde solution like Cidex® which provides quick high-level disinfection.
- Noncorrosive solution reduces instrument damage and associated repair costs.
- Soaking times vary by product.


### Endosheaths

**Loosen endosheath**

**Pull endosheath from distal end**

### Leak Testing

1. Routine leak testing in accordance with specific manufacture depending on volume of use.
2. Introduce air pressure via attached bulb (DO NOT overinflate) and submerge looking for leaks.
3. Leaks can slowly damage fiber optics and internal parts causing expensive yet preventable damage.
Helpful Care Tips

- Avoid bending scope in tight angles.
- Clean lens with lens cleaner/paper.
- Pre-clean with enzymatic cleaner.
- Soak only for required period depending on brand and manufacture.
- Store in dry safe place.
- Perform regular leak testing to avoid damage.

Practice Flexible Scope Exam

Practice on mannequins and become familiar with scope angulation and focusing. This is the time to gain confidence on mannequins and simulated patients before performing on live patients.

Practice Flex Scope Exam

Practice Flex Scope Exam on mannequins. Practice Flex Scope Exam on each other.
## Flexible Scope Workshop: Basic Evaluation

Score cards will be used for admission to workshops and attendance. Credit will only be awarded for completed score cards.

<table>
<thead>
<tr>
<th>Name</th>
<th>Evaluation 1-3-5</th>
</tr>
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<tbody>
<tr>
<td>1. Were learning objectives met?</td>
<td>Scale 1-5</td>
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<tr>
<td>2. Was instruction free of commercial bias?</td>
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<td>3. Was there adequate instruction before practice?</td>
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<td>4. Was there adequate supervision during practice?</td>
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<tr>
<td>5. Were training aids useful/realistic in learning skill?</td>
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<tr>
<td>6. How likely are you to perform these skills in future?</td>
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<tr>
<td>7. Did this training improve your skills?</td>
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### Flexible Scope Workshop: Basic Score Card

Rotate and complete each station. “Go/No Go” for internal use only. Completion of workshop is NOT contingent on pass/fail.

<table>
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<tr>
<th>Task</th>
<th>Go</th>
<th>No Go</th>
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<tbody>
<tr>
<td>Understand indications &amp; contraindications to exam.</td>
<td></td>
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<tr>
<td>Properly explain procedure.</td>
<td></td>
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<tr>
<td>Apply topical anesthetic &amp; decongestant.</td>
<td></td>
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<td>Perform flexible fiberoptic endoscopy on simulated patient.</td>
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<tr>
<td>Identify normal anatomy.</td>
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<td>Comments</td>
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Proctor Name

Proctor Signature

### Resources On-Line

New England Journal of Medicine Video

[http://www.youtube.com/watch?v=3tbuF7Qwmps](http://www.youtube.com/watch?v=3tbuF7Qwmps)

Excellent pictures and videos by

Dr. Kevin Kavenaugh

[http://www.entusa.com/larynx_photo.htm](http://www.entusa.com/larynx_photo.htm)

Dr Rahmat Omar


Direct Laryngoscopy video

Recommend Reading

*Examination of the Larynx and Pharynx*  
*Engl Med* 358;3  

*Laryngeal Evaluation* by Kendall & Leonard  
Publication Date: August 2010  
324 pp, 309 illustrations  
hardcover & video  
ISBN (Americas): 9781604062724  

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**Flexible Scope Workshop: Basic Room Set Up**

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