The Ear

Since symptoms of ear disease are relatively few in number and frequently non-specific, a clinical examination of the ear is important in the management of ear disorders.

When a patient complains of ear pain, examination of the ear is indicated to differentiate whether the patient's disorder is an ear infection or a disorder originating in adjacent structures, such as the temporomandibular joint, the teeth or the tonsils. As the only window into the middle ear, the appearance and behavior of the tympanic membrane offers valuable information about possible disease within the middle ear.

Fortunately, the ear provides easy access for examining and diagnosing disorders of the complex and interrelated ear, nose and throat system. The Welch Allyn otoscope, when used correctly, is the single most important diagnostic tool available to the practitioner for determining whether the ear is the source of the patient's complaint.

Otoscopy is one of the primary methods a practitioner uses for diagnosing patient complaints for the entire ear-nose-throat complex. Use of a well-designed otoscope which provides illumination, magnification and air pressure capability for checking tympanic membrane mobility is, therefore, essential, allowing the practitioner to view the ear canal and, in particular, the tympanic membrane with clarity.

The examination that follows this section uses the Welch Allyn otoscope, which incorporates many features that aid in achieving an accurate, thorough examination.
**SPECULUM OPTIONS**

The examiner can choose from three types of specula:

The first type of speculum is reusable and made of lightweight, durable polypropylene. Reusable specula are available in four sizes: 2.5mm, 3mm, 4mm and 5mm.

The second type of speculum is the Universal KleenSpec®, a disposable, economical and convenient tip. KleenSpec® tips are made of nontoxic plastic and are available in two sizes: 2.75mm (pediatric) and 4.25mm (adult).

The third type of speculum exclusively available for traditional Welch Allyn scopes is SofSpec®, designed with a rigid plastic base and a special soft material at the distal end. SofSpec® fits snugly into the external ear canal, providing the practitioner with the finest seal available for pneumatic otoscopy. These specula are available in three sizes: 3mm, 5mm, and 7mm and may be cleaned or sterilized by conventional methods.

In order to obtain the maximum field of view, the examiner should always select the largest size speculum which fits comfortably into the patient's ear canal.

The following guidelines may be helpful:

<table>
<thead>
<tr>
<th>Patient</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>4mm or 5mm</td>
</tr>
<tr>
<td>Children</td>
<td>3mm or 4mm</td>
</tr>
<tr>
<td>Infants</td>
<td>2.5mm or 3mm</td>
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</tbody>
</table>
How to Conduct an Otoscopic Examination

1. Carefully inspect the pinna and post auricular skin. Gently palpate the pinna to determine if any tenderness exists.

2. Inspect the entrance to the ear canal for debris or pus, which might interfere with further examination.

3. Choose the largest speculum that can comfortably be inserted into the ear canal. Straightening the outer ear canal makes insertion of the speculum easier. For adults, this is accomplished by retracting the pinna upwards and backwards. For children, this is accomplished by retracting the pinna horizontally backwards.

4. When using the MacroView™ otoscope, set the focusing wheel of the otoscope to the default position by aligning the green line on the focusing wheel with the corresponding green dot on the side of the instrument. You will feel the focusing wheel settle into the default setting. The majority of the exams can be completed at the default focusing position.
5. There are two common ways to hold the otoscope. The first way is to hold the otoscope like a hammer by gripping the top of the power handle between your thumb and forefinger, close to the light source. You can conveniently hold the bulb of the pneumatic attachment between the palm of the same hand and the power handle. It is recommended that you extend the middle and ring finger outward so they come into contact with the person’s cheek. This way, any sudden flinch by the patient will not cause the otoscope to be jammed in the ear canal.

The otoscope can also be held like a pencil, between the thumb and the forefinger, with the ulnar aspect of the hand resting firmly but gently against the patient’s cheek. You can hold the bulb of the pneumatic attachment in the palm of the same hand. If the patient turns or moves, the otoscope will move in unison with the patient’s head. This will avoid possible injury to the ear canal or even the tympanic membrane.

It is very important that the otoscope be held correctly, particularly when examining children. A sudden movement by the patient could cause the skin on the inside of the ear canal to be pierced by the end of the speculum.

6. It may be necessary to adjust the line of sight and the position of the speculum to get a complete view of the entire ear canal and all areas of the tympanic membrane. This yields a composite view of the external canal and the tympanic membrane.

7. If the tympanic membrane or desired area in view is not in focus, the practitioner has the option to adjust the focal length of the optics system of the MacroView otoscope. To adjust the focal length, place a finger on either side of the focusing wheel or on the back eyepiece of the otoscope. To shorten the focal length or zoom in, rotate the focusing wheel towards the smaller dashes on the side of the otoscope. To increase the focal length or zoom out, rotate the focusing wheel towards the longer dashes.

8. After the examination is complete, the used specula should be removed from the otoscope. Simply twist the specula off or use the tip grip feature (MacroView only) by rotating the tip grip counter clockwise to disengage the specula.