Welcome to Infection Control for the Hearing Healthcare Professional

Presenter:
Julie K. Purdy, Ph.D, CCC-A
Audiology Manager
Rady Children’s Hospital
jpurdy@rchsd.org

Fran Vincent
Marketing and Membership Manager

Carrie Pedersen
Professional Development Administrator

IHS Organizers:

Housekeeping

- This presentation is being recorded
- CE credit is available! Visit ihsinfo.org for details
- The slides are available at ihsinfo.org on the webinar page. Feel free to download now!
- CE Credit: Everyone who completes the 60-minute webinar and submits a CE quiz with payment will receive 1 hour of CE credit

Agenda

- Learn the methods of infection transmission
- Evaluate clinical equipment
- Discover the need for standard precautions in a hearing aid dispensing practice
- Q&A (enter your questions in the Question Box any time)

INFECTION CONTROL PROGRAM BASICS
Definition of an IC Program

An organized effort to manage one’s environment in order to minimize exposure to pathogenic microbes that can make you or your patient sick.

Why Bother?

- Infection Control Risks
  - Personnel Health
  - Patients’ Health
  - Practices’ Health
  - Legal (Malpractice)
  - Regulatory

Goal of an IC Program

- Reduce the number of pathogens in the environment to a level where the normal resistance mechanism of the body may take over and prevent infection.

Infection Control Definitions

- Pathogenic -Vs- Opportunistic
  - Pathogenic: No other purpose than to make individual sick
  - Opportunistic: Lives with us but given opportunity can make individual or others sick
Route of Transmission

- Route of Transmission: Pathway
  - Eyes/Nose/Mouth
  - Ears: TM very porous membrane

Exposure Groups

<table>
<thead>
<tr>
<th>Disease</th>
<th>Agent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>Virus (HIV)</td>
<td>Wide range of opportunistic infections causing malaise, hearing disorders, systemic infection, death</td>
</tr>
<tr>
<td>Aspergillus</td>
<td>Fungus</td>
<td>Cutaneous infection</td>
</tr>
<tr>
<td>Candida</td>
<td>Fungus</td>
<td>Cutaneous disease of skin, nails, systemic infection, meningitis, endocarditis, pulmonary infection</td>
</tr>
<tr>
<td>Chicken pox</td>
<td>Virus</td>
<td>Conjunctivitis, shingles, encephalitis</td>
</tr>
<tr>
<td>Coag neg staphylococcus</td>
<td>Bacterium</td>
<td>Folliculitis, furuncles, boils, carbuncles, bacteria, endocarditis, pneumonia, osteomyelitis</td>
</tr>
<tr>
<td>Common Cold Virus</td>
<td>Virus</td>
<td>Cough, occasional low-grade fever, malaise</td>
</tr>
<tr>
<td>Cytomegalovirus</td>
<td>Virus</td>
<td>Mild flu-like symptoms, moderate to severe generalized infection, liver or spleen damage, SN hearing loss, visual impairment, cognitive dysfunction</td>
</tr>
<tr>
<td>Hepatitis B (HBV)</td>
<td>Virus</td>
<td>Flu-like symptoms, jaundice, liver, liver damage, death</td>
</tr>
<tr>
<td>Herpes Simplex</td>
<td>Virus</td>
<td>Herpetic conjunctivitis, pain, discomfort, inflammation of digits</td>
</tr>
<tr>
<td>Herpes Zoster</td>
<td>Virus</td>
<td>Painful vesicular eruptions, discomfort</td>
</tr>
<tr>
<td>Influenza</td>
<td>Virus</td>
<td>Respiratory infection, fever, chills, headache, cough, sore throat</td>
</tr>
<tr>
<td>Otitis Externa</td>
<td>Bacterium, fungus</td>
<td>Itchy, dry ear canal skin, redness, edema, pain</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>Bacterium</td>
<td>Endocarditis, chronic otitis externa, pulmonary infections, eye infections</td>
</tr>
<tr>
<td>SARS</td>
<td>Prion</td>
<td>Fever, headache, body aches, discomfort, cough, respiratory distress, death</td>
</tr>
</tbody>
</table>
Exposure Groups, cont.

<table>
<thead>
<tr>
<th>Staphylococcus aureus</th>
<th>Bacterium</th>
<th>Boils, carbuncles, bacteremia, pneumonia, osteomyelitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streptococcal infection</td>
<td>Bacterium</td>
<td>Pneumonia, suppurative inflammation, endocarditic, kidney problems</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>Bacterium</td>
<td>Persistent dry cough, chronic lung infection, malaise, weakness, loss of weight, fever chills, night sweats</td>
</tr>
</tbody>
</table>

Mode of Transmission

- **Contact**: Direct: Shake Hand, Indirect: Pen, Droplet: Speaker 3-4 ft area
- **Vehicle**: Blood or body substance, Water, Food
- **Airborne**: Floating in air
- **Vector Bourne**: Tick/animal

Contact: Direct

- Close physical contact such as kissing, touching, sexual contact or contact with oral secretions.
- Cannot live long outside of the body.
- **Examples are common cold, conjunctivitis (pinkeye), herpes simplex (cold sores), influenza, mononucleosis.**
**Direct: Indirect Contact**

- The host has transmitted the disease to a secondary surface: door knobs, handrails, tables, chairs, washroom surfaces, computers, office supplies and toys.
- Some organisms can survive on the secondary surfaces for long periods of time.
- Example: HBV

**Contact: Droplets**

- Droplets transmitted to eye, nose or mouth when the infected person coughs, sneezes or talks.
- Typically not propelled further than 1 meter (3 feet) and settle out of the air quickly.
- Examples: SARS, measles.

**Vehicle Transmission**

- Transmitted via food/water or body substances.
- Examples: Contaminated blood transfusion (typically 3rd world countries where HBV or HIV can be transmitted) or salmonella.

**Airborne Transmission**

- Evaporated droplets or dust particles that contain microbes can remain suspended in the air or blown about for long periods of time.
- Must be able to survive outside of the body and be resistant to drying.
- Examples: Influenza, whooping cough, pneumonia, tuberculosis, measles, chickenpox.
Vectorborne Transmission

- Animals or insects carry the disease and are capable of transmitting to the human from another source (dogs, flies, mites, fleas).
- Examples: West nile virus, malaria and yellow fever or lyme disease.

STANDARD PRECAUTIONS

- Hand hygiene
- Risk assessment related to client symptoms, care and service delivery
- Risk reduction strategies such as promoting use of respiratory etiquette, client accommodation, use of personal protective equipment
- Environmental cleaning, disinfection and sterilization
- Laundry and waste management
- Healthy workplace practices to include education, immunizations and when to stay home from work

Hand Hygiene

- Before and after direct client care
- Between dirty/clean activities with the same client (after cerumen removal and before the audiogram)
- Immediately after touching body fluids or any contaminated items in the immediate environment
- Immediately after removing personal protective equipment such as gloves
- Prior to and after eating or smoking
- Prior to and after the application of cosmetics, lip balm or adjustment to the contact lenses
- After handling money/other possibly contaminated items
- After personal functions (using the toilet or nose blowing)
- Immediately if skin is contaminated and or injury occurs
- At the end of one's workday
Hand Rub Technique

- Can be used if the hands are not visibly soiled and should contain a minimum of 60% ethanol.

- Technique:
  - Remove jewelry
  - Apply 1-2 full pumps into one palm.
  - Spread product over all surfaces of hands, concentrating on the finger tips, between fingers, back of hands and base of thumbs
  - Rub hands until the product is dry. This will take 15-20 seconds if an adequate amount of product is used. The entire technique should take 20-30 seconds in total.

Hand Washing-Water

- Must be used if the hands are visibly soiled.

- Technique:
  — Remove all jewelry
  — Wet hands with warm water
  — Apply soap
  — Vigorously rub all aspects of your hands for a minimum of 15 seconds, paying particular attention to the finger tips, between the fingers, backs of hands and base of the thumbs. Rinse and dry hands thoroughly by blotting gently so as not to damage the skin. Turn off taps with paper towel, if available
  — Use lotion, as soaps, antimicrobial agents and extra hand washing can be hard on the hands.

Risk Assessment

If you/your child have symptoms of fever and cough, diarrhea, rash or untreated eye infections within 24 hours of your appointment, please let this office know before the scheduled appointment. Visits can be rescheduled due to illness.

- Include questions regarding coughs, fevers, rashes, diarrhea and eye infections as part of treatment.
- Questions can include recent exposure to infectious diseases and travel

Personal Protective Equipment

- Must be used when there is a risk of coming in contact with non-intact skin, mucous membranes or body fluids.

- Types of PPE:
  - Masks: Disposable (fit tested N95) masks should be used if there is a risk of splatter or splash of potentially infectious materials or when airborne precautions are indicated.
  - Known airborne infection such as TB, chickenpox, measles
  - There is a health alert that requires the use of fit-test mask
  - Protective Clothing
  - Eye Protection
  - Gloves
Use Gloves when:

- If ear drainage, blood, sores or lesions (on the scalp) are evident
- Handling earmolds/hearing aids directly from patient
- Removing or handling of earmold impressions
- Performing cerumen management
- Cleaning/disinfecting instruments contaminated with cerumen
- In environments where additional precautions have been identified
- Handling dirty laundry or waste materials
- Cleaning up spills of body fluids or when disinfecting a contaminated area
- Dealing with immuno-compromised clients

Glove Protocol

- Prior to putting on gloves, bandages (band-aids) are to be placed on open sores or cuts.
- Appropriately sized examination gloves that fit tightly, like a second skin, are to be used during necessary procedures.
- If gloves become torn or perforated in any way during the application, dispose of the damaged gloves and replace with new, undamaged ones.

Remove or Change Gloves

- When moving between dirty and clean procedures, even on the same client (following cerumen management and moving on with audiometry)
- After contact with contaminated items
- Immediately after completion of the procedure at point of use and before touching clean environmental surfaces.
**Spaulding Classification**

<table>
<thead>
<tr>
<th>Category</th>
<th>Level of Processing</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical: Items that enter</td>
<td>Cleaning followed by sterilization.</td>
<td>Generally not used in our field.</td>
</tr>
<tr>
<td>sterile tissue including the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vascular system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-Critical: Items that</td>
<td>Sterilization or disposal/single use is</td>
<td>Any item entering the ear canal: Insert earphone, impedance probe tips,</td>
</tr>
<tr>
<td>come in contact with non-intact</td>
<td>preferred.</td>
<td>curettes and other cerumen equipment, otoscope tips, probe tubes.</td>
</tr>
<tr>
<td>skin or mucous membranes, but</td>
<td></td>
<td></td>
</tr>
<tr>
<td>do not penetrate them.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Items that come in contact</td>
<td>Cleaning followed by High Level Disinfection (HLD) as a minimum.</td>
<td></td>
</tr>
<tr>
<td>with cerumen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Critical: Items that</td>
<td>Cleaning following by Low Level Disinfection.</td>
<td>Insert earphones (exclusive of foam tip), bone oscillator, patient</td>
</tr>
<tr>
<td>contact only the intact skin</td>
<td></td>
<td>response button, listening stethoscope.</td>
</tr>
<tr>
<td>or do not touch the client.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cleaning**

- Physical removal of foreign matter that removes but does not kill microorganism.
- Cleaning is required before any device may be decontaminated, disinfected or sterilized.

**Disinfectants**

Inactivation of disease-producing microorganism and the reduction in the number of viable microorganisms. Does not destroy all bacterial spores. Used only on inanimate objects with antiseptics used on living tissue. (Alcohol) Level depends on to what extent the microbes are eliminated.

**Disinfection**

- High Level Disinfection (HLD): the level of disinfection required when processing semi-critical medical equipment. Destroys vegetative bacteria, mycobacteria, fungi and enveloped (lipid) and non-enveloped (non-lipid) viruses, but not bacterial spores.

- Low Level Disinfection (LLD): the level used when processing non-critical medical equipment and some environmental surfaces. Will not kill mycobacteria or bacterial spores.
Sterilization

- The level of processing required when processing **critical** medical equipment.
  - Destroys all forms of microbial life including bacteria, viruses, spores and fungi.
  - Recommended in US by audiologists as minimum standard.

Sterilization Methods

- Steam Autoclave
- Dry Heat Oven
- Chemical Vapor Sterilization
- Ethylene Oxide Sterilize
- Chemical Sterilant
  - Glutaraldehyde (Cidex)
  - Hydrogen Peroxide (7.5%)

High-Level Disinfectant Methods

- Semi-Critical Items
- Chemical Sterilant (but for lesser time)
  - Glutaraldehyde
  - Hydrogen Peroxide (7.5%)

Low-Level Disinfectant

- Items used in direct patient care, but not in contact with ear canal:
  - **Low Level Disinfectants** include:
    - Alcohol
    - Chlorine
    - Bleach
    - Some liquids that can be put in an ultrasonic cleaner
Cleaning

- Water, detergent and mechanical action
- Ultra-sonic cleaner

Material Safety Data Sheet

- Information on what to do if chemical is used inappropriately

Dispose of Infectious Waste

Waste divided into 3 types: general, biomedical & pathological

- Most waste fine to dispose of in regular ways
- If contaminated with excessive cerumen, place in a separate impermeable bag and place in regular trash
- If contaminated with excessive blood, place in bags labeled for biohazard waste and dispose of by a waste hauler licensed for medical waste disposal

Healthy Workplace Practices

- Recommended Immunizations:
  - Annual influenza
  - Measles, mumps and rubella (MMR)
  - Tetanus, diphtheria and Polio (TDP)
  - Hepatitis B
  - Varicella (chickenpox)
  - Meningococcal (working with patient)
  - TB-periodic testing
Staying Home from Work

- Febrile respiratory illness
- Dermatitis on hands
- Cold sores or shingles that can’t be covered
- During initial days of a respiratory illness
- Diarrhea
- Eye infections until treated

SPECIFIC RECOMMENDATIONS

Ear Mold Impressions

- Wash hands.
- In the absence of open wounds or ear drainage, proceed with the insertion of the otoblock and injection of impression material.
- As the impression material sets, prepare the earmold impression box and paperwork.
- When ready to remove impression, put on a pair of gloves.

- Place the earmold in the box, not touching any outer surfaces of the box.
- Remove the gloves.
- Close the box (no contact with inside of box).
- Disinfect horizontal surfaces.
Dispensing Hearing Aids

- Handle the newly-ordered hearing aids with gloved hands.
- Disinfect the hearing aids with a fresh towelette prior to providing the devices to the patient.
- During the dispensing appointment, put gloves on prior to educating patients about proper techniques for hearing aid insertion and removal from the ear canal as assistance during these procedures is anticipated.
- Disinfect horizontal surfaces.
Accepting or Receiving Hearing Aids or Earmolds

- Accept any hearing aid from patients with gloved hands or have the patient put the aid on a paper towel or disinfectant towelette.
- Wear eye apparel when cleaning vents or other ports with a pick.
- Clean hearing aid surfaces with disinfectant towelette or paper towel to remove surface dirt.
- Disinfect with a disinfectant towelette.
- Clean picks and probes with a towelette unless visibly contaminated with cerumen, then sterilize.
- Remove gloves.
- Disinfect horizontal surfaces.

Hearing Aid Listening Check

- Pre-clean and disinfect entire surface of hearing aid.
- Attach the hearing aid to the listening probe of the hearing aid stethoscope.
- After performing the check, use a fresh disinfectant towelette to clean the listening probe and ear pieces of the stethoscope.
- Clean the stethoscope listening probe and ear pieces a second time.
- Place stethoscope in its appropriate resting place.

Bankaitis (2002)

<table>
<thead>
<tr>
<th>H Aid</th>
<th>Bacteria</th>
<th>Fungus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>Coag neg Staphlococcus</td>
<td>Aperigillus flavus</td>
</tr>
<tr>
<td>3</td>
<td>Coag neg Staphlococcus/ diphtheroids</td>
<td></td>
</tr>
<tr>
<td>4 &amp; 6</td>
<td>Coag neg Staphlococcus</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Coag neg Staphlococcus/Lactobacillus</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Enterobacter cloacae/Pseudomonas aeruginosa Enterococci</td>
<td>Candida Parapsilosis</td>
</tr>
</tbody>
</table>

Electroacoustic Analysis of Hearing Aids

- Pre-clean and disinfect the entire surface of the hearing aid.
- Attach the coupler using standard procedures.
- Make measurements, remove aid.
- Using a towel or towelette, clean the surface of the coupler.
- Using a fresh disinfectant towelette, clean the coupler.
- Return the electroacoustic measuring equipment to the appropriate location.
Real-Ear Measurements

- In absence of visible open wounds or ear drainage, insert the probe tube. Gloves or other PPE are not needed.
- Once measurements are completed, remove the probe, careful not to touch the contaminated probe.
- If the probe is disposable, dispose in waste container.

- For reusable probes, clean with a towel or towelette.
- Sterilize.

Earmold or HA Modifications

- Pre-clean the entire hearing aid and disinfect.
- Prior to buffing/grinding do the following:
  - Put on safety goggles,
  - Put on a mask to cover nose/mouth,
  - Put on gloves,
  - Position the protective cover to minimize exposure to particles.
- Disinfect the earmold/hearing aid surface with a fresh towelette before putting in the patient’s ear each time during the modification process.
- Clean the horizontal surfaces.
- Remove gloves.
- Clean hands and remove the glasses.
- Remove the mask.

Front Office: Drop-off Procedure

- The front office staff will take a “hearing aid drop off envelope” or impression box and hold it open.
- The patient will be instructed to place the hearing aid in the envelope/box.
- The staff will close the envelope and secure it by stapling shut.
- The staff will disinfect any splash surface if the aid came in contact with it.
- Complete a “hearing aid drop off sheet” and staple to the front of the envelope.
- Clean hands.

http://www.audiology.org/resources/documentlibrary/Pages/InfectionControl.aspx
Infection Prevention and Control Guidelines for Audiology: www.Caslpo.com

- Canadian Alliance of Regulators of Speech-Language Pathologists and Audiologists (CAR)
- The Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA)
- Canadian Academy of Audiologists (CAA)
- Canadian Council of University Programs in Communication Sciences and Disorders (CCUP)

Patti-Jo Sullivan, AuD. Chair
Jennifer Henley, AuD.
Marianne McCormick, AuD.
Jillian Mills, AuD.
Ann Marie Newroth, M.Sc.
Julie Purdy, Ph.D.

Questions

Enter your question in the Question Box on your webinar dashboard

Contact Julie K. Purdy:
jpurdy@rchsd.org

For more info on obtaining a CE credit for this webinar, visit www.ihsinfo.org

THANK YOU FOR ATTENDING!