Back to Basics
Infection Control 101
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They’ve got what?!
To Identify:

- Basic principles of infection prevention and control (IPAC)
- Chain of transmission
- Strategies to “Break the Chain”
What is Infection Prevention & Control (IPAC)?

- Infection control addresses factors related to the spread of infections within the health-care setting,
- Including prevention (via hand hygiene/hand washing, cleaning/disinfection/sterilization, vaccination, surveillance),
- Monitoring/investigation of demonstrated or suspected spread of infection within a particular health-care setting (surveillance and outbreak investigation),
- Management (interruption of outbreaks).
Promoting IPAC Best Practices

http://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/PIDAC/Pages/PIDAC.aspx

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Infection Prevention and Control strategies are aimed at breaking the chain at one of its links.

Chain of Transmission of Infection:
- Infectious agent
- Reservoir
- Route of entry
- Route of exit
- Mode of transmission

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Infectious Agents

• Bacteria
  • MRSA, VRE, C. difficile, Salmonella
  • Group A Streptococcus

• Viruses
  • Influenza, Hepatitis B, HIV

• Parasites
  • Giardia, Malaria

• Fungi
  • Candida, Aspergillus
Reservoirs = Hiding Places for Bugs
Portal of Exit = The Way Out
How an infectious agent gets out of its reservoir:

Human portals of exit:

- Respiratory system
- Genitourinary tract
- Gastrointestinal tract
- Skin/mucous membrane
- Trans-placental
- Blood
Transmission = Getting Around

AIRBORNE

Direct
Indirect

CONTACT

VECTORBORNE

VEHICLE

<2 metres

Droplet

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Image credits: © PHO
Modes of Transmission

- **Contact**
  - e.g. MRSA, Scabies, Norovirus

- **Droplet**
  - e.g. Influenza, Bacterial Meningitis

- **Airborne**
  - e.g. TB, Chickenpox, disseminated Shingles

- **Vehicle**
  - e.g. Salmonella, Hepatitis A

- **Vector borne**
  - e.g. West Nile, Malaria
Route of Entry = Way In
Means of Entry

How They Get In!

The infectious agent enters the host through:

- Non-intact skin
- Mucous membranes
- Respiratory system
- Gastrointestinal system
- Genitourinary system
Susceptible Host = The Next Sick Person
Susceptible Host

• The Next Sick Person Is Anyone Who:

• Lacks immunity / has reduced resistance to a particular infectious agent

• Host characteristics that influence susceptibility:
  • Age
  • Gender
  • Ethnicity
  • Marital status
  • Disease history
  • Underlying illness
  • Lifestyle
  • Heredity, etc.
Chain of Transmission Game!
Infection Prevention Activities to “Break the Chain”

• Identify/manage the agent
• Reduce the reservoir
• Identify mode of transmission and prevent spread
• Reduce host susceptibility
How to Break the Chain: Infection Prevention Strategies

• Identification and management of the causative agent:
  • Early identification/diagnosis and treatment
    • Screening for febrile respiratory illness (FRI)
    • Appropriate and timely reporting of suspected and confirmed infections in residents and any change in status
  • Policies for staff to report when they are ill
Reduce the Reservoir

- People
- Environment
- Equipment

Breaking this link:

- Early identification and management of colonized/infected individuals
- Vaccination
- Promotion of healthy lifestyle
- Food safety
- Effective cleaning, disinfection, sterilization

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Why Routine Practices?
Routine Practices

- Risk Assessment
- Hand Hygiene
- Environmental Controls
- Administrative Controls
Start with a Risk Assessment.....
Requires Critical Thinking!

• WHO is the patient?
• WHAT will I be doing?
• WHAT will the patient be doing?
• Will I get dirty?
• Will I get wet?
• Will I get sprayed?
• WHAT could get splashed on me?
• WHERE might that splash go?
• Will I breathe something in?
• WHY am I doing this?
• HOW intact is my skin?
• HOW comfortable do I feel with what I am doing?
• Will I be injured?

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Assess the anticipated interaction with the client and/or their environment

Will I be exposing myself to a splash or spray of blood, excretions or secretions?

OR

Will I have contact with the client’s environment?

YES

Will my hands be exposed to blood, excretions, secretions or contaminated items?

YES

Wear gloves
Perform Hand Hygiene

Image credits: ©istockphoto/kamil
Will my face be exposed to a splash, spray, cough or sneeze? **YES**

Wear facial protection

Will my clothing or skin be exposed to splashes/sprays or items contaminated with blood, secretions or excretions? **YES**

Wear a gown
Does the client have a known infection or symptoms of an infection?

Follow specific Additional Precautions as required
Routine Practices: Personal Protective Equipment

- Worn when exposure to blood and/or body fluids is likely
- Masks or N95 respirator
- Gloves
- Gowns
- Eye Protection (splash shields, goggles)
Gloves

- Gloves used for anticipated contact with body substances
- Gloves changed between resident contacts and between procedures on same resident
- Gloves removed carefully and hand hygiene performed
Do’s and Don’ts

- **DO:** Use gloves routinely when you are in contact with something that is “ooey, or gooey, or wet and not yours”

- **DO:** Limit opportunities for “touch contamination” - protect yourself, others, and the environment
  - **DON’T:** touch your face or adjust PPE with contaminated gloves
  - **DON’T:** touch environmental surfaces except as necessary during care activities

Image credits: MS Office Clipart
Glove Use

- Prolonged wearing of gloves is not recommended
  - Increased risk of irritant contact dermatitis
  - Breakdown of the glove material
  - Risk of tears
- Inappropriate use of gloves facilitates the spread of microorganisms
  - Going from room to room with the same pair of gloves
- Gloves must be removed immediately after the activity for which they were used
In addition...

- Gloves are not a substitute for hand hygiene
- Do not wash or re-use disposable gloves
- Change or remove gloves after contact with a client/resident environment and before contact with another environment
- Perform hand hygiene after removing gloves
Gowns

• Use to prevent soiling of clothes

• Not needed for all care but should be used during procedures and activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions

• Use the ties!!
Masks and Eye Protection

• Use for procedures that may generate splashes or sprays of blood, body fluids, secretions or excretions
• Use when within 2 metres while caring for people with cough and fever
• Prescription eyeglasses are not considered protective
Putting On & Removing PPE

**PUTTING ON Personal Protective Equipment**

1. Perform hand hygiene
2. PUT ON gown
3. PUT ON mask or N95 respirator
4. PUT ON eye protection
5. PUT ON gloves

**REMOVING Personal Protective Equipment**

1. REMOVE gloves
2. REMOVE gown
3. Perform hand hygiene
4. REMOVE eye protection
5. REMOVE mask or N95 respirator
6. Perform hand hygiene
Routine Practices: Hand Hygiene

• How you wash your hands is as important as when you wash your hands...

• Glo-germ demo!
Your 4 Moments For Hand Hygiene

JCYH Introduction video!
Routine Practices: Environmental Controls

- Accommodation and placement
- Environment and equipment clear
- Handling of sharps
Key Concepts

• Client/patient/resident environment
  • Varies based on healthcare setting
Key Concepts

- Surfaces touched by client/resident/patient more frequently carry a heavier load of microorganisms
Life of Microorganisms in the Environment

- Influenza: 24-48 hours
- Rotavirus: 8 days to weeks
- MRSA: days to weeks
- VRE: weeks to months
- HIV: until blood dries on surface
- Hepatitis B: in dried blood at least 7 days
- Hepatitis C: 16 hours to 4 days
- C difficile spores: ????
Key Concepts

• Type of surface and finish impact the ability to clean and/or disinfect
Key Concepts

• Hotel Clean and Hospital Clean
Hotel Clean & Hospital Clean

Hotel Clean:

- Is a measure of cleanliness based on visual appearance that includes dust and dirt removal, waste disposal and cleaning of windows and surfaces.

Hospital Clean is a hotel clean PLUS:

- High touch surfaces in patient/resident/client care areas are cleaned and disinfected with hospital grade disinfectant
- Non-critical medical equipment is cleaned and disinfected between patients/residents/clients AND
- Cleaning practices are periodically monitored and audited with feedback and education
Focus on . . .

- Areas requiring “hospital clean”
- Routine practices including hand hygiene and proper glove use
- Routine cleaning
  - Frequency
  - Practices
  - Products and tools
  - Communication
- Equipment cleaning – what and who?
- Auditing
Focus on . . . Routine Cleaning

Frequency of Routine Cleaning depends on:

• Frequency of contact: high touch vs low touch surfaces
• Type of activity in the area
• Vulnerability of the patients in the area
• Probability of body substance contamination in the area

Each area should be evaluated to determine the appropriate routine cleaning

• Appendix B: Risk Stratification Matrix to Determine Frequency of Cleaning
Focus on . . . Routine Cleaning

• Focus on frequently touched surfaces
  • Often referred to as “high touch” items and surfaces
  • More prone to contamination
  • Examples: call bells, bedrails, door handles, telephones, bedside tables, ABHR dispensers
Focus on . . . Routine Cleaning

• Work from clean-to-dirty and from high-to-low areas
  • Avoid contaminating already cleaned areas and surfaces

• Avoid generating aerosols
  • Roll up soiled linen carefully and away from your clothing
  • Place soiled items in bins – do not throw
  • Tie up waste bags without compressing air
  • Keep mop head in contact with floor at all times
  • Do not shake mops or cloths
Focus on . . . Routine Cleaning

• Change cleaning cloths
  • When no longer saturated with solution
  • When going from one client space to another client space
  • When going from shared client space to bathroom
  • After cleaning heavily soiled area/surface (i.e. toilet)
  • Do not re-dip into cleaning solution ~ Double-dipping
  • It will be necessary to use multiple cloths for each space
  • If using a microfibre mop, solution and buckets need not be changed between rooms as they are not re-immersed in cleaning solution
Focus on . . . Routine Cleaning

- Ensure cleaning equipment and supplies are clean
  - All used cloths and mop heads are stored separately when soiled and sent for laundry at end of each day
  - Mops and cloths are dried thoroughly and stored in clean area
  - Clean the cleaning cart daily

- Proper use of cleaning and disinfecting products
  - Follow instructions for dilution and monitor automated dilution systems regularly
  - Ensure cleaning cloths will hold sufficient disinfectant for the contact time
  - Allow for appropriate contact time
  - Do not apply cleaning chemicals by aerosol or trigger spray
  - Do not top-up liquids
  - Limitations to where product can be used
Focus on . . . Routine Cleaning

Ensure surface or item is cleaned before disinfected

• Presence of organic soil will impact activity of disinfectant
• 1-step or 2-step products
• Whenever possible, take apart items
• Use FRICTION to mechanically clean items and surfaces
# Common Acceptable Disinfectants

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Contact time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alcohols (70-95%)</strong></td>
<td>Low cost, non-toxic</td>
<td>Evaporates quickly&lt;br&gt; Flammable&lt;br&gt; Inactivated by organic material</td>
<td>10 minutes</td>
</tr>
<tr>
<td><strong>Chlorines</strong></td>
<td>Low cost, rapid action</td>
<td>Corrosive to metals; inactivated by organic material; irritating to skin and mucous membranes; must be re-mixed every 24 hours; stains cloth</td>
<td>2 minutes</td>
</tr>
<tr>
<td><strong>Accelerated Hydrogen Peroxide (0.5%)</strong></td>
<td>Safe for environment; non-toxic; rapid action; active in the presence of organics</td>
<td>Contraindicated for copper, brass, carbon-tipped devices and anodised aluminum</td>
<td>5 minutes at 20°C</td>
</tr>
<tr>
<td><strong>QUATs (Quaternary Ammonium Compunds)</strong></td>
<td>Non-corrosive, non-toxic, lo irritant; good cleaner</td>
<td>Narrow microbiocidal spectrum; diluted solutions may support growth of microorganisms; may be neutralized by various materials</td>
<td>Manufacturer’s recommendations</td>
</tr>
</tbody>
</table>
Focus on . . . Routine Cleaning

• Communicate issues to your supervisor
  • Cracked mattresses and pillows
  • Non-intact surfaces
  • Mould in shower grouting or bathrooms
  • Carpet or upholstery stains
  • Worn or torn finishes
  • Presence of pests
  • Improper disposal of sharps
Routine Practices and Laundry Risks

• Sheets and pyjamas have been shown to harbour germs
• Soiled linen is rarely found to cause infection transmission
• Laundry staff should have a dedicated hand washing sink
• Laundry staff should wear Personal Protective Equipment (e.g. water proof gowns, gloves) to prevent cross-contamination
Soiled Linen

• Treat all soiled linen the same
• Remove gross soil (e.g. poop) with a gloved hand and dispose into toilet or hopper
• Bag laundry at point of care
• Handle contaminated laundry with minimal agitation
• Contain wet laundry before placing in laundry bag
• Special handling of linen is not required
Sharps

- Sharps safety program includes:
  - Use of safety engineered devices
  - Provision of puncture resistant sharps containers at the point of care
  - Staff education regarding the risks associated with unsafe procedures such as recapping

- Needle Safety Legislation - Occupational Health and Safety Act, O. Regulation 474/07, Needle Safety available at:
Dishware and Eating Utensils

- Effectively decontaminated in commercial dishwashers with hot water and detergents
- Reusable dishware and utensils may be used for all residents INCLUDING those on Additional Precautions
- Disposable dishes are not required
- Food Premises Regulations:
Routine Practices: Administrative Controls

- Staff education and training
- Education of patients
- Respiratory etiquette
- Healthy workplace policies
- Immunization
Good Respiratory Hygiene?
What can you do to make it easier to follow Routine Practices routinely?
Additional Precautions

• Based on the mode of transmission of the infectious disease
• Used in addition to Routine Practices
• Contact, Droplet, Airborne
Contact Precautions

- MRSA, *Direct care* activities
- VRE, *Direct care* activities
- ESBL, *Direct care* activities
- Draining abscess
- Conjunctivitis
- Symptomatic *C. difficile*
- Norovirus
Additional Precautions

- Droplet Precautions
- Mumps
- Pertussis (Whooping Cough)
- Influenza**

**with contact precautions
**Routine Practices/Pratiques de base +**

**DROPLET-CONTACT**

**GOUTELETTES-CONTACTS**

<table>
<thead>
<tr>
<th>Visitors: Speak with nurse before entering room</th>
<th>Visiteurs : Consultez auprès de l'infirmière avant de rentrer</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Hygiène des mains</strong></th>
<th><strong>Hand Hygiene</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Avant d’entrer et à la sortie</td>
<td>Upon entering and exiting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Masque et lunettes de protection ou écran facial</strong></th>
<th><strong>Mask and Eye Protection or Face Shield</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Porter dans un rayon de 2 mètres du résident</td>
<td>Wear within 2 metres of resident</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Gants</strong></th>
<th><strong>Gloves</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pour les soins directs</td>
<td>For direct care</td>
</tr>
<tr>
<td><strong>Blouse</strong></td>
<td><strong>Gown</strong></td>
</tr>
<tr>
<td>Pour les soins directs si la peau ou les vêtements peuvent être contaminés</td>
<td>For direct care when skin or clothing may become contaminated</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Équipement dédié</strong></th>
<th><strong>Dedicated Equipment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Désinfecter tout équipement qui sort de la chambre</td>
<td>Disinfect all equipment that comes out of the room</td>
</tr>
</tbody>
</table>
Additional Precautions

• Airborne Precautions
• Active, infectious tuberculosis
• Chicken pox (if susceptible)
• Measles
• “Pandemic” infections
• Rarely used in a home setting
Infection Prevention and Control is Everyone’s Business!

We are only as strong as our weakest link!
Questions?