OVERVIEW:

- AROs: Carriage vs Infection
- Isolation precautions: Who, When, Why
- Controversies
  - MRSA, VRE, ESBLs
  - M.tuberculosis
  - C.difficile
- Summary of key issues

SBGH Isolation Precautions: New Cases 2006

<table>
<thead>
<tr>
<th></th>
<th>Screening</th>
<th>Carriage</th>
<th>Infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA</td>
<td>Yes</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>VRE</td>
<td>Yes</td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>ESBL</td>
<td>No</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>C.difficile</td>
<td>No</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>MTB</td>
<td>No</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Isolation precautions are used to reduce the spread of specific pathogens

- Site of infection/carriage affects spread
  - Faeces/diarrhea for VRE, C.difficile
  - Skin/wound → cloud shedder for MRSA
  - Respiratory vs Non-respiratory for MTB
- Air borne versus other
  - MTB: special air-handling
  - Others: environmental contamination

Initiation of Isolation Precautions: WHO??

- MRSA, VRE: Contact precautions
  - Ward staff: Nurse calls for Isolation cart/signage for room
- ESBL: Contact precautions
  - Unclear: ICP assesses if patient continent, no open wounds, good hygiene → may decide isolation not needed

Record of initiation often not documented on patient chart
The Who, When and Why of Isolation Precautions for AROs
Dr. Michelle Alfa, Diagnostic Services of Manitoba
A Webber Training Teleclass

Discontinuation of Isolation Precautions: WHO??

- **MRSA:** Controversial:
  - unclear who determines discontinuation (should be the responsibility of ICP – but often not documented)
- **VRE:** Never
- **ESBL:** Unclear
  - ICP assesses patient: if continent, no open wounds, good hygiene \( \rightarrow \) discontinue isolation

Discontinuation of Isolation Precautions: WHEN?

- **MRSA, VRE, ESBL:**
  - if 3 consecutive (-) screens when not on therapy, no draining wounds etc, no ongoing transmission \( \rightarrow \) OK to discontinue isolation

Initiation of Isolation: WHEN?

- **MRSA, VRE, ESBL:**
  - Initiation based on Lab Report:
    - Diagnostic or Screening specimen (admission or ward)
    - Note; ESBL screening not routinely done
  - **Lab Report:** TAT varies:
    - **MRSA, VRE:**
      - Chromagar: ~ 24 hr TAT
      - PCR: 6 hr TAT
    - **ESBL:**
      - 3 to 5 days TAT

Initiation of Isolation: WHY?

- **MRSA, VRE, ESBL:**
  - Prevent spread to other patients
  - MRSA infection increases morbidity/mortality (not established for VRE, ESBL)

Management of Multidrug-Resistant Organisms in Healthcare Settings, 2006
CDC Guideline

Controversies: MRSA, VRE, ESBL

- Admission screening for MRSA, VRE
  - Universal or targeted?
  - Patient often admitted but not on isolation while waiting for lab results
- Screening for ESBLs
  - Needed?? What sites??
- Community spread
  - Need for gloves/gowns for patient once discharged home?
- Decolonization for MRSA

Mycobacterium tuberculosis

- **Primary pathogen**
  - acute, reactivation, & latent infection
  - Highest risk: pulmonary TB with cough
- **Airborne spread:**
  - Infectious droplet nuclei

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Initiation of Isolation Precautions: WHO??

- Mycobacterium tuberculosis
  - Admitting staff: ensure patient in negative pressure room while waiting for admission
  - ICP ± Ward nurse calls for Isolation cart/signage for room once admitted

Discontinuation of Isolation Precautions: WHO??

- MTB: Controversial:
  - Ward staff often discontinue isolation without input from ICP (major problem)
  - Requires ICP review because type of infection and screening post-initiation of therapy must be taken into consideration

Initiation of Isolation: WHY?

- M. tuberculosis: Primary pathogen
  - Prevent spread to other patients and caregivers (public health risk)
  - Forms “infectious droplet nuclei” and requires airborne isolation precautions
- M. tuberculosis; non-pulmonary
  - no draining lesions → Standard precautions adequate

Controversies: M. tuberculosis

- Admission
  - Need to ensure rapid transfer of patient to negative pressure room
- Discontinuation:
  - Bed utilization → pressure ward staff may discontinue isolation without input from ICP
  - Submitting respiratory samples prior to 14 days therapy (median time to smear negativity is 21 days)

C. difficile: vegetative vs. spore

Vegetative form: metabolically active
- Produces Toxin A & B (? Other)
- Killed by some antibiotics only
- Oxygen exposure kills

Spores: not metabolically active
- No Toxin production,
- Not affected by antibiotics
- Oxygen exposure doesn’t kill

Not all C. difficile strains carry genes for Toxin production

Record of initiation often not documented on patient chart
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Initiation of Isolation Precautions: WHO??

- **C. difficile**: Contact precautions
  - Ward staff: Nurse calls for Isolation cart/signage for room
  - ICP may follow-up to ensure patient on isolation precautions

Discontinuation of Isolation Precautions: WHO??

- **C. difficile**:
  - Ward staff often discontinue isolation without input from ICP (major problem)
  - Requires ICP review because should have resolution of diarrhea for 48 hrs prior to discontinuation.

Isolation Precautions: WHEN??

- **C. difficile**:
  - Implementation:
    - Lab report: Diarrheal stool specimen Positive for Toxin A/B
  - Discontinuation:
    - Diarrhea resolved for 48 hours

Initiation of Isolation: WHY?

- **C. difficile**:
  - Prevent spread to other patients
  - Spores in environment form reservoir for spread so environmental disinfection is basis for enhanced housekeeping.

Controversies:

- **C. difficile**
  - Hand Hygiene: spores not killed by alcohol → if gloves used is use of alcohol hand hygiene an issue??
  - Discontinuation:
    - May be stopped by nursing staff on ward too early
  - Fecal material: how to safely dispose? (diapers, bedpans, ward bedpan washers)

Provincial Infectious Disease Advisory Committee (PIDAC)

- Contact precautions
- Hand hygiene: soap and water
- Room cleaning (twice per day)
- If ongoing transmission → consider hypochlorite (after routine cleaning)
- After 48 hours without diarrhea → may stop isolation precautions
- Do not perform “test of cure”

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Summary of Key Issues:

- Most common pathogens requiring isolation: MRSA, C. difficile
- Carriage vs Infection: VRE → majority are carriage only, once screen (+) assumed to be (+) forever
- Discontinuation of precautions: MTB and C. difficile → optimal to have ICP input prior to discontinuation of precautions
- Controversies:
  - ESBLs: need to screen? How to screen
  - MRSA/VRE: Universal admission screening?
  - M. tuberculosis: discontinuation of precautions
  - C. difficile: spores in faeces → adequate disposal
  - C. difficile: clinical relevance of alcohol hand-hygiene in transmission

Isolation Precautions:
One more thing to do!!

References:

Teleclass Education 2009
. . . A World of Knowledge
www.webbertraining.com/schedule1.php

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