


The Who, When and Why of Isolation Precautions for AROs

Dr. Michelle Alfa, Diagnostic Services of Manitoba


A Webber Training Teleclass

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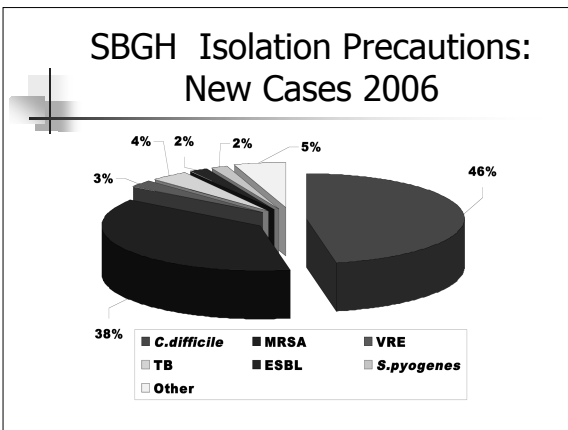



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OVERVIEW: 


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



ARO's: Carriage versus Infection 

	Screening	Carriage	Infection
MRSA	Yes	75%	25%
VRE	Yes	90%	10%
ESBL	No	N/A	
<i>C. difficile</i>	No	N/A	
MTB	No	0%	100%

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

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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 → 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

Discontinuation of Isolation: WHEN?

- **MRSA, VRE, ESBL:**
 - Discontinuation; controversial
 - CDC; unresolved issue**
 - if 3 consecutive (-) screens when not on therapy, no draining wounds etc, no ongoing transmission → OK to discontinue isolation

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

Initiation of Isolation: WHY?

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

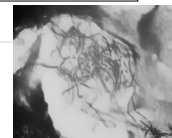
Controversies: MRSA, VRE, ESBL

- **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

Airborne & Contact precautions

- **Primary pathogen**
 - acute, reactivation, & latent infection
 - Highest risk: pulmonary TB with cough
- **Airborn 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

Record of initiation often not documented on patient chart

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

Isolation Precautions: WHEN??

M. tuberculosis: Active Pulmonary TB

Implementation:

- If TB is in the diagnostic differential during admission process → patient put in negative pressure room
- Lab report: Specimen smear: AFB (+)
(Note: only ~ 25% of cases are smear positive)
Culture: AFB growing → probe results MTB complex (+)

Discontinuation:

- Need 3 consecutive negative smears (on separate days)
- DO NOT start collecting samples until 14 days after starting therapy → should be clinically improving (NOTE: median time to negative smears → 21 days)

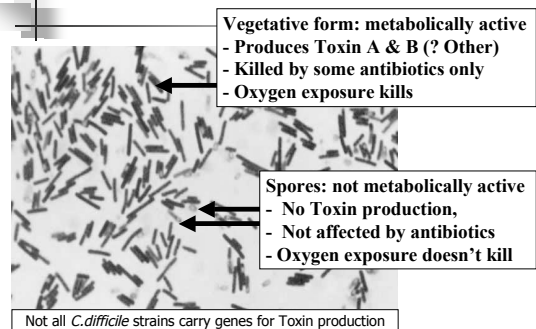
Initiation of Isolation: WHY?

- ***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



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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

Record of initiation often not documented on patient chart

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!!



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