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# Highlights from the AMMI Canada- CACMID 2010 Conference: *What did Tim actually learn?*

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# What's new?

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- Influenza
- Infectious diseases
- Prosthetic infections
- Static vs. tidal

# Influenza

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- Influenza Pandemic, 2009  
Dr. Danuta M. Skowronski  
BCCDC
- Highlights:
  - Influenza attack rates highest in children
  - Subtype replacement
  - Pandemic waves may or may not be associated with seasons (↑ 1.4-2.5 fold pH1N1 in summer)
  - More pandemic waves?
  - Risk factors
    - Aboriginals (↓ IgG<sub>2</sub> levels)
    - Time to antivirals
    - Pregnancy (↓ cell-mediated in 3<sup>rd</sup> trimester)

# Influenza

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- Lessons learned:
  - Real-time knowledge
  - Rapid response
  - Surveillance
  - Supply
  - Prioritization
- Overall, 462 deaths (not 60,000 as predicted)

# Influenza

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- The Mystery Influenza Virus and Diagnostic Enigmas  
Dr. Todd Hatchette  
QEII Health Sciences Centre, Halifax, NS
- Highlights:
  - Diagnostic testing
    - Nasopharyngeal swabs
      - Best
    - Throat swabs alone
      - Bad
    - Combination
      - Ideal
    - In critically ill,
      - BAL or endotracheal sample
    - Rapid point-of-care influenza detection
      - 20% sensitivity

# Influenza

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- Influenza Vaccination Strategies in Canada  
Dr. Shelly McNeil  
Dalhousie University, Halifax, NS
- Highlights:
  - Adjuvant vs. non-adjuvant
    - Adjuvant
      - Rapid protection
      - Antigen sparing
    - Non-adjuvant
      - Similar efficacy
  - Why did we have the adjuvanted vaccine?
    - In 2001, Government of Canada signed contract with GSK
    - Supply “adjuvanted” pandemic vaccine

# Influenza

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- Problems
  - Adjuvant stability
    - 24 h
    - Syringe
  - Limited supplies
    - Sequencing of patient groups
  - Safety
    - U.S. used non-adjuvant
    - Different recommendations in pregnancy
- Unclear whether adjuvant or non-adjuvant selected for next year

# ID

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- What's Hot in Adult ID?  
Dr. Stephen D. Shafran  
University of Alberta, Edmonton, AB
- Highlights:
  1. ↑ ESBL mainly in UTIs
  2. MRSA rates stable
  3. MRSA ↑ clindamycin resistance
  4. VISA and VRSA rare
  5. VRE mainly colonizer
  6. ↑ carbapenem resistance
  7. No new antibiotics
  8. Pneumococcal conjugate vaccine in adults – pending
  9. Meningococcal vaccine in US/EU quadravalent
    - Serogroup B (1/2 of cases)

# ID

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- Highlights:

16. New TB drug (TMC 207 – diarylquinoline)

17. Combination invasive aspergillosis trial

- Voriconazole vs. voriconazole/anidulafungin for IA in BMT

18. HPV quadravalent vaccine for males

- 89% protection
- Reduces genital lesions
- Oral cavity disease and CA

19. Herpes zoster live vaccine in Canada

- Efficacy 61% approved in  $\geq 60$  years

20. Oseltamivir resistance 1% (H275Y mutation)

- Susceptible to zanamivir

21. Hepatitis E recombinant vaccine

- 95% protection

# ID

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- Highlights:

- 22. Malaria

- Artesunate available as SAP in Canada
    - Mosquirix vaccine in Phase 3 studies (Phase 2 efficacy 55%)

- 23. HIV

- Start HAART earlier
      - Any CD4
        - Pregnant
        - HIV neuropathy (Black)
        - HBV co-infection
        - Symptomatic patients
      - CD4
        - <350: treat all
        - 350-500: more evidence
        - >500: controversial

# ID

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- Highlights:

## 23. HIV

- Opportunistic infections
  - Treat with HAART earlier (after 12 days) than later
- Heterosexual transmission
  - If <400 VL → no transmission to partner

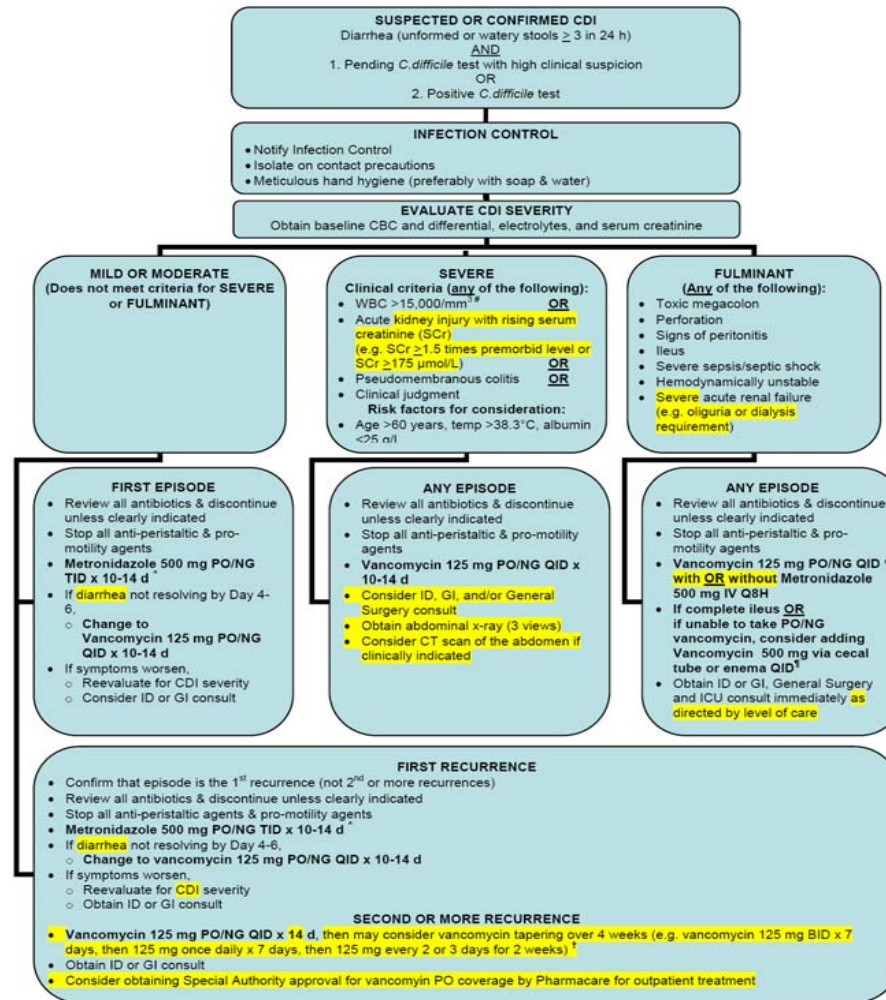
## 24. CDI

- New IDSA guidelines
- If 2 episodes, then increase recurrence

## 25. Fidaxomicin

1. Fidaxomicin (macrocyclic antibiotic – RNA polymerase) vs. vancomycin
  1. ↓ recurrence 12.8% vs. 25%
  2. Cure 79.6% vs. 65.5%

## VCH-PHC Draft CDI Guidelines



\* In patients unable to mount a WBC response  $>15,000/\text{mm}^3$ , an increasing WBC with pronounced left shift may also be considered in these criteria; threshold of  $>15,000/\text{mm}^3$  is based on expert opinion.

<sup>\*</sup> May change to vancomycin if patient intolerant to metronidazole.

<sup>\*</sup> Doses of 125 to 500 mg may be considered; appropriate dose has not been established in clinical trials.

<sup>†</sup> Vancomycin IV is not effective for the treatment of CDI.

<sup>†</sup> Tapering regimens may vary considerably, as clinical data is limited.

**Note:** Physician assessment for perforation risk is required prior to rectal tube placement.

# ID

## VCH-PHC Draft CDI Guidelines

**MILD OR MODERATE**  
(Does not meet criteria for SEVERE or FULMINANT)

**SEVERE**  
Clinical criteria (any of the following):

- WBC >15,000/mm<sup>3</sup># OR
  - Acute kidney injury with rising serum creatinine (SCr) (e.g. SCr ≥1.5 times premorbid level or SCr ≥175 µmol/L) OR
  - Pseudomembranous colitis OR
  - Clinical judgment
- Risk factors for consideration:**
- Age >60 years, temp >38.3°C, albumin <25 g/l

**FULMINANT**  
(Any of the following):

- Toxic megacolon
- Perforation
- Signs of peritonitis
- Ileus
- Severe sepsis/septic shock
- Hemodynamically unstable
- Severe acute renal failure (e.g. oliguria or dialysis requirement)

**FIRST EPISODE**

- Review all antibiotics & discontinue unless clearly indicated
- Stop all anti-peristaltic & pro-motility agents
- Metronidazole 500 mg PO/NG TID x 10-14 d ^
- If diarrhea not resolving by Day 4-6,
  - Change to Vancomycin 125 mg PO/NG QID x 10-14 d
- If symptoms worsen,
  - Reevaluate for CDI severity
  - Consider ID or GI consult

**ANY EPISODE**

- Review all antibiotics & discontinue unless clearly indicated
- Stop all anti-peristaltic & pro-motility agents
- Vancomycin 125 mg PO/NG QID x 10-14 d
  - Consider ID, GI, and/or General Surgery consult
  - Obtain abdominal x-ray (3 views)
  - Consider CT scan of the abdomen if clinically indicated

**ANY EPISODE**

- Review all antibiotics & discontinue unless clearly indicated
- Stop all anti-peristaltic & pro-motility agents
- Vancomycin 125 mg PO/NG QID \* with OR without Metronidazole 500 mg IV Q8H
- If complete ileus OR if unable to take PO/NG vancomycin, consider adding Vancomycin 500 mg via cecal tube or enema QID<sup>1</sup>
- Obtain ID or GI, General Surgery and ICU consult immediately as directed by level of care

# ID

## ■ VCH-PHC Draft CDI Guidelines

### FIRST RECURRENCE

- Confirm that episode is the 1<sup>st</sup> recurrence (not 2<sup>nd</sup> or more recurrences)
- Review all antibiotics & discontinue unless clearly indicated
- Stop all anti-peristaltic agents & pro-motility agents
- **Metronidazole 500 mg PO/NG TID x 10-14 d** <sup>^</sup>
- If **diarrhea** not resolving by Day 4-6,
  - **Change to vancomycin 125 mg PO/NG QID x 10-14 d**
- If symptoms worsen,
  - Reevaluate for **CDI** severity
  - Obtain ID or GI consult

### SECOND OR MORE RECURRENCE

- **Vancomycin 125 mg PO/NG QID x 14 d, then may consider vancomycin tapering over 4 weeks (e.g. vancomycin 125 mg BID x 7 days, then 125 mg once daily x 7 days, then 125 mg every 2 or 3 days for 2 weeks)** <sup>†</sup>
- Obtain ID or GI consult
- **Consider obtaining Special Authority approval for vancomycin PO coverage by Pharmacare for outpatient treatment**

# In patients unable to mount a WBC response  $>15,000/\text{mm}^3$ , an increasing WBC with pronounced left shift may also be considered in these criteria; threshold of  $>15,000/\text{mm}^3$  is based on expert opinion.

<sup>^</sup> May change to vancomycin if patient intolerant to metronidazole.

\* Doses of 125 to 500 mg may be considered; appropriate dose has not been established in clinical trials.

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**Note:** Physician assessment for perforation risk is required prior to rectal tube placement.

# Prosthetic Infections

- Prosthetic Joint Infections  
Dr. Robin Patel  
Mayo Clinic, Rochester, MN
- Highlights:

Prosthetic Infection	0 to 2 years	2 to 10 years
Knee	1.55%	0.46%
Hip	0.78%	0.33%

- Diagnosis criteria (any of the following)
  1. Acute inflammation
  2. Sinus tract
  3. Purulence
  4. Microorganisms in  $\geq 2$  cultures
- Labs
  - ESR/CRP
    - Differ between hip/knees and shoulder

# Prosthetic Infections

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- Highlights:
  - Diagnostics
    - Combined WBC and bone scan
    - Synovial fluid
      - Leucocytes >1.1
      - Neutrophils >64%
  - Culture
    - Gram stain not definitive
    - Need fluid or tissue
    - Require at least 2 samples
    - Sonication fluid
      - Shorter time to positivity than tissue culture

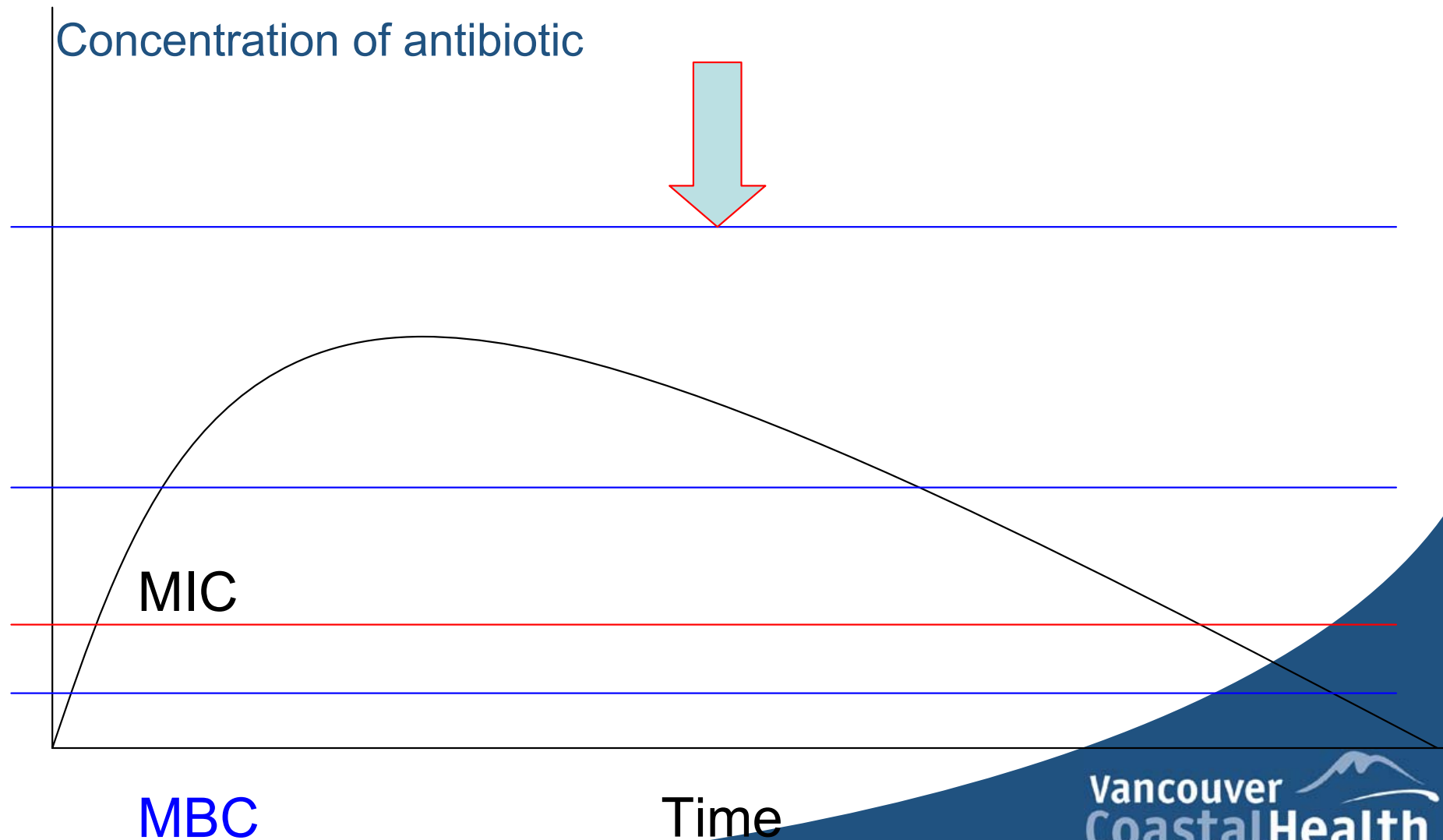
# Static vs. Cidal

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- **Static vs. Cidal in Complex Infections**  
Dr. Edward A. Dominguez  
University of Nebraska Medical Center, Omaha, Nebraska  
Dr. Ethan Rubinstein  
University of Manitoba, Winnipeg, MB
- **Highlights:**
  - **Bacteriostatic (inhibits growth; reversible)**
    - Drugs achieving MIC, but not MBC ( $MBC/MIC \geq 16$ )
    - Effective against toxin producing organisms
  - **Bactericidal (kills organisms)**
    - Drugs that have same MIC and MBC ( $MBC/MIC \leq 4$ )
    - Effective against growth phase

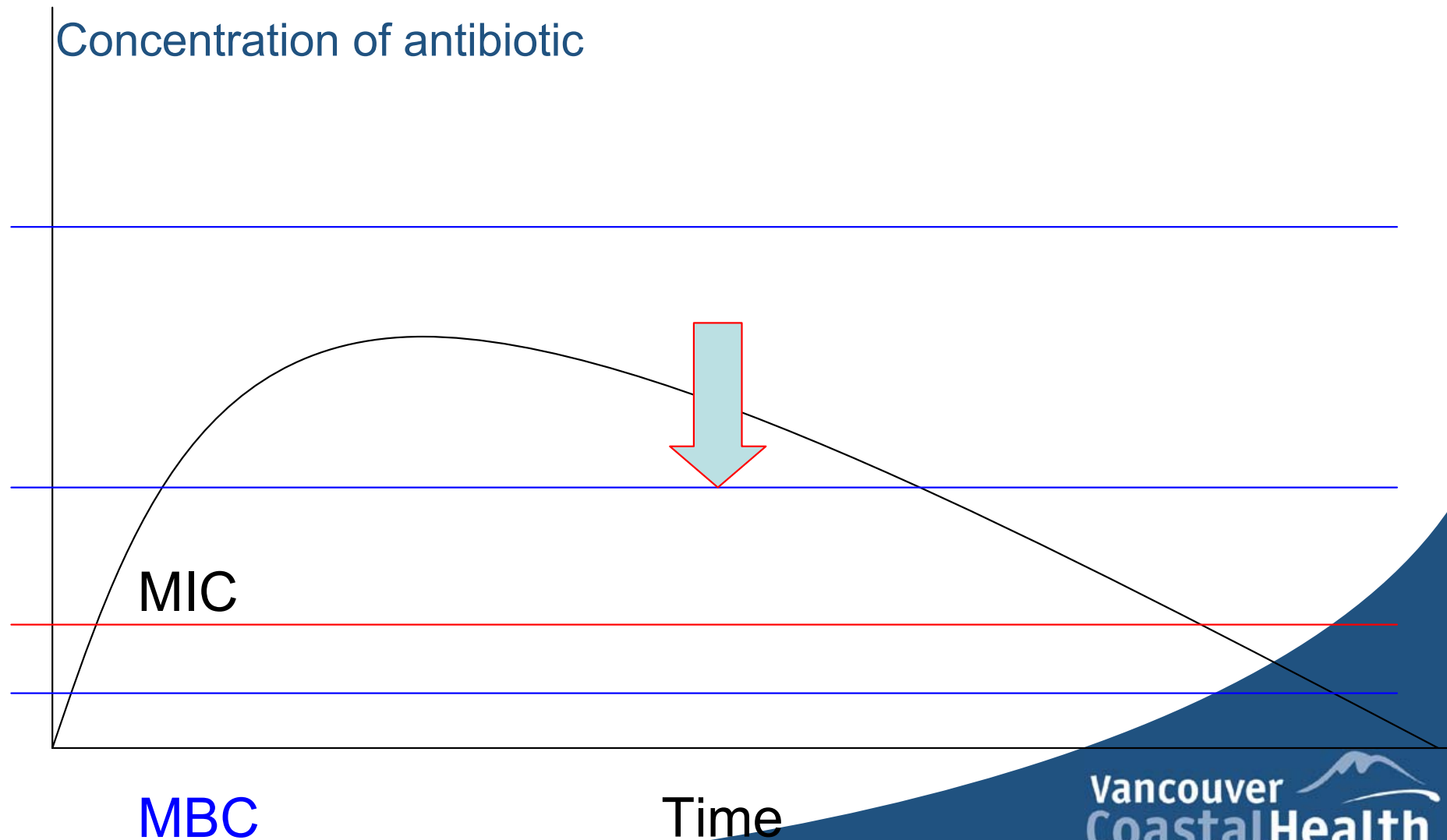
# Static vs. Cidal

Bacteriostatic antimicrobial



# Static vs. Cidal

Bactericidal antimicrobial



# Static vs. Cidal

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- Highlights:
  - Other factors affecting antimicrobial activity
    - Site, inoculum size, PK/PD, host defences
  - Bottom-line
    - If antimicrobial studied for indication, then it works!