When Sharing ISN’T Caring: Preventing HAI / MDRO Transmission

Infection Prevention: A Community Effort Symposium
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Outline

• Definitions and organisms
• Prevention & control strategies
• MDCH SHARP HAI & MDRO surveillance and prevention activities
• Questions and answers
Transmission Locations: More than just Hospitals!

- Acute care hospitals
- Long term care
- Long term acute care
- Ambulatory surgical centers
- Home care
- Wound care clinics
- Dialysis facilities
- Outpatient facilities and offices
- Schools and daycares
- Gyms and pools
- Correctional facilities

The list goes on and on.....
What are Healthcare-Associated Infections (HAIs)?

- Infections acquired within a healthcare facility — i.e. hospital, long term care facility, & other
- Not present on admission
- Not incubating at time of admission to facility
- Previously called “nosocomial infections”
What are Multidrug-Resistant Organisms (MDROs)?

- Organisms with decreased susceptibility to multiple classes of antimicrobial agents
- Most often bacteria
- Commonly are healthcare-associated infections (HAIs)
- Increasing prevalence in community
Pssst! Hey kid! Wanna be a Superbug...?
Stick some of this into your genome...
Even penicillin won't be able to harm you...

It was on a short-cut through the hospital kitchens that Albert was first approached by a member of the Antibiotic Resistance.
The Organisms

Alphabet soup!!!

- MRSA (CA-MRSA and HA-MRSA)
- VRE
- VISA
- VRSA
- MDR GNB: ESBLs, KPCs, and CREs
And lets not forget….

- Clostridium difficile
- Influenza
- Rotavirus
- Rhinovirus
- Norovirus
- TB
- HBV / HCV and HIV / AIDS
- Et cetera…
"Let me guess...it's contagious!"
Requirements for Transmission

Source

Susceptible Host

Mode or Route
Risk Factors for HAI / MDRO Acquisition

- Existing severe illness
- Underlying disease or condition
- Invasive medical procedures
- Repeated contact with healthcare system
- Prolonged hospitalization
- Previous colonization with a MDRO
- Elderly and immune-compromised
 Routes of Transmission

- **Contact**
  - Person to person, direct or indirect
  - Most MDROs
- **Droplet**
  - Respiratory droplets (>5 µm) to host mucosa over short distance (e.g. ≤3 feet)
- **Airborne**
  - Small particles (≤5 µm) infective over time and distance
- **Bloodborne**
  - Poor injection technique most frequent exposure
Infection Control Precautions

• Standard
• Transmission-based = ISOLATION
  – Contact
  – Droplet
  – Airborne
Standard Precautions

- All blood, body fluids, secretions (except sweat), nonintact skin, and mucus membranes assumed infectious
- Apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered
- Application determined by
  - Nature of interaction
  - Extent of anticipated blood, body fluid, or pathogen exposure
- Have an ESSENTIAL role in preventing transmission in ALL healthcare settings
Standard Precaution Measures

• Hand hygiene
• Respiratory hygiene / cough etiquette
• Safe injection practices
• Use of personal protective equipment (PPE)
  – PPE = gloves, gown, mask, eye protection, and/or face shield
• Handling of contaminated equipment / environment
  – Wear gloves for direct contact
  – Contain heavily soiled equipment
  – Properly clean and disinfect or sterilize reusable equipment
Contact Precautions

• For infections spread by contact and patients with excessive wound drainage, fecal incontinence, or other bodily discharges
  – *Herpes simplex* virus (HSV), respiratory syncytial virus (RSV), *Staphylococcus aureus*, most MDROs

• Gown and gloves for every interaction with the patient or potentially contaminated environment
Droplet Precautions

- For pathogens spread through close respiratory or mucous membrane contact with respiratory secretions
  - *Bordetella pertussis*, influenza virus, adenovirus, rhinovirus, *Mycoplasma pneumoniae*, SARS-associated coronavirus (SARS-CoV), group A streptococcus, and *Neisseria meningitidis*
- Personnel don mask for patient contact
- Single patient rooms or separation of ≥3 feet with curtain
- Mask patient (if tolerated) when transporting outside room and adhere to respiratory hygiene / cough etiquette
Airborne Isolation

- For agents that remain infectious over long distances when suspended in the air
  - *Mycobacterium tuberculosis*, rubeola virus (measles), and varicella-zoster virus (chickenpox)
- Airborne infection isolation room (AIIR)
  - Alternative: private room with door closed, patient mask, and N95 for personnel
- Providers wear mask or respirator
Patient Placement

- Single-patient rooms
  - Airborne Precautions
  - Preferred for Contact and Droplet Precautions
- Cohort patients
  - By HAI / MDRO
  - With patients at low-risk for acquisition and adverse outcomes, and short stays
Inter-facility Infection Control Transfer Form

Available under Long Term Care Toolkits at:
http://www.cdc.gov/HAI/recoveryact/stateResources/toolkits.html

Sending Healthcare Facility:

<table>
<thead>
<tr>
<th>Patient/Resident Last Name</th>
<th>First Name</th>
<th>Date of Birth</th>
<th>Medical Record Number</th>
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Name/Address of Sending Facility

<table>
<thead>
<tr>
<th>Sending Unit</th>
<th>Sending Facility phone</th>
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Sending Facility Contacts

<table>
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<tr>
<th>Name/Address</th>
<th>PHONE</th>
<th>E-mail</th>
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Is the patient currently in isolation? □ NO □ YES

Type of Isolation (check all that apply)

□ Contact □ Droplet □ Airborne □ Other:

__________________________

Does the patient currently have an infection, colonization OR a history of positive culture of a multidrug-resistant organism (MDRO) or other organism of epidemiological significance?

□ Methicillin-resistant Staphylococcus aureus (MRSA)
□ Vancomycin-resistant Enterococcus (VRE)
□ Clostridium difficile
□ Acinetobacter, multidrug-resistant*
□ E coli, Klebsiella, Proteus etc. w/Extended Spectrum B-Lactamase (ESBL)*
□ Carbapenemase resistant Enterobacteriaceae (CRE)*
□ Other:

Does the patient/resident currently have any of the following?

□ Cough or requires suctioning
□ Central line/PICC (Approx date inserted ____/____/____)
**Inter-facility Infection Control Transfer Form**

(continued)

**Does the patient/resident currently have any of the following?**

- Cough or requires suctioning
- Diarrhea
- Vomiting
- Incontinent of urine or stool
- Open wounds or wounds requiring dressing change
- Drainage (source)

**Central line/PICC (Approx. date inserted ___/___/_____)**

- Hemodialysis catheter
- Urinary catheter (Approx. date inserted ___/___/_____)
- Suprapubic catheter
- Percutaneous gastrostomy tube
- Tracheostomy

Is the patient/resident currently on antibiotics?  □ NO  □ YES:

<table>
<thead>
<tr>
<th>Antibiotic and dose</th>
<th>Treatment for:</th>
<th>Start date</th>
<th>Anticipated stop date</th>
</tr>
</thead>
<tbody>
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<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Date administered (If known)</th>
<th>Lot and Brand (If known)</th>
<th>Year administered (If exact date not known)</th>
<th>Does Patient self report receiving vaccine?</th>
</tr>
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<tbody>
<tr>
<td>Influenza (seasonal)</td>
<td></td>
<td></td>
<td></td>
<td>◯ yes ◯ no</td>
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<tr>
<td>Pneumococcal</td>
<td></td>
<td></td>
<td></td>
<td>◯ yes ◯ no</td>
</tr>
<tr>
<td>Other:________________</td>
<td></td>
<td></td>
<td></td>
<td>◯ yes ◯ no</td>
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</tbody>
</table>

Printed Name of Person completing form  Signature  Date  If information communicated prior to transfer: Name and phone of individual at receiving facility

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<tr>
<th>Printed Name of Person completing form</th>
<th>Signature</th>
<th>Date</th>
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GUIDE TO INFECTION PREVENTION IN OUTPATIENT SETTINGS:
Minimum Expectations for Safe Care

- Released April 2011
- Summary guide of infection prevention recommendations for outpatient (ambulatory care) settings
- Available at: http://www.cdc.gov/HAI/pdfs/guidelines/Ambulatory-Care-04-2011.pdf
Antimicrobial Stewardship

- Promote adherence to appropriate prescribing guidelines among providers
- Decrease demand for antibiotics for viral upper respiratory infections among healthy adults and parents of young children
- Increase adherence to prescribed antibiotics for upper respiratory infections

http://www.cdc.gov/getsmart/index.html
http://www.mi-marr.org/index.html
Michigan Reporting Requirements

- Influenza
  - Weekly aggregate reports
  - Novel strain cases
  - Pediatric deaths
- HBV, HCV, HIV / AIDS, TB
- Methicillin resistant *Staphylococcus aureus* (MRSA) outbreaks
- Vancomycin-intermediate and -resistant *Staphylococcus aureus* (VISA/VRSA)
- Invasive *Streptococcus pneumoniae*, susceptible and drug-resistant
- Unusual occurrence, outbreak or epidemic of any disease or condition
  - Includes healthcare-associated infections (HAIs)
  - Includes epidemiologically significant organisms
    - Carbapenemase-resistant *Enterobacteraceae* (CRE)
  - Includes noro, rota, rhino and influenza

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[Website: www.michigan.gov/hai]
New Surveillance Initiative

- Formation of SHARP Unit in 2009
- Surveillance of healthcare-associated infections and MDROs through voluntary participation of Michigan hospitals
- Data collected from National Healthcare Safety Network (NHSN)
- Currently, 50 participating hospitals sharing data with SHARP Unit
Prevention Collaboratives

• GOAL: To implement evidence-based infection control measures for purpose of reducing infection rates in hospitals.
• Partnering with existing collaboratives
  • MHA Keystone: HAI, Catheter-Associated Urinary Tract Infection (CAUTI) Initiative
  • MPRO: MDRO/MRSA Initiative
NEW! Prevention Collaboratives

• MRSA/CDI in acute, long term care, and long term acute care facilities
• CRE in acute, long term care, and long term acute care facilities (grant application pending)
• Future: SSI in acute and ambulatory surgical centers?
MDCH HAI Website

- www.michigan.gov/hai
- Content:
  - Annual and Quarterly Reports
  - Sample facility report
  - Frequent updates
- RESOURCES
  - For IPs
  - For public
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Strain of 2000

You are the next class of drug-resistant bacteria. As humans continue to abuse and overuse antibiotics, your ranks will swell. So, go out there and mutate! And remember: that which does not kill us makes us stronger!
Questions?
References


http://www.jstor.org/stable/10.1086/592416