

Strategies for Collaboration for HAI Prevention across the Continuum of Care

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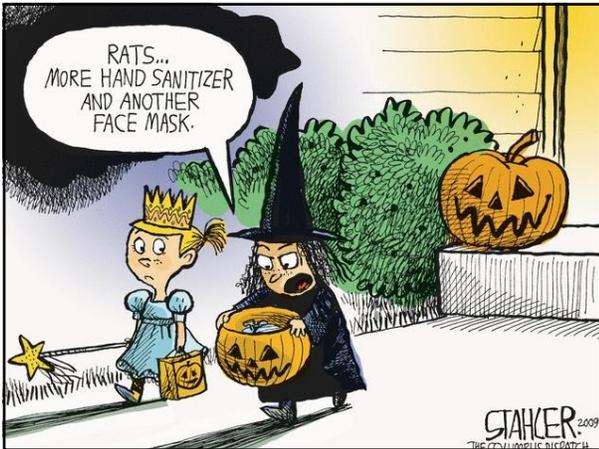


Objectives

- Discuss the need for an integrated approach to HAI prevention across the continuum of care
- Discuss the role of Infection Prevention to achieve the IHI Triple Aim and reduce Healthcare Associated Infections
- Discuss the core elements of HAI prevention and their application to both acute care and post-acute care

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Evolution of US Healthcare Quality

- Transparency**
 - public reporting laws and public demand
- Preventability**
 - demonstrated success with adherence to recommended practices
- Incentives**
 - CMS reimbursement tied to reporting and outcomes
- National Expansion**
 - antimicrobial resistance initiative

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Complexities within Healthcare



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graph TD; Hospitals --- Ambulatory[Ambulatory facilities]; Ambulatory --- Long-term[Long-term care]; Long-term --- Dialysis[Dialysis facilities]; Dialysis --- Hospitals;
```

Complexities within

- ~1.2 billion outpatient visits/year
 - On average, four visits to physician offices/year
- Outpatient procedures
 - e.g., > one million cancer patients receive outpatient chemotherapy and/or radiation therapy
- Infrastructure is Inconsistent



```
graph TD; Dialysis[Dialysis facilities] --- Ambulatory[Ambulatory facilities]; Ambulatory --- Long-term[Long-term care]; Long-term --- Dialysis;
```

Evolution of US Healthcare Quality

Key challenges in healthcare technology and environment -

Technology:

- Procedures that are faster or safer
- Greater cost-effectiveness
- Better access to care
- More information available for care delivery

Unintended Consequences:

- Device design issues
- Environmental real-world issues
- Human factors issues
- Opportunity costs

Opportunities for Improvements ...?

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Life in the Fast Lane

1

Infection Control Program

2

Infection Preventionist

3

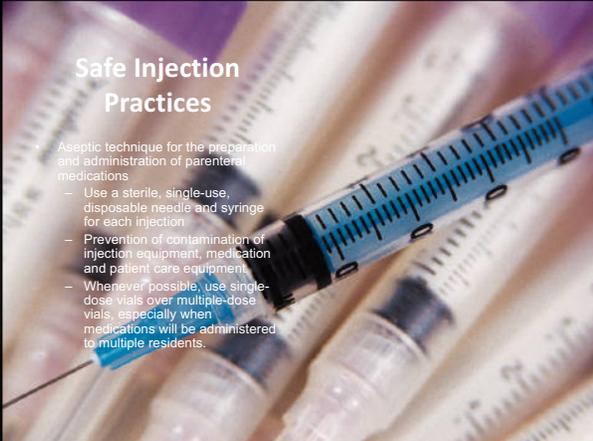
Antibiotic Stewardship Program

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Safe Injection Practices

- Aseptic technique for the preparation and administration of parenteral medications
 - Use a sterile, single-use, disposable needle and syringe for each injection
 - Prevention of contamination of injection equipment, medication and patient care equipment
 - Whenever possible, use single-dose vials over multiple-dose vials, especially when medications will be administered to multiple residents.



TIME

PUBLIC HEALTH

Meningitis Outbreak Grows, Highlighting Dangers of Compounding Pharmacies

By Alice Park @aliceparkny Oct. 04, 2012 · 6 Comments

[Share](#)[Pin](#)[Read Later](#)

Health officials are hunting for the source of a meningitis outbreak among dozens of people who received steroid injections to treat back pain.

So far, 33 people have fallen ill with fungal meningitis and five have died after receiving shots in the spine. Health officials expect the case count to rise, warning that hundreds, if not thousands of patients who received epidural steroid injections could be at risk. The fungus, *Aspergillus*, causing



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SAFE HANDLING OF MEDICATION

1 ONE NEEDLE, ONE SYRINGE, ONLY ONE TIME.
Safe Injection Practices Coalition
www.ONEandONLYcampaign.org

Injection Safety Guidelines From CDC

- Never administer medications from the same syringe to more than one patient, even if the needle is changed.
- After a syringe or needle has been used to enter or connect to a patient's line it is contaminated and should not be used on another patient or to enter a medication vial.
- Never enter a vial with a used syringe or needle.
- Never use medications packaged as single-dose vials for more than one patient.
- Assign medications packaged as multi-dose vials to a single patient whenever possible.
- Do not use bags or bottles of intravenous solution as a common source of supply for more than one patient.
- Follow proper infection control practices during the preparation and administration of injected medications.
- Wipe a surgical mask when placing a catheter or injecting material into the spinal canal or subdural space.

Adapted from Guidelines for infection precautions preventing transmission of infectious agents in health-care settings 2007 Atlanta, GA: US Department of Health and Human Services, CDC, 2007. Available at: <http://www.cdc.gov/nceh/infectioncontrol/2007.pdf>

<http://www.oneandonlycampaign.org/single-dose-multi-dose-vial-infographic>

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Refocus on Safe Injection Practices

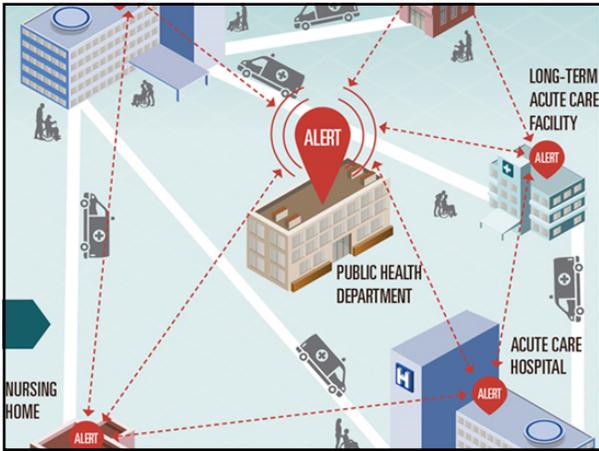
Twelve percent (12.4%) of physicians and 3% of nurses indicated reuse of syringes for >1 patient occurs in their workplace

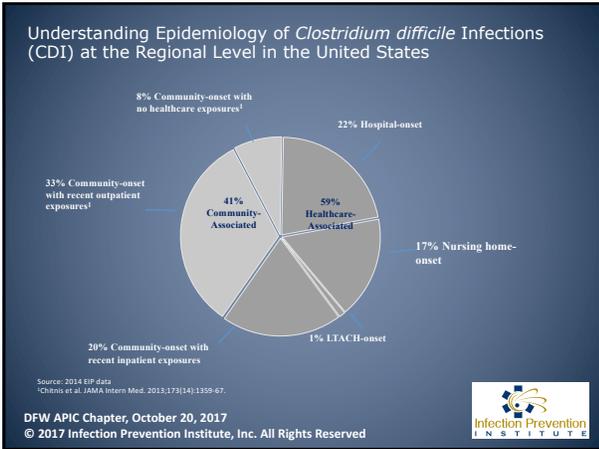
nearly 5% of physicians indicated this practice usually or always occurs.

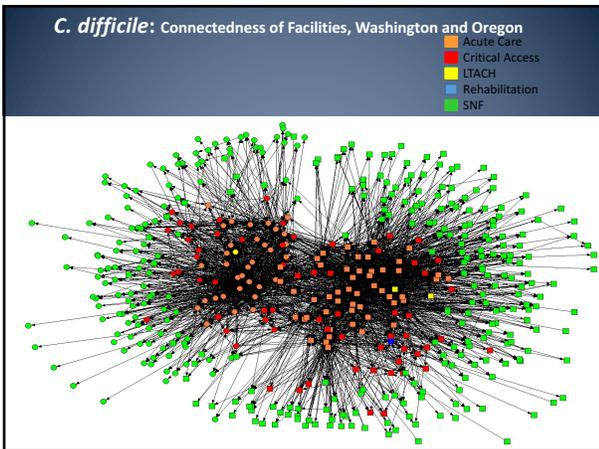
higher proportion of oncologists reported unsafe practices occurring in their workplace.

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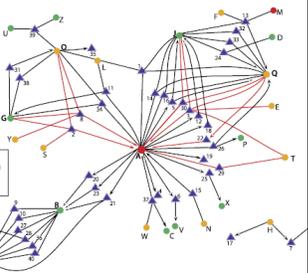
Putting Things in Perspective



C-Diff...
Same Shit, Different Day

someecards.com

Regional control of Carbapem-resistant Enterobacteriaceae (CRE)



- Won S, Munoz-Price S, Lolans K, Hota B, Weinstein R, Hayden M. for the Centers for Disease Control Prevention Epicenter Program. Rapid and Regional Spread of Klebsiella pneumoniae Carbapenemase CID 2011;53: 532-540

Containment Strategy

- Goal: slow the spread
 - of novel or rare multidrug-resistant organisms or mechanisms
- Systematic, aggressive response
 - to single cases of high concern
 - focus on stopping transmission
- Tiered approach based on organism/mechanism attributes
- Complements existing guidance

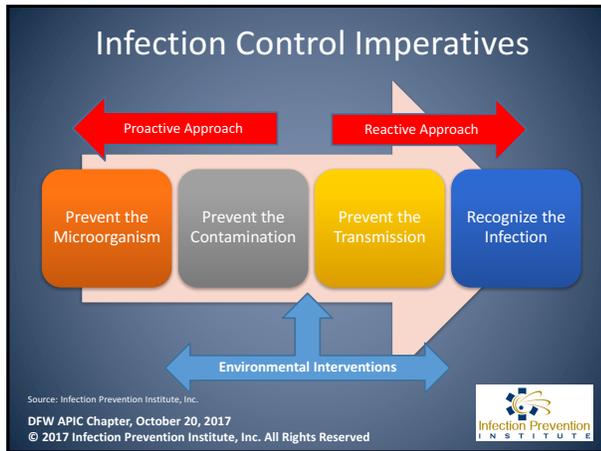


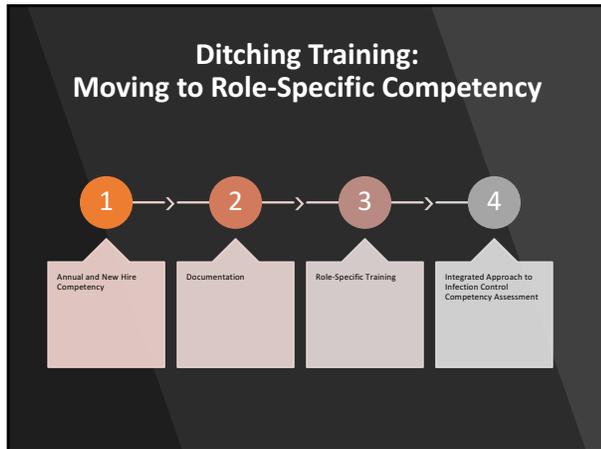
Interim Guidance for a Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs)

<https://www.cdc.gov/infectioncontrol/preventionandcontrol/media/2017/s071717a0001.pdf>

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Care Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings – Recommendations of the Healthcare Infection Control Practices Advisory Committee

Preface
The Healthcare Infection Control Practices Advisory Committee (HICPAC) is a federal advisory committee chartered in 1981 to provide advice and guidance to the Centers for Disease Control and Prevention (CDC) on the Department of Health and Human Services (HHS) regarding the practice of infection control and strategies for surveillance, prevention, and control of healthcare-associated infections, antimicrobial resistance and related events in health care settings. CDC has been developing recommendations for healthcare infection control to prevent infections in patients and healthcare personnel since the 1950s. These recommendations continue to evolve over

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CDC Core Elements of Hospital Antibiotic Stewardship Programs

Leadership Commitment

Accountability

Drug Expertise

Action

Tracking

Reporting

Education

Application to Outpatient and LTC?

Source: Core Elements of Antimicrobial Stewardship, Centers for Disease Control and Prevention

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U.S. Nursing Home Antibiotic Use:

- ~70% of residents receive an antibiotic each year
- ~40-75% inappropriate or unnecessary

<http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html>

Assessing and Improving Antibiotic Use in Nursing Homes

- Point prevalence survey of antibiotic use pilot in nursing homes (9) completed
- CDC's Emerging Infection Program sites are currently collecting data on antibiotic use point prevalence survey
- Purchasing proprietary data
- Funding nursing home network to implement and evaluate Core Elements

UP TO 70% OF NURSING HOME RESIDENTS RECEIVED one or more COURSES OF SYSTEMIC ANTIBIOTICS IN A YEAR

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Implementation of the Core Elements of antibiotic stewardship for Nursing Homes

- Partnership with CMS quality improvement
- Collaboration with professional organizations
- Community engagement and education
- Incentives/requirements for antibiotic stewardship in all healthcare settings:
 - Hospitals: Joint Commission standard and proposed CMS requirement
 - Nursing homes: New CMS requirement
 - Outpatient: Stewardship including in new payment system.

The Core Elements of Antibiotic Stewardship for Nursing Homes

Core vs. Adjunctive Technologies

Core Measures <ul style="list-style-type: none">• Cleaning• Disinfection• Environmental Monitoring		Adjunctive Technologies <ul style="list-style-type: none">• UV• Gas/Fogging• Cubicle Curtains• Novel Technologies• Antimicrobial Environmental Surfaces
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Source: Infection Prevention Institute, Inc.
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Equipment Design and Reprocessing

- The growing complexity of reusable medical equipment complicates optimal reprocessing

Design Elements Prone to Retaining Biological Material
Lumens with long, narrow interior channels too small to pass a brush through or with ridges, angles, or non-smooth interior
Hinges, O-rings
Sleeves surrounding rods, blades, activators, inserters, etc.
Adjacent device surfaces where debris can get stuck
Valves that regulate flow of fluid through a device (stopcock)
Devices with features that hinder disassembly

FDA Website, Updated August 4, 2015. Accessed October 3, 2016.
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Designing for Intended Use

- Manufacturers should consider all intended users when designing medical equipment

Who Uses the Device?



- Differences in devices from model to model or manufacturer to manufacturer further complicate reprocessing

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Prevention Starts With Purchasing Decisions

Step 1: Determine the device's intended use

- Defined by point-of-care users (eg, physicians, nurses, surgeons, gastroenterologists)
- How, when, where, and what will it be used for?

Step 2: Bring all the stakeholders to the table

- Relevant clinicians
- Staff from materials management, biomedical engineering, environmental services, infection prevention, and reprocessing

Step 3: Provide adequate resources for reprocessing

- Time and equipment
- Training

Pre-purchase Checklist

Is the item sterile as supplied or does it require sterilization or disinfection before first use?

Is it compatible with the facility's disinfectants?

How much time will cleaning and disinfection take?

How complex is any disassembly and reassembly?

How can this be integrated into the facility's process?

Are the manufacturer's reprocessing instructions adequate?

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Reprocessing/Maintenance Program

- Key elements of an after-purchase program
- How to **use** the device safely
- How to **reprocess** the device appropriately
 - List of all steps and staff responsible for each step
 - Design complexities that require special attention
- How to **maintain** the device per manufacturer instructions (including preventive maintenance)

Failing to follow the manufacturer's instructions can damage equipment and increase risk to patients.

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Emerging Future Threats

- Human exposure to new environments
- Changes in animal or vector exposure

- New care environments
- New procedures
- New devices and products

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Human Factors Approach to HAI Prevention



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Clinical Risk Management for HAIs

- Clinical staff
- Nonclinical staff
- Environmental Services
- Purchasing
- Materials management and Facility engineering
- Patients and visitors

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Medical Device Purchasing Infection Control "Red Flags"

DRAFT



Elements to Avoid	Elements of Concern	Extra Scrutiny Needed for devices and equipment used in:
<ul style="list-style-type: none">• Fans• Motors/vibration sources• Condensation sites• Seams and porous surfaces• other...?	<ul style="list-style-type: none">• Water reservoirs• Moisture retention• Re-usable tubing• Splash potential• Inaccessible compartments open to environment• Complex cleaning procedures	<ul style="list-style-type: none">• NICU/ICU• Oncology• Transplant• Burn• OR• Sterile Processing

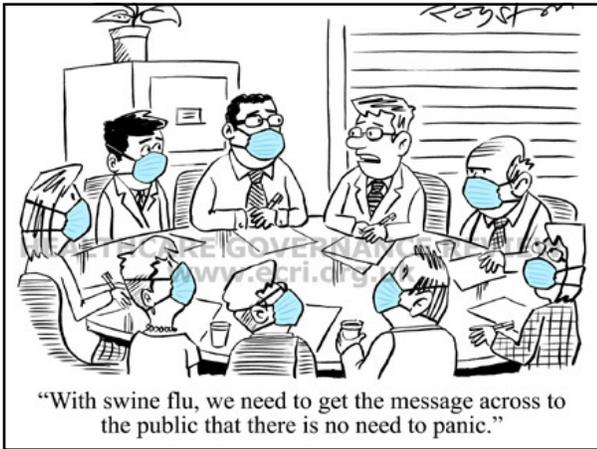
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Attaining Perfect Care

- Optimally staffed, highly trained, competency-certified care delivery... plus:
 - Effective oversight
 - Optimal use of electronic health records
 - Innovations in materials and design
 - Environmental interventions

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Summary

- Collaborate and Communicate with all stakeholders about **“antimicrobial stewardship”** relative to the clinical environment of care
- Reduce the risk for the clinical environment of care to serve as a **vector** for transmission across the continuum of care
- Integrate **EVS** into the **clinical care** team
- Focus on **basic core** infection control practices before deploying adjunctive technologies
- **Training** is critical and emphasize **back to the basics**

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Questions

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