

Antibiotic Resistance in the Post-Acute and Long-Term Care Settings: Strategies for Stewardship

J. Hudson Garrett Jr., PhD, MSN, MPH, FNP-BC, PLNC, CDONA, IP-BC, GDCN, CDP, CADDCT, CALN, VA-BC, AS-BC, FACDONA

November 16, 2017



About our speaker



**J. Hudson Garrett Jr., PhD,
MSN, MPH, FNP-BC, PLNC,
CDONA, IP-BC, GDCN, CDP,
CADDCT, CALN, VA-BC, AS-BC,
FACDONA**

**Executive Vice President and
Chief Clinical Officer**

Master Trainer

NADONA

**President and Co-Founder
Infection Prevention Institute**

Antibiotic Resistance in the Post-Acute and Long-Term Care Settings: Strategies for Stewardship

J. Hudson Garrett Jr., PhD, MSN, MPH, FNP-BC, PLNC, CDONA, IP-BC, GDCN, CDP,
CADDCT, CALN, VA-BC, AS-BC, FACDONA

Executive Vice President and Chief Clinical Officer

Master Trainer

NADONA

President and Co-Founder

Infection Prevention Institute

Disclosures

- Opinions and positions expressed by the speaker are solely those of the speaker and do not necessarily reflect the views, opinions or positions of Nutricia North America or any employee thereof.

Objectives

- Discuss the impact of antimicrobial and antibiotic resistance in long-term care settings.
- Review the CDC core elements of the Antibiotic Stewardship Program.
- Discuss strategies to ensure success in the implementation and maintenance of an Antibiotic Stewardship Program and achieving productive collaboration between nursing and providers.

Why the Concern?

- 1 to 3 million serious infections occur every year in these facilities.
- Infections include urinary tract infection, diarrheal diseases, antibiotic-resistant staph infections and many others.
- Infections are a major cause of hospitalization and death; as many as 380,000 people die of the infections in LTCFs every year.

Source: Centers for Disease Control and Prevention

Copyright 2017 Infection Prevention Institute

Times are Changing

Community
Pathogens



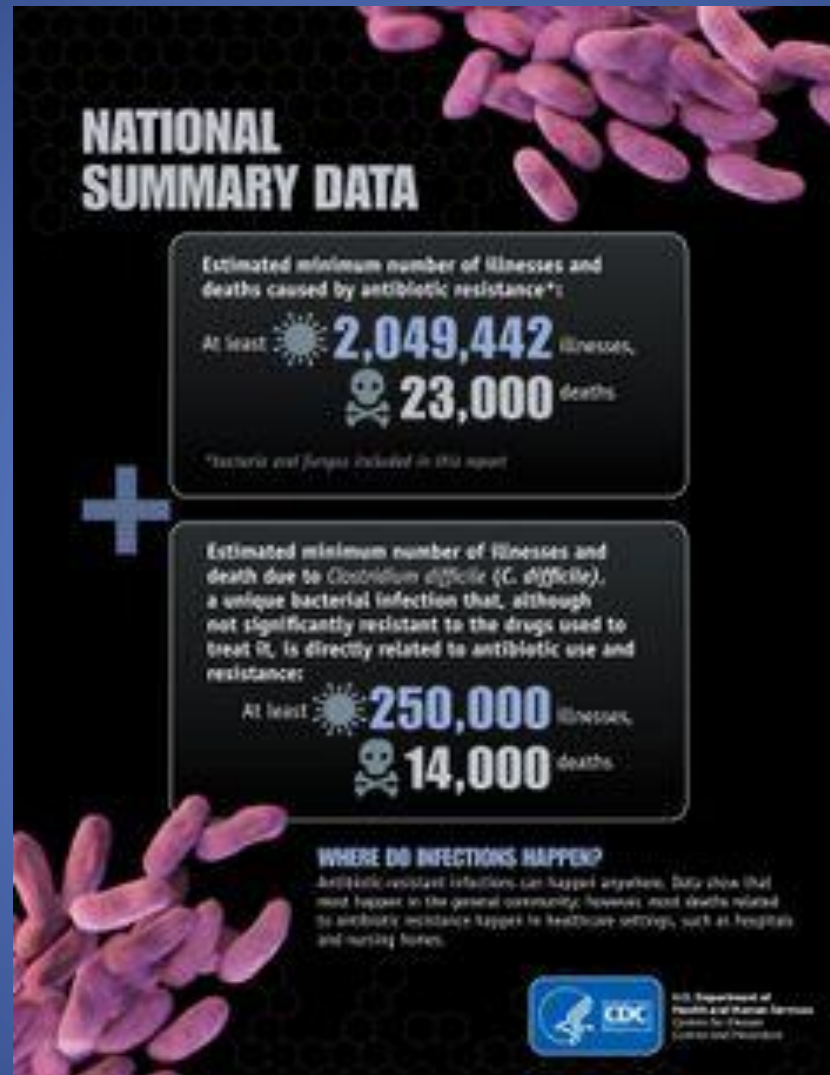
Healthcare
Pathogens



Changing Landscape of Healthcare

- **Organizational factors affect HAI prevention**
 - Administrative policies
 - Antimicrobial utilization
 - Staffing
 - Education
- **Organism adaptation to its environment**
- **Increased prevalence of antimicrobial-resistant pathogens**

New CDC Estimates



Source: Centers for Disease Control and Prevention

Copyright 2017 Infection Prevention Institute

MDRO's are Epidemiologically Important Pathogens

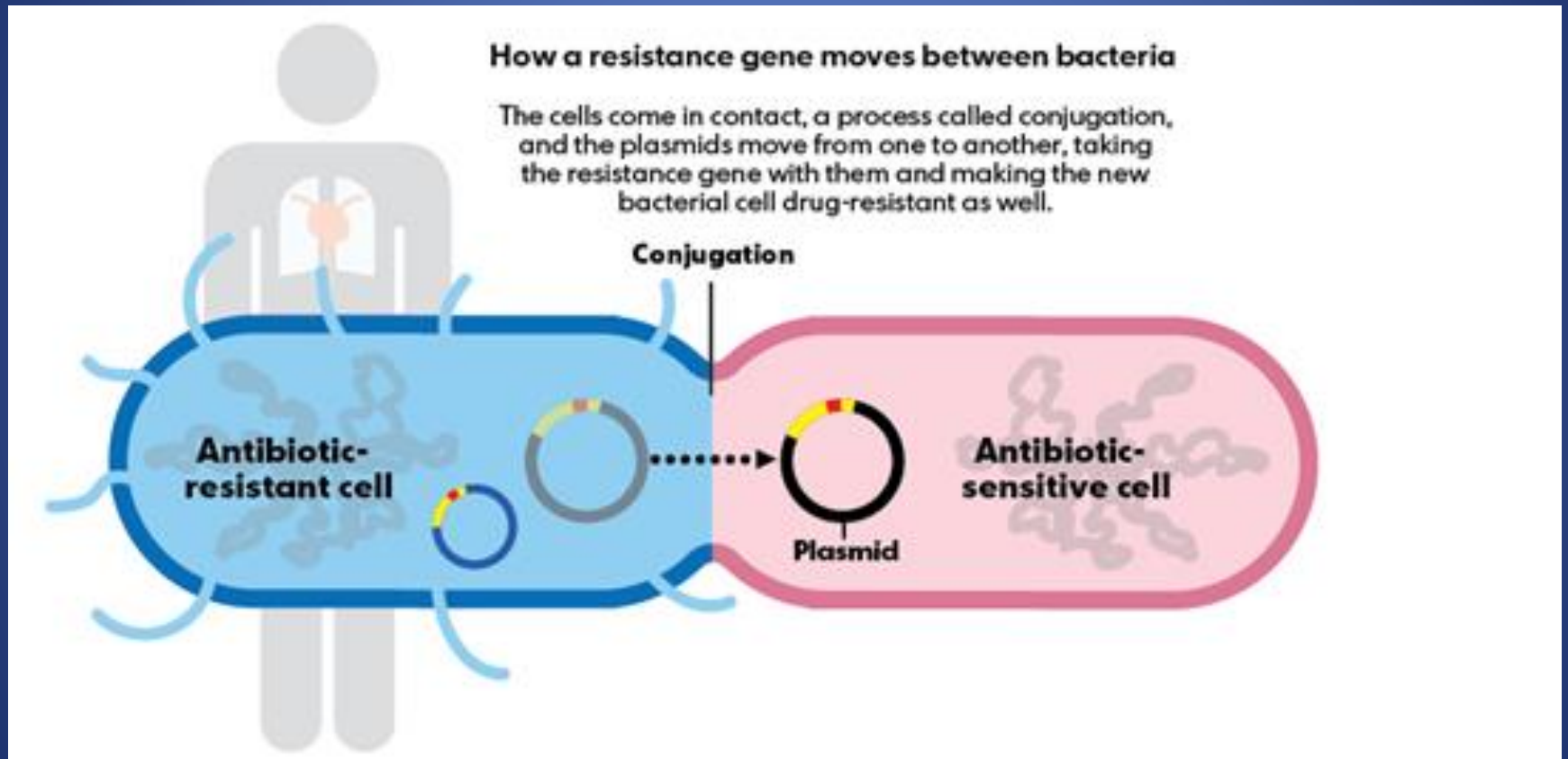
- Options for treatment are limited
- MDRO's are associated with:
 - Increased lengths of stay
 - Increased costs
 - Increased morbidity and mortality
- Can be transmitted in healthcare facilities and affect younger adult residents

Source: Centers for Disease Control and Prevention Guideline for Control of Multidrug-Resistant Organisms in Healthcare Settings, 2006.

Key Definitions

- Antibiotic
- Antimicrobial
- Antiseptic
- Antisepsis
- Disinfectant
- Sanitizer
- Antibiotic Stewardship

Resistance in Action



SUPER BUGS...

"Survival of the fittest"

Realize they are here to stay



- In the environment
- In all healthcare facilities
- In or on ourselves

Practice Prevention Methods

Introduction

- The modern age of antibiotic therapeutics was launched in the 1930s with sulfonamides and the 1940s with penicillin
- Since then, many antibiotic drugs have been developed, most aimed at the treatment of bacterial infections
- These drugs have played an important role in the dramatic decrease in morbidity and mortality due to infectious diseases
- While the absolute number of antibiotic drugs is large, there are few unique antibiotic targets

Untoward Effects of Antibiotics

- Antibiotic resistance
- Adverse drug events (ADEs)
 - Hypersensitivity/allergy
 - Drug side effects
 - Diarrheal Infections
 - Antibiotic-associated diarrhea/colitis
- Increased healthcare costs

Ohl CA, Luther VP. J. Hosp. Med. 2011;6:S4

Copyright 2017 Infection Prevention Institute

MDRO's are Epidemiologically Important Pathogens

Options for treatment are limited

MDRO's are associated with:

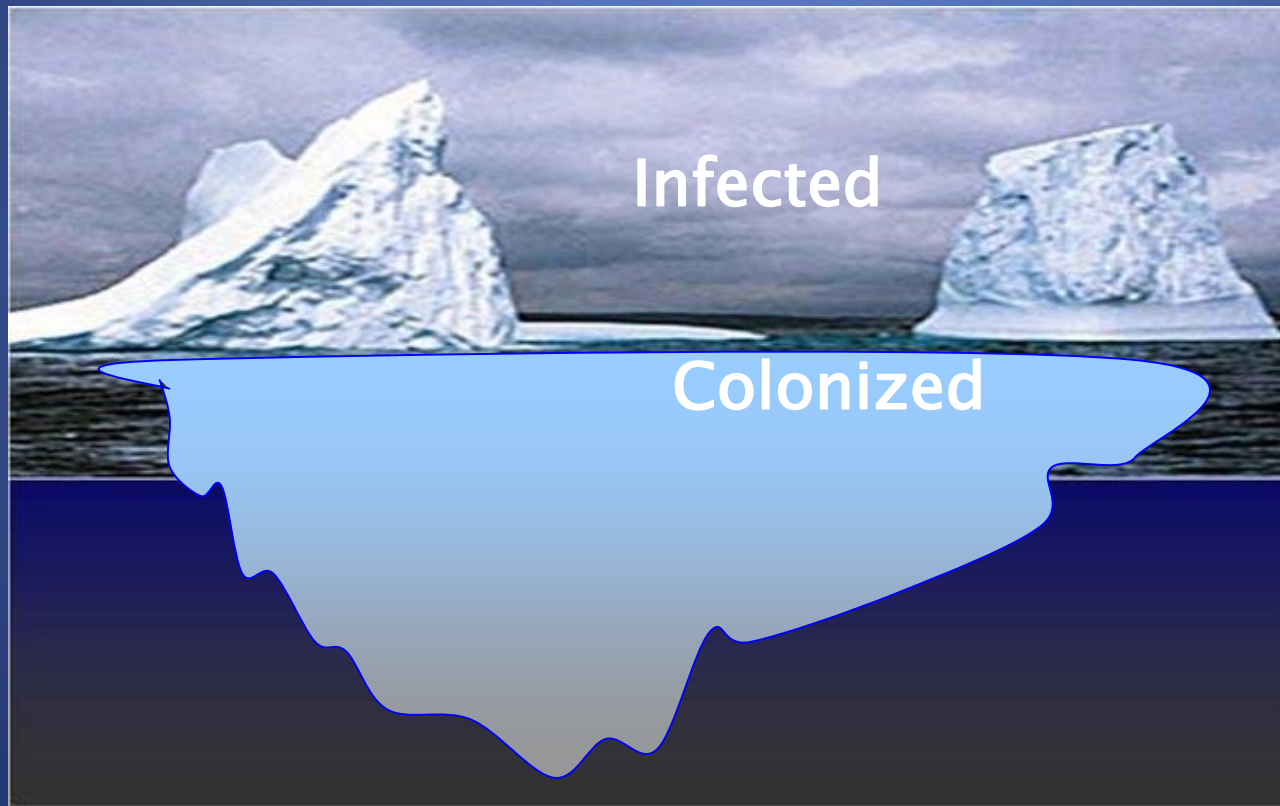
- Increased lengths of stay
- Increased costs
- Increased morbidity and mortality

Can be transmitted in healthcare facilities

Source: Centers for Disease Control and Prevention Guideline for Control of Multidrug-Resistant Organisms in Healthcare Settings, 2006.

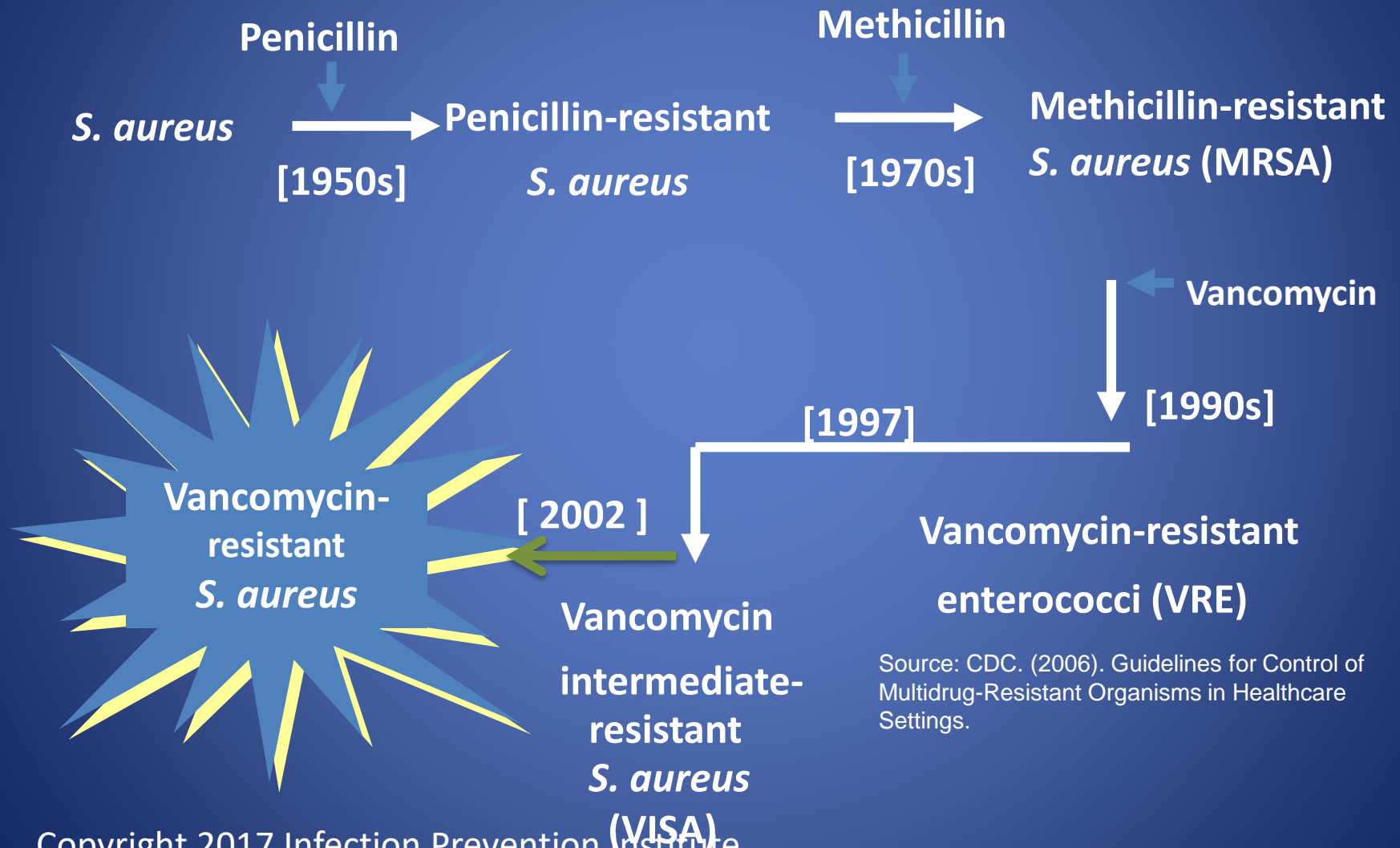
Active Surveillance

- ▶ **Active surveillance helps identify not only infected but also colonized persons**



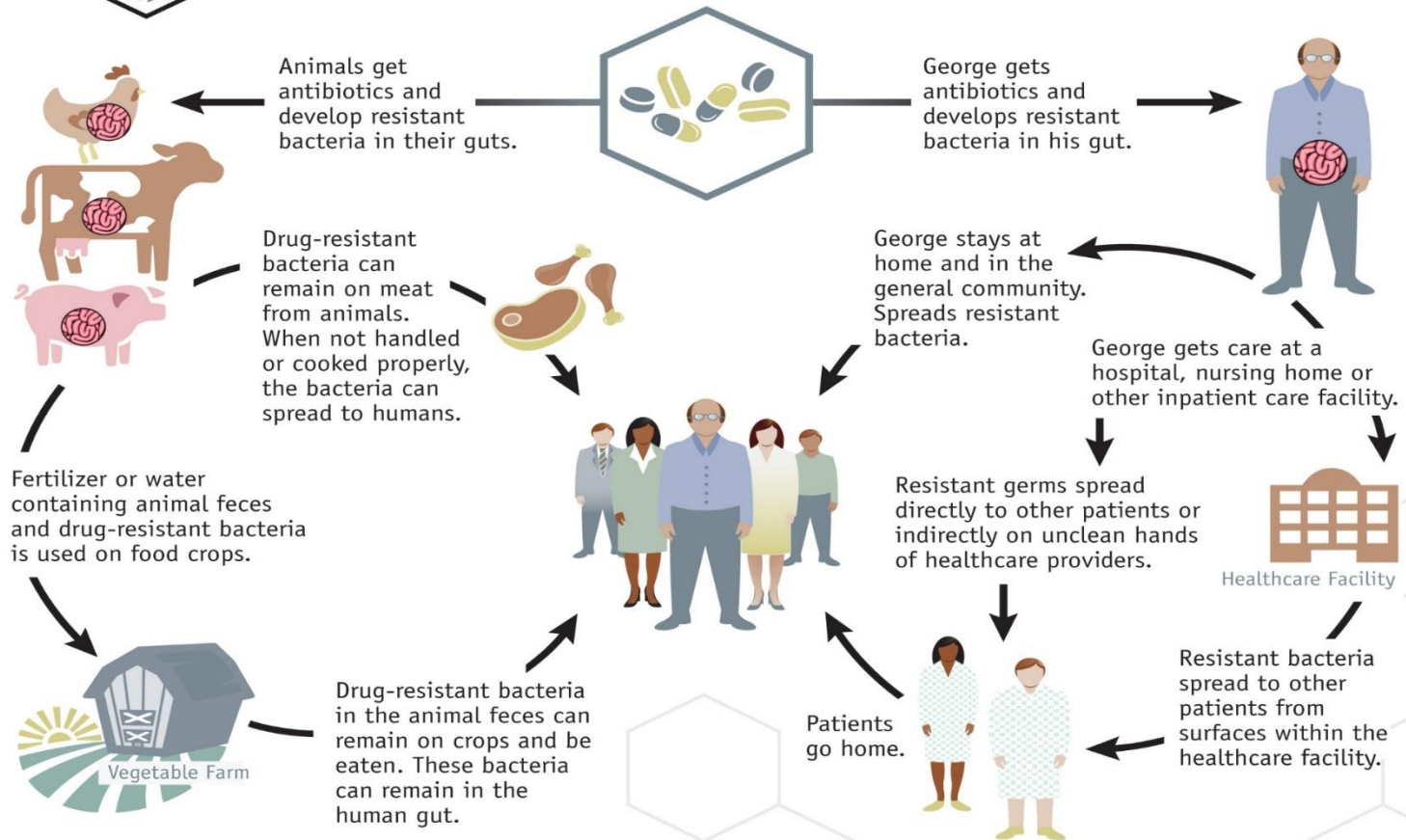
Source: Hand Hygiene Core-Supplemental Slides, Centers for Disease Control and Prevention, 2005.
Copyright 2017 Infection Prevention Institute

Evolution of Drug Resistance in *S. aureus*





Examples of How Antibiotic Resistance Spreads



Simply using antibiotics creates resistance. These drugs should only be used to treat infections.

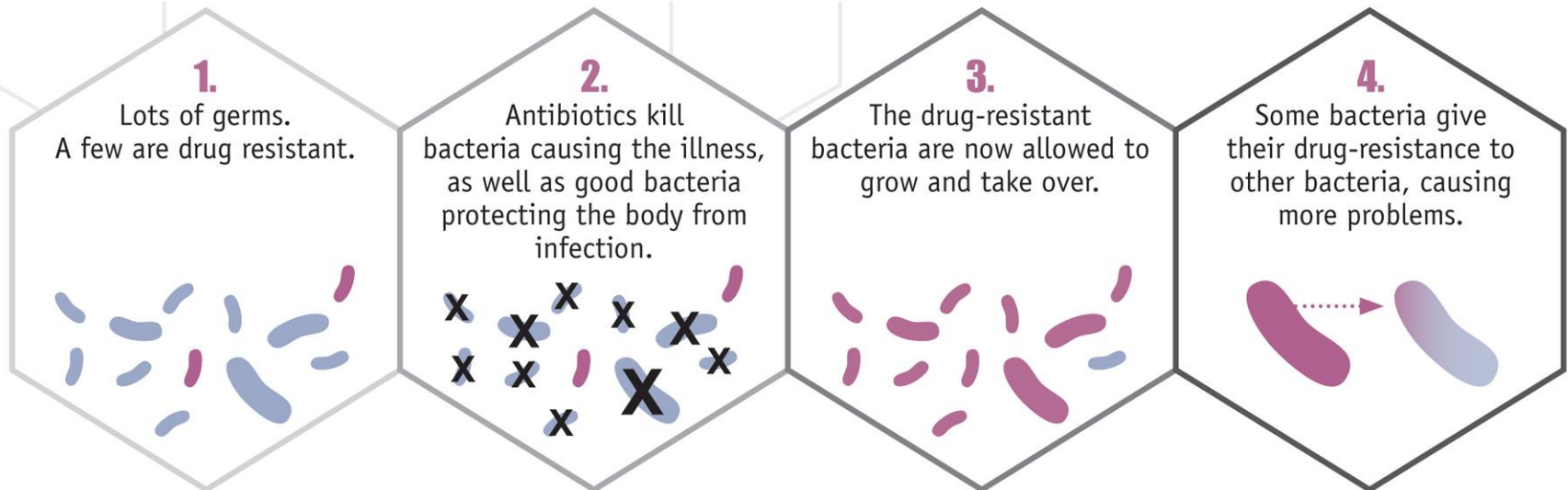
Source: Centers for Disease Control and Prevention

Copyright 2017 Infection Prevention Institute

Resistance in Action



How Antibiotic Resistance Happens

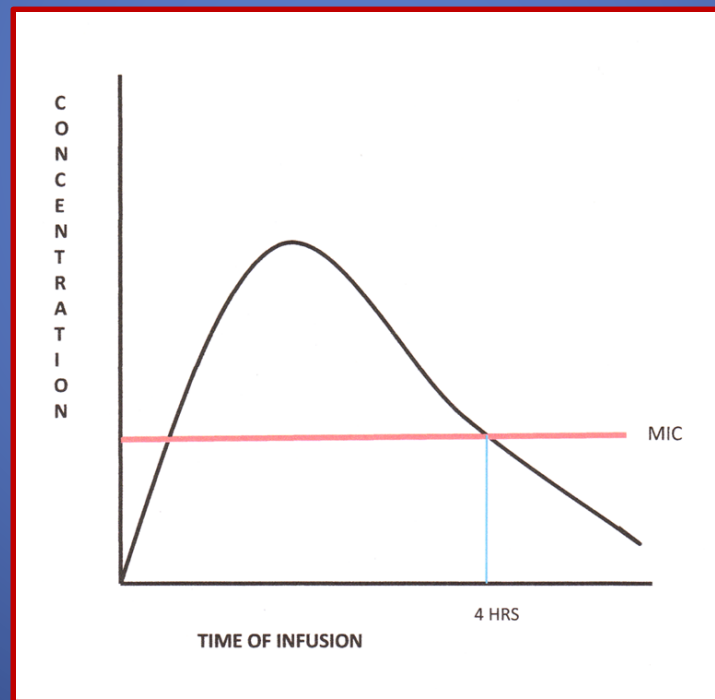


Source: Centers for Disease Control and Prevention

Copyright 2017 Infection Prevention Institute

Time Above the Mean Inhibitory Concentration (MIC)

- Therapeutic levels of drug
- Prescribed time
- Correct dosing for body weight



SUPER BUGS?

- MRSA (Methicillin Resistant *Staph aureus*)
- CRE (Carbapenem-Resistant Enterobacteriaceae)
- ACINETOBACTER sp.
- NOROVIRUS
- *CURRENT ORGANISMS OF CONCERN ??*

ESBL and CRE

ESBL: Extended-Spectrum Beta Lactamase-Producing gram-negative bacteria

CRE: Carbapenem Resistant Enterobacteriaceae

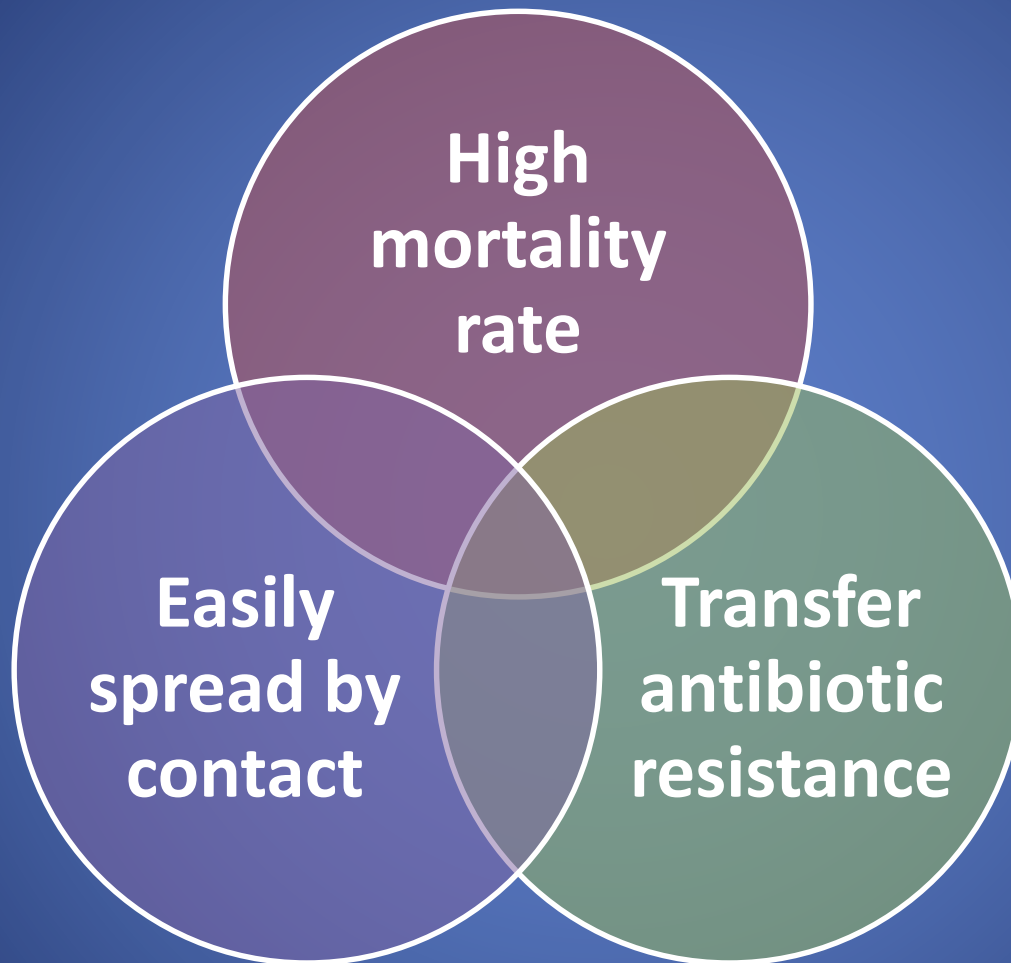
Cause variety of infections:

- Pneumonia
- Bloodstream Infections
- Wound infections
- Resistant to many antibiotics and difficult to treat



Source: APIC Text, Association for Professionals In Infection Control and Epidemiology, 2009.

Why the Hype on CRE?



ESBL

- Gram negative organisms that produce an enzyme called beta-lactamase that causes resistance to these antibiotics:
 - Penicillins
 - Cephalosporins (1st, 2nd, 3rd & 4th generation) (Keflex, cefepine)
 - Monobactams (Azactam)
 - One or more Carbapenem
- **Can usually be treated with one of the Carbapenems:**
 - Meropenem, Imipenem, Ertapenem, Doripenem
- **Commonly isolated from:**
 - Abscesses, blood, catheter tips, lungs, sputum, peritoneal fluid
- **Risk factors include:**
 - Recent surgery or instrumentation, admission to ICU, recent Abx therapy (esp. Beta lactams), prolonged hospital stay

Source: APIC Text, Association for Professionals In Infection Control and Epidemiology, 2009.

Copyright 2017 Infection Prevention Institute

CRE

- Gram negative organisms that produce one type of beta-lactamase enzyme called carbapenemase
- Occurs typically in the Enterobacteriaceae family of bacteria
- Confers resistance to all currently available antibiotics, including Carbapenems
- Carbapenem Resistant Enterobacteriaceae
- Most common **CRE** is:
 - *Klebsiella pneumoniae* - **KPC**

Source: CDC MMWR, Vol. 58 No. 10 3/20/09

Copyright 2017 Infection Prevention Institute

CDC Core Elements for Antibiotic Stewardship

Leadership Commitment

Accountability

Drug Expertise

Take Action Through Policy & Practice Change to Improve Antibiotic Use

Tracking and Reporting Antibiotic Use & Outcomes

Education

Leadership Commitment

Write statements in support of improving antibiotic use to be shared with staff, residents and families

Include stewardship-related duties in position descriptions for the medical director, clinical nurse leads, and consultant pharmacists in the facility

Communicate with nursing staff and prescribing clinicians the facility's expectations about use of antibiotics and the monitoring and enforcement of stewardship policies

Create a culture, through messaging, education, and celebrating improvement, which promotes antibiotic stewardship

Accountability

Empower the Medical Director to set standards for antibiotic prescribing practices for all clinical providers credentialed to deliver care in a nursing home and be accountable for overseeing adherence.

Empower the Director of Nursing to set the practice standards for assessing, monitoring and communicating changes in a resident's condition by front-line nursing staff. Nurses and nurse aides play a key role in the decision-making process for starting an antibiotic. The knowledge, perceptions and attitudes among nursing staff of the role of antibiotics in the care of nursing home residents can significantly influence how information is communicated to clinicians who are deciding whether to initiate antibiotic therapy.

Therefore the importance of antibiotic stewardship is conveyed by the expectations set by nursing leadership in the facility.

Engage the consultant pharmacist in supporting antibiotic stewardship oversight through quality assurance activities such as medication regimen review and reporting of antibiotic use data.

Additional Responsibilities

Infection Prevention Program Coordinator: Infection prevention coordinators have key expertise and data to inform strategies to improve antibiotic use. This includes tracking of antibiotic starts, monitoring adherence to evidence-based published criteria during the evaluation and management of treated infections, and reviewing antibiotic resistance patterns in the facility to understand which infections are caused by resistant organisms.

Consultant laboratory: Nursing homes contracting laboratory services can request reports and services to support antibiotic stewardship activities. Examples of laboratory support for antibiotic stewardship include developing a process for alerting the facility if certain antibiotic-resistant organisms are identified, providing education for nursing home staff on the differences in diagnostic tests available for detecting various infectious pathogens, and creating a summary report of antibiotic susceptibility patterns from organisms isolated in cultures.

State and local health departments: Nursing homes benefit from the educational support and resources on antibiotic stewardship and infection prevention which are provided by the Healthcare-Associated Infection (HAI) Prevention programs at state and local health departments.

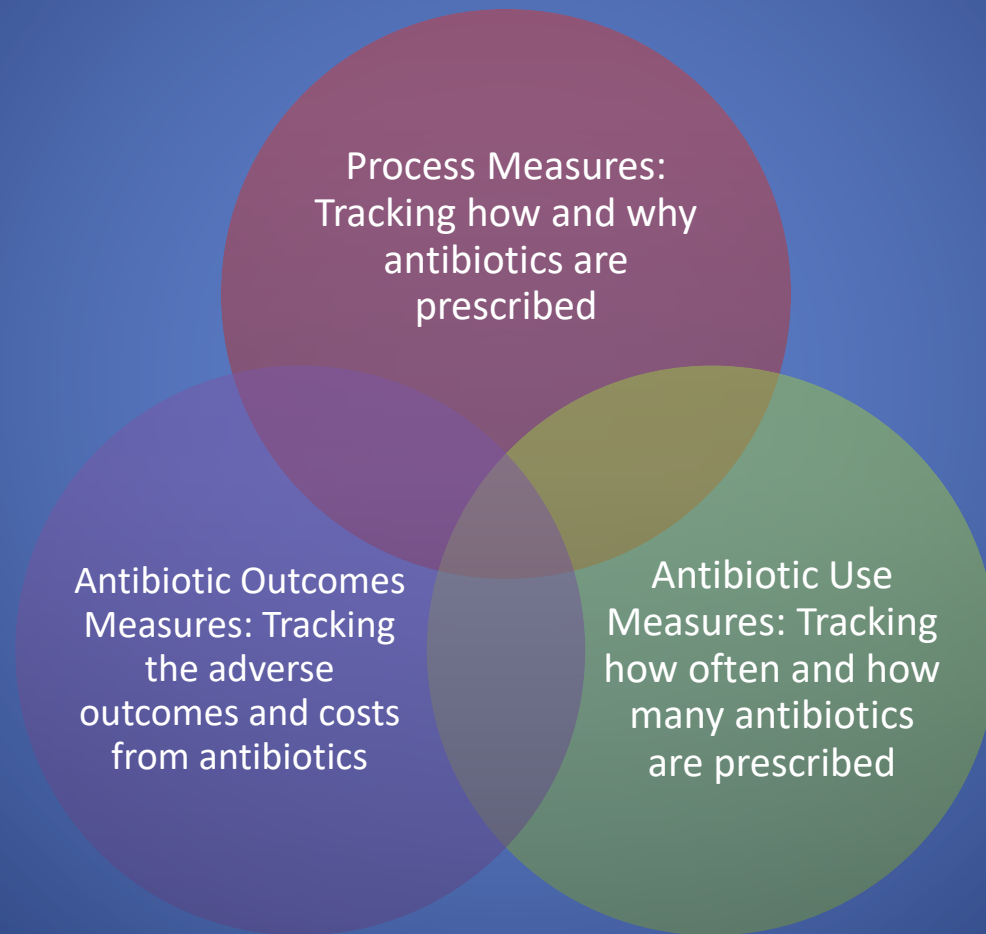
Drug Expertise

- Work with a consultant pharmacist who has received specialized infectious diseases or antibiotic stewardship training. Example training courses include:
 - Making a Difference in Infectious Diseases (MAD-ID) antibiotic stewardship course: <http://mad-id.org/antimicrobial-stewardship-programs/>
 - The Society for Infectious Diseases Pharmacists antibiotic stewardship certificate program: <http://www.sidp.org/page-1442823>
- Partner with antibiotic stewardship program leads at the hospitals within your referral network.
- Develop relationships with infectious disease consultants in your community interested in supporting your facility's stewardship efforts.

Take Action: Policy & Practice Change

- **Develop policies that support optimal antibiotic use:** Ensure that current medication safety policies, including medication regimen review, developed to address Centers for Medicare and Medicaid Services (CMS) regulations are being applied to antibiotic prescribing and use.
 - **Broad interventions to improve antibiotic use:** Standardize the practices which should be applied during the care of any resident suspected of an infection or started on an antibiotic.
 - **Infection and syndrome specific interventions to improve antibiotic use:** Identify clinical situations which may be driving inappropriate courses of antibiotics such as asymptomatic bacteriuria or urinary tract infection prophylaxis and implement specific interventions to improve use.
- These practices include improving the evaluation and communication of clinical signs and symptoms when a resident is first suspected of having an infection, optimizing the use of diagnostic testing, and implementing an antibiotic review process, also known as an “antibiotic time-out,” for all antibiotics prescribed in your facility.

Tracking and Reporting



Education

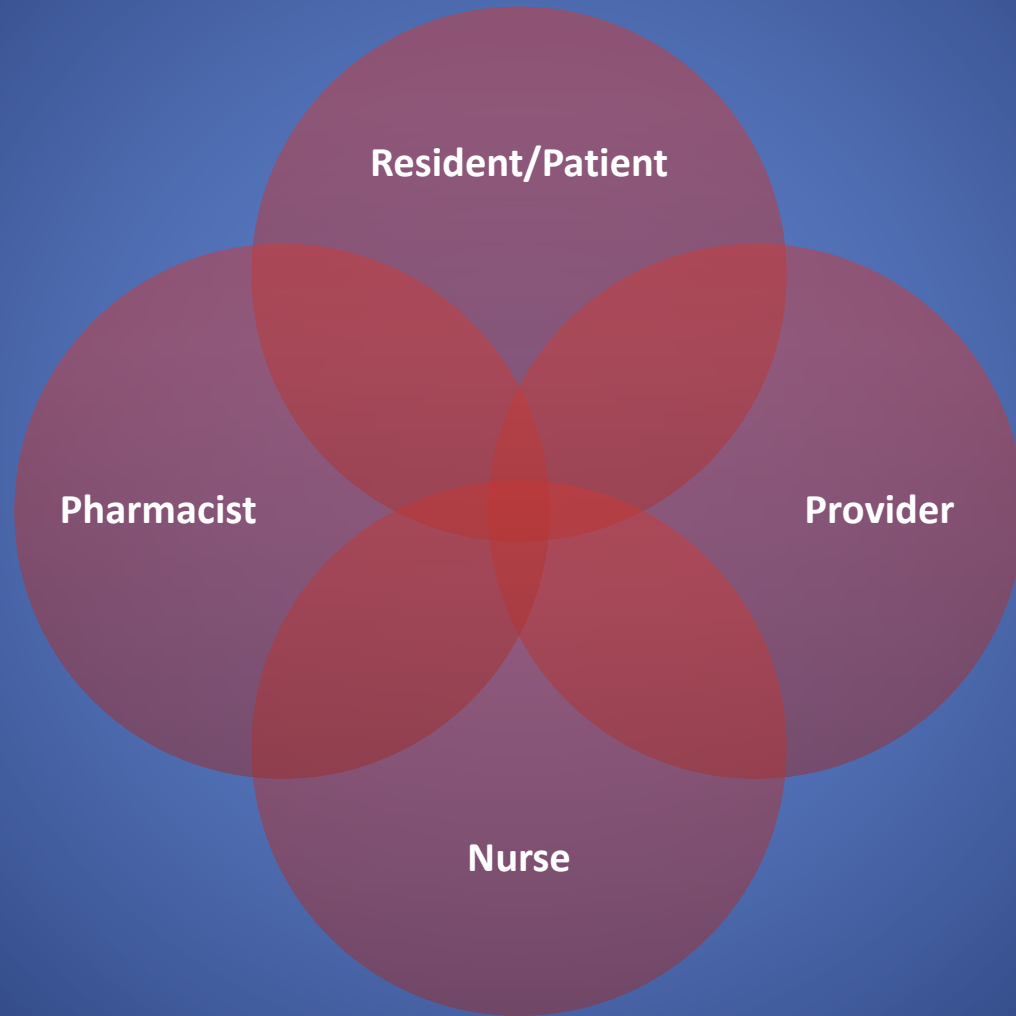
- Provide antibiotic stewardship education to clinicians, nursing staff, younger adult residents, and families
- Provide education and feedback to providers and staff
- Engage residents and their families in stewardship educational efforts

Monitoring and Compliance

- Develop measures
 - Observation of adherence to protocols and practice, contact precautions, hand hygiene
 - New infections
 - Organism prevalence
 - Microbiological antibiograms resistance trends
- Collect data
- Analyze data
- Present findings
- Develop strategies for improvement

Source: Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, Centers for Disease Control and Prevention, 2007.

Collaboration Creates Success



Conclusion

- The therapeutic benefit of antibiotics should be balanced with their unintended adverse consequences
- Inappropriate antibiotic use is associated with increased antibiotic resistance, adverse drug effects and other infection
- Antibiotic stewardship is important for preserving existing antibiotics and improving patient outcomes
- Antibiotic prescribing should be prudent, thoughtful and rational

References

- WHO Patient Safety Curriculum for Medical Schools, electronically accessible from:
http://www.who.int/patientsafety/activities/technical/medical_curriculum_slides/en/
- CDC Antibiotic Resistance Resources, electronically accessible from:
<http://www.cdc.gov/hai/patientsafety/patient-safety.html>
- 10 Things You Can Do to Be a Safe Patient, electronically accessible from:
<http://www.cdc.gov/features/patientsafety/>

Questions and Answers

- Contact Information:
 - Email: Hudson.garrett@nadona.org

CEU/CPE Instructions

To receive your CEU/CPE Certificate:

1. Complete the webinar survey at
<https://www.surveymonkey.com/r/strategiesforantibioticstewardshipprogram>
2. Once webinar code is obtained, please visit
www.NutriciaLearningCenter.com and click on “CE Credit Request”
3. Enter the webinar code obtained
4. Certificate will be visible for download on your NLC dashboard

