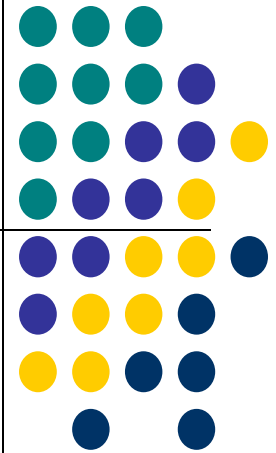


# Florida Department of Health Antibiotic Stewardship

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**Tammy Jernigan, ARNP, MSN, CIC**  
**Health Care-Associated Infection Preventionist**  
**Division of Disease Control and Health Protection**  
**Bureau of Epidemiology**  
**November 20, 2015**

# Objectives

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- Provide an overview of antibiotic stewardship program components for hospitals
- Discuss the use and misuse of antibiotics in the U.S.
- Identify strategies to improve patient care through antibiotic stewardship programs
- Summarize the National Action Plan for Combating Antibiotic-Resistant Bacteria



# Get Smart Week

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To raise awareness of the threat of antibiotic resistance and the importance of appropriate antibiotic prescribing and use







WHITewater: ANGUISH INSIDE THE WHITE HOUSE

# Newsweek

March 28, 1994

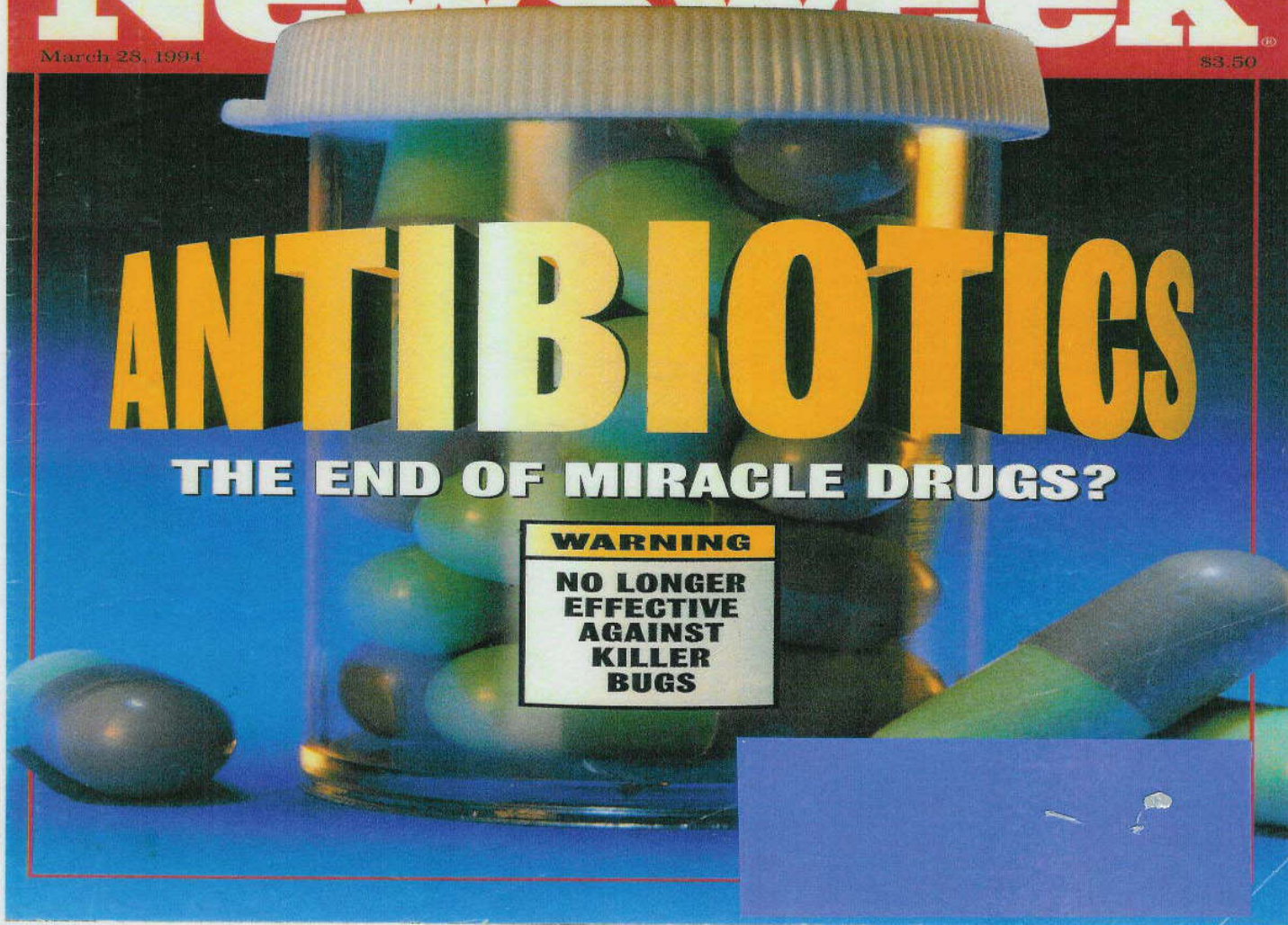
\$3.50

# ANTIBIOTICS

THE END OF MIRACLE DRUGS?

**WARNING**

**NO LONGER  
EFFECTIVE  
AGAINST  
KILLER  
BUGS**



# Antibiotic Overuse

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- “It has been recognized for several decades that up to 50% of antimicrobial use is inappropriate”
  - Given when they are not needed
  - Continued when they are no longer necessary
  - Given at the wrong dose
  - Broad-spectrum agents are used to treat very susceptible bacteria
  - The wrong antibiotic is given to treat an infection

[www.journals.uchicago.edu/doi/pdf/10.1086/510393.IDSA/SHEA](http://www.journals.uchicago.edu/doi/pdf/10.1086/510393.IDSA/SHEA)  
Guidelines for antibiotic stewardship programs

# Antibiotic Overuse Effects on Patient Lives

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- Approximately 5% of hospitalized patients experience an adverse event caused by antibiotics
  - *Clostridium difficile* infection
  - Allergic reactions
  - Hepato- or nephrotoxicity.
- Complications of antibiotics make up 19.3% of all emergency room visits.
- Antibiotics alter normal flora.

# Resistant Organisms



**A poster attached to a curbside mailbox offering advice to World War II servicemen in 1944.**



# ESKAPE Pathogens

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- **E** – *Enterococcus faecium* (VRE)
- **S** – *Staphylococcus aureus* (MRSA)
- **K** – *Klebsiella pneumoniae*
- **A** – *Acinetobacter baumannii*
- **P** – *Pseudomonas aeruginosa*
- **E** – *Extended-spectrum beta-lactamase* positive bacteria such as *E. coli* and *Enterobacter spp.*

# Antibiotic Resistance Threats in the U.S.

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## Urgent Threats

- *Clostridium difficile*
- Carbapenem-resistant *Enterobacteriaceae* (CRE)
- Drug-resistant *Neisseria gonorrhoeae*

# Antibiotic Resistance Threats in the U.S.



## Serious Threats

- Multidrug-resistant *Acinetobacter*
- Drug-resistant *Campylobacter*
- Fluconazole-resistant *Candida*
- Extended-spectrum beta-lactamase producing\* Enterobacteriaceae (ESBLs)
- Vancomycin-resistant *Enterococcus* (VRE)
- Multidrug-resistant *Pseudomonas aeruginosa*
- Drug-resistant nontyphoidal *Salmonella*
- Drug-resistant *Salmonella typhi*
- Drug-resistant *Shigella*
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- Drug-resistant *Streptococcus pneumoniae*
- Drug-resistant TB

# Improving Antibiotic Use

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- Educating clinicians about resistance and optimal prescribing
- Monitoring antibiotic prescribing and resistance patterns
- Regularly reporting information on antibiotic use and resistance to doctors, nurses and relevant staff
- Implementing at least one recommended action, as described in the following examples.

# Example



## Antibiotic “Time-Out”

- **Mandatory reassessment at days 3, 7 and 10 showed decreased MDRO causing nosocomial infections.**
  - All: 37% to 13%, <0.001 p-value
  - MRSA: 61% to 13 %, <0.001 p-value
  - Ceftriaxone-resistant *Enterobacteriaceae*: 37% to 13%, <0.001 p-value
- **A mandatory day 3 reassessment for all patients receiving antibiotics reduced average treatment duration in ICU from 14.2 to 11.9 (<0.001 p-value).**
- **None of these strategies were associated with worse clinical outcomes.**



# Core Members of a Multidisciplinary Antimicrobial Stewardship Team

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- Infectious disease physician
- Clinical pharmacist with infectious disease training
- Clinical microbiologist
- Information systems specialist
- Infection control professional
- Hospital epidemiologist, if available

# Core Members of a Multidisciplinary Antimicrobial Stewardship Team

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- The support and collaboration of hospital administration
- Medical staff leadership
- Local providers in the development and maintenance of antimicrobial stewardship programs is essential

# Policies That Support Optimal Antibiotic Use

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- Implement policies that apply in all situations to support optimal antibiotic prescribing.
- **Document dose, duration, and indication.** Specify the dose, duration and indication for all courses of antibiotics so they are readily identifiable.
- Making this information accessible helps ensure that antibiotics are modified as needed and/or discontinued in a timely manner.

# Diagnosis and Infection Specific Interventions

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Does your facility have specific interventions in place to ensure optimal use of antibiotics to treat the following common infections?

- Community-acquired pneumonia
- Urinary tract infection
- Skin and soft tissue infections
- Surgical prophylaxis
- Empiric treatment of methicillin-resistant *Staphylococcus aureus* (MRSA)

# Methicillin-Resistant *Staphylococcus aureus* (MRSA)





## Limiting Inappropriate Use

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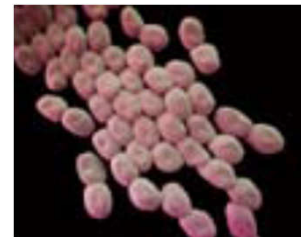
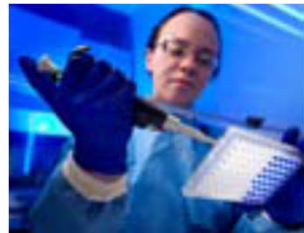
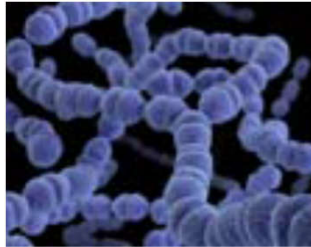


- De-Escalation: Adequate empiric treatment transformed to target therapy with culture results
- Dose Optimization: Using best dose based on renal function, disease state, serum concentration and other patient-specific factors

# Antibiotic Stewardship Checklist



- Checklist for Core Elements of Hospital Antibiotic Stewardship Programs



National Center for Emerging and Zoonotic Infectious Diseases Division of Healthcare Quality Promotion



# NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA

MARCH 2015



# National Action Plan Highlights



**The plan sets 1- 3- and 5-year targets in each of the five overarching goals, which are to:**

1. Slow the emergence of resistant bacteria and prevent the spread of resistant infections
2. Strengthen national one-health surveillance efforts to combat resistance (the "one-health" approach to disease surveillance integrates data from multiple monitoring networks, according to the White House)
3. Advance development and use of rapid and innovative diagnostic tests for the identification and characterization of resistant bacteria
4. Accelerate basic and applied research and development for new antibiotics, other therapeutics, and vaccines
5. Improve international collaboration and capacities for antibiotic resistance prevention, surveillance, control, and antibiotic research and development

# National Action Plan, continued



**The plan sets goals for eradicating pathogens that have been labeled urgent or serious threats by the Centers for Disease Control and Prevention. The 2020 targets include:**

1. 50% reduction from 2011 estimates in the incidence of *Clostridium difficile*
2. 60% reduction in hospital-acquired carbapenem-resistant Enterobacteriaceae infections
3. 35% reduction in hospital-acquired multidrug-resistant *Pseudomonas* species infections
4. 50% reduction from 2011 estimates in methicillin-resistant *Staphylococcus aureus* bloodstream infections
5. By 2020, a 50% reduction in inappropriate antibiotic use in outpatient settings and a 20% reduction in inpatient settings
6. By 2020, the development and wide dissemination of rapid diagnostic tests that can be used in a physician's office or at the hospital bedside to distinguish between viral and bacterial infections, and thus help ensure more appropriate use of therapeutics



# Milestones Within One Year

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- The Department of Health and Human Services (HHS), Department of Defense (DOD), and Veterans Affairs (VA) will review existing regulations and propose new ones, as needed, requiring hospitals, ambulatory surgery centers, dialysis facilities, and other inpatient facilities to implement robust antibiotic stewardship programs that align with the CDC *Core Elements*.
- HHS, DOD, and VA will work together to optimize standardization of stewardship programs and activities, including monitoring activities and reporting criteria.
- The National Healthcare Safety Network (NHSN) will begin tracking the number of health care facilities with stewardship policies and programs in place.

# Milestones Within Three Years



All hospitals that participate in Medicare and Medicaid programs must comply with Conditions of Participation (COP). The Centers for Medicare & Medicaid Services (CMS) will issue new COPs or revise current COP *Interpretive Guidelines* to advance compliance with recommendations in CDC's *Core Elements of Hospital Antibiotic Stewardship Programs*. HHS, DOD, and VA will also implement policies that:

- Encourage implementation of antibiotic stewardship programs as a condition for receiving Federal grants for health care delivery (e.g., in community health care centers).
- Require health facilities operated by the U.S. Government to develop and implement antibiotic stewardship programs and participate in NHSN reporting.
- Require all acute care hospitals governed by the CMS COP to implement antibiotic stewardship programs.
- Require CMS to expand COP requirements to apply to long-term acute care hospitals, other post-acute facilities, ambulatory surgery centers, and dialysis centers.
- Require CMS to revise existing Interpretive Guidelines (IGs), as needed, to include antimicrobial stewardship improvements.

# Milestones in Five Years



DOD will support antibiotic stewardship programs and interventions critical for maintaining quality health care throughout the Military Healthcare System (MHS).

CDC will work with selected hospital systems to expand antibiotic use reporting and stewardship implementation, and will partner with nursing organizations to develop and implement stewardship programs and interventions in a set of nursing homes.

All states will establish or enhance antibiotic stewardship activities in health care delivery settings.

Federal Drug Administration (FDA) strategy to ensure the elimination of the use of medically important antibiotics for growth promotion in food-producing animals and bring under veterinary oversight other in-feed and in-water uses of antibiotics that are medically important for treatment, control, and prevention of disease.

# Antibiotic Stewardship: Key Strategies

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- Educating clinicians about resistance and optimal prescribing
- Monitoring antibiotic prescribing and resistance patterns
- Assess the status of changes made to sustain and spread improvements
- Provide feedback to staff on performance (including jobs well done)

## Next Steps in ASP Education

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- Quarterly Webinars: February, May, and July 2016  
Presentation by hospital clinical pharmacists on how to perform antibiotic stewardship in the acute care setting
- Hospitals sharing of tools and successes
- Feedback and evaluation surveys



# References

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2. Peleg AY, Hooper DC. Hospital-acquired infections due to gram-negative bacteria. *N Engl J Med*. 2010;362(19):1804-1813.
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# Questions

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Tammy Jernigan, ARNP, MSN, CIC  
Health Care-Associated Infection Preventionist  
Florida Department of Health  
Division of Disease Control and Health Protection  
Bureau of Epidemiology  
Phone: 850-766-7582  
E-mail: [Tammy.Jernigan@flhealth.gov](mailto:Tammy.Jernigan@flhealth.gov)