Antibiotic Resistance

A One Health Perspective

Mike Apley
U.S. National Action Plan for Combating Antibiotic-Resistant Bacteria

• The National Action Plan directs federal agencies to accelerate response to antibiotic resistance, and has pushed transformative improvements across the country that strengthen and expand the ability to prevent, identify, and respond to these threats.
U.S. National Action Plan for Combating Antibiotic-Resistant Bacteria

- Slow the emergence of resistant bacteria and prevent the spread of resistant infections
- Strengthen national One Health surveillance efforts to combat resistance
- Advance development and use of rapid and innovative diagnostic tests for identification and characterization of resistant bacteria
- Accelerate basic and applied research and development for new antibiotics, other therapeutics, and vaccines
- Improve international collaboration and capacities for antibiotic resistance prevention, surveillance, control, and antibiotic research and development
Presidental Advisory Council on Combating Antibiotic-Resistant Bacteria (PACCARB)

The Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria (PACCARB) provides advice, information, and recommendations to the Secretary regarding programs and policies intended to support and evaluate the implementation of U.S. government activities related to combating antibiotic-resistant bacteria.

I would like info on...

- [The September 26, 2018 Public Meeting](#)
- [The upcoming January 30-31, 2019 Public Meeting](#)

About PACCARB

Learn about why PACCARB was established and what it does.

Membership

Learn about PACCARB's voting members, organizational liaisons, ex officio members, and advisory council staff.

Meetings

Find details about upcoming PACCARB meetings and related important information.
INITIAL ASSESSMENTS OF THE NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA

MARCH 2016

PAC CARB
Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria
PACCARB identified 6 overarching themes requiring further attention by the USG

• Fully embracing a one health approach
• A lead federal champion of the CARB initiative
• Coordination of the federal response
• Resource allocation
• Development of critical partnerships
• Economic incentives for developing and deploying new diagnostic, preventive, and therapeutic tools.
PACCARB on One Health

• “One Health is defined as multiple disciplines and professions working locally, nationally and globally to achieve optimal health in the human, animal and environmental domains.

• Microbes do not respect geographical, political or species boundaries.

• The relationship between humans and domesticated animals in the transmission of microbes is a central principle in any rational approach to solving antimicrobial resistance (AMR).

• Therefore, One Health must be seen as an organizing principle to be used to better understand resistance and to generate new interventions to prevent or reduce the occurrence and transmission of antibiotic resistance.”
PACCARB on One Health

• “All five WGs stressed this principle, but the efforts vis-à-vis AMR in animal and human health remain largely disconnected.

• In addition, there needs to be further exploration of the potential contamination of the environment with antibiotics and metabolites and the impact on our health.

• New approaches are clearly needed. The interdisciplinary integration and dialogue between veterinary and human health institutions and subject matter experts needs to become more frequent and more in depth to ensure that our ability to combat antibiotic resistance in both human and animal populations is better coordinated and optimized.”
Reports & Recommendations

PACCARB
Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria

2018

September 26, 2018: Report 3 - PDF

March 2, 2018: Resolution 1 - PDF

March 2, 2018: Resolution 2 - PDF

2017

September 14, 2017: Report 2 - PDF

2016

March 31, 2016: Report 1 - PDF
PACCARB Past Meetings

• All public meetings, including archived webcasts and PDFs of presentations, may be accessed on the PACCARB site.

• Looking at the agendas will illustrate the focus of the PACCARB in seeking outside input.
Total Use = Effective Use + Ineffective Use

Perceived Effective Use

Antibiotic Resistance Selection = Antibiotic Exposition + Exposed Bacterial Population

The First Failure = Failure to prevent the infection

The Ultimate Antibiotic Failure = Bacterial Population Exposure Without Achieving the Desired Effect

I Don’t Know What Else to Do Use
Antimicrobial Stewardship

• Antimicrobial stewardship refers to coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration.

• Antimicrobial stewards seek to achieve optimal clinical outcomes related to antimicrobial use, minimize toxicity and other adverse events, reduce the costs of health care for infections, and limit the selection for antimicrobial resistant strains.
What is “Stewardship”?

1. Responsibility for appropriate diagnostics and establishment of an accurate and functional case definition

2. Is there a non-antibiotic alternative which will appropriately prevent, control, or treat this disease challenge?

3. Selection of an antibiotic which has been demonstrated to be safe and effective for this purpose

4. Assuring use of the antibiotic as shown to be safe and effective

5. Is this antibiotic intervention still necessary?

While asking...

Yes...

If not...

Enter...

No: Stop

While...

Enter...
0.9% Sodium Chloride Injection, USP

250 mL

Lot 23-066-JT  Exp 1 Nov 2014

NDC 0409-7983-07

Each 100 mL contains sodium chloride 900 mg in water for injection. Electrolytes per 1000 mL:

- Sodium 154 mEq
- Chloride 90 mEq

Date: 1/18/13
Time: 11:40 AM
Tech: __

RX ONLY

CONTAINS DEHP

Latex

Dropper no.: 018-1637 AL

Drug Information:

Vancomycin (Vancocin) 1,250 mg in sodium chloride

1.4% 300 mL IVPB

Intravenous

Frequency: Q8H

Flow: 200 mL/hr

Duration: 90 Minutes

Due: 1/18/13 17:00

Discharged after: Date 1/9/13 Time 11:40

MRN: 665251

Location: 17C

Ord# 2397000

Day, Kyle

[3/30/1996]