Pennsylvania’s Response to the Threat of Resistance

Dr. Rachel Levine
Pennsylvania Physician General
Antimicrobial resistance (AMR) is the change in microbes (e.g. bacteria, parasites and fungi) which enable them to withstand treatment by antimicrobial drugs, meaning that the drugs no longer work, or work less effectively.

Source: CDC

Source: Imperial College
The recent discovery of a plasmid-borne colistin resistance gene, *mcr-1*, heralds the emergence of truly pan-drug resistant bacteria

Colistin-resistant *E. Coli* infection; female 46 yrs old Pa. patient in 2016
What drives AMR?

National Prescription Rates

- **262.5 million** courses of antibiotics prescribed by health care providers in 2011
- **842** prescriptions per 1000 persons

Overuse of Abx in animals

- ≥60% of medically important antimicrobials are used in animals*

Source: *FDA Report on antimicrobials sold in 2014

What drives AMR?

Nationally, 48.1% of all hospitals have stewardship programs (2,199 of 4,549); the national goal is 100% of hospitals by 2020.

*A hospital stewardship program is defined as a program following all 7 of CDC’s Core Elements of Hospital Antibiotic Stewardship Programs.

Source: CDC’s National Healthcare Safety Network (NHSN) Survey
GOAL 2. Strengthen National One-Health Surveillance Efforts to Combat Resistance

Actions taken to achieve Goal 2 will fulfill:

- **Executive Order 13676, Section 6:**
  - Strengthening National Surveillance Efforts for Resistant Bacteria

- **Provisions in PCAST Recommendations #2 and #6:**
  - Effective Surveillance & Response for Antibiotic Resistance
  - Improving Stewardship of Existing Antibiotics in Health Care
Overview of Commonwealth Response

• Pennsylvania Get Smart Program
  • Antimicrobial stewardship

• Program for monitoring antimicrobial resistance
Get Smart Program Objectives

- Promote guidelines for antimicrobial stewardship
- Estimate antibiotic prescriptions
- Decrease consumer demand for unnecessary antibiotics
- Increase prevention activities (vaccination and hygiene)
Get Smart Program Initiatives

- LTCFs*
- Communications
- Pediatrics

Pharmacy

Decreased Abx, BSAs prescriptions


Get Smart App
Mobile-ready site

* Long Term Care Facilities
Pediatric Initiative

**Pediatric settings**
- Pediatric clinics Abx stewardship
  - Promote Get Smart guidelines
  - Reduce parental expectations for Abxs
- Collaborations
  - Penn State Hershey Pediatrics
  - Children’s Hospital of Pittsburgh
- Focus
  - Childcare facilities
    - ~7907 facilities
    - ~242,324 children in childcare facilities

Source: www.examiner.com

3. Pennsylvania Department of Human Services
Primary prevention

- Hand hygiene demonstrations are held in child care centers and schools

Dr. Levine reading “Katie Caught a Cold” to children at a child care center in State College, Pa. November 17, 2015
Get Smart Pharmacy Initiative

Objectives

• Engage faculty and students in antimicrobial stewardship
  ▪ Outreach in community pharmacies
• Research on antibiotic prescribing trends
• Collaborator: University of Pittsburgh School of Pharmacy
Examples of activities

- Annual Get Smart workshop
  - Get Smart CDC and State perspective, since 2014
  - Online course “Community Pharmacists Tip the Scales”
    - ~110 students outreach in ~75 com. pharmacies in Allegheny county each year
    - Over 2000 encounters since 2014
- Community outreach
  - Abx quiz, feedback and Get Smart brochures

4. CDC: Weighing in on Antibiotic Resistance (available at www.cdc.gov)
Get Smart Communication Initiative

Objectives

• Disseminate guidelines and training materials
  ▪ Get Smart Web portal
  ▪ Social media Facebook, Twitter
  ▪ Monthly newsletter

• Conduct behavioral research on drivers of abx use

• Coordinate Get Smart Week and One Health forums
Get Smart Communication Initiative

Examples of activities and outcomes

- Get Smart Week
  - Governor’s Proclamation, 2015
    - First seminar at Penn State Nov
    - ~300 participants, Student Health Services
- Get Smart Award Ceremony
  - 18 award recipients March 2016
  - 100 participants—parents, kids, legislators

Lydia Glick- Penn State Student
Tracking Antimicrobial Resistance (continued)

Tracking antimicrobial resistant foodborne bacteria—e.g., Salmonella

- Clinical isolates analyzed in collaboration with CDC and Pa. Vet Lab
- Enteric bacteria in retail meat in collaboration with FDA

Next generation whole genome sequencing (WGS)

- An advance over PFGE —WGS is a more precise method to identify related bacterial strains—important for outbreak tracing
- Collaborative initiatives: DOH and Penn State College of Ag Sciences

Tracking Carbapenem-Resistant Enterobacteriaceae (CREs) in collaboration Un. Pennsylvania and CDC
Call to Action

- Prevent spread of pathogens within healthcare settings
  - Ensure staff ALWAYS clean their hands, instruments & environment at key junctures during care
  - Major administrative and clinical leadership investment needed to improve infection prevention practices
- Promote antimicrobial stewardship programs
- Conduct surveillance for antibiotic-resistance pathogens--timely, actionable data

Pennsylvania Department of Health
Call to Action

For Providers
● Prevent infections by ensuring clean environment, hands, stethoscopes, and other medical equipment
● Judiciously prescribe antibiotics.
  ■ Prescribe ABX only when they are needed
  ■ Narrow-spectrum ABX whenever possible
  ■ The appropriate dose for the appropriate duration
● Keep patient vaccinations up to date

Credit: NIH
2016 Get Smart Art Competition Winners
Age Group <4

First place
Kailee Park
Age 4
Lorton, VA

Second place
Landon Moran
Age 4
Palmyra, PA

Third place
Kendal Rank
Age 3
Dillsburg, PA
Age Group 5-6

First place
Wyatt Lentz  
Age 5  
Camp Hill, PA

Second place
Aanya Govil  
Age 6  
Mechanicsburg, PA

Third place
Alexa Park  
Age 6  
Dillsburg, PA
Age Group 7-8

First place
Avery Moran
Age 8
Palmyra, PA

Second place
Romello Torres
Age 8
York, PA

Third place
Naila Nicholson
Age 8
Lancaster, PA
Age Group 9-10

First place
Sarah Watson
Age 9
Atglen, PA

Second place
Ian Lentz
Age 9
Camp Hill, PA

Third place
Alyson Park
Age 9
Lorton, VA
Age Group 11-12

First place
Courtney Keller
Age 11
Kennett Square, PA

Second place
Madyson Isenhour
Age 11
Harrisburg, PA

Third place
Keegan Carter Tilley
Age 12
Harrisburg, PA
Acknowledgment – PCAS Team

Team means Together Everyone Achieves More!
~Author Unknown
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- PA Bureau of Labs, James Lute, Lisa Dettinger and Bridgette Husband
- Allegheny County Health Department – Karen Hacker and Jenn Fidnner
- Children’s Hospital of Pittsburgh – Marian Michals and Michael Green
• Get Smart Week Speakers

Michael Katzman, George McSherry, Jeffery Gerber, Andrew Read, Marian Michaels, David Wolfgang and Robin Oliver
2016 Annual Get Smart Week
Antibiotic Stewardship in Pennsylvania

University of Pittsburgh
O’Hara Student Center
Friday, Nov. 18, 2016
Noon – 1:30 p.m.