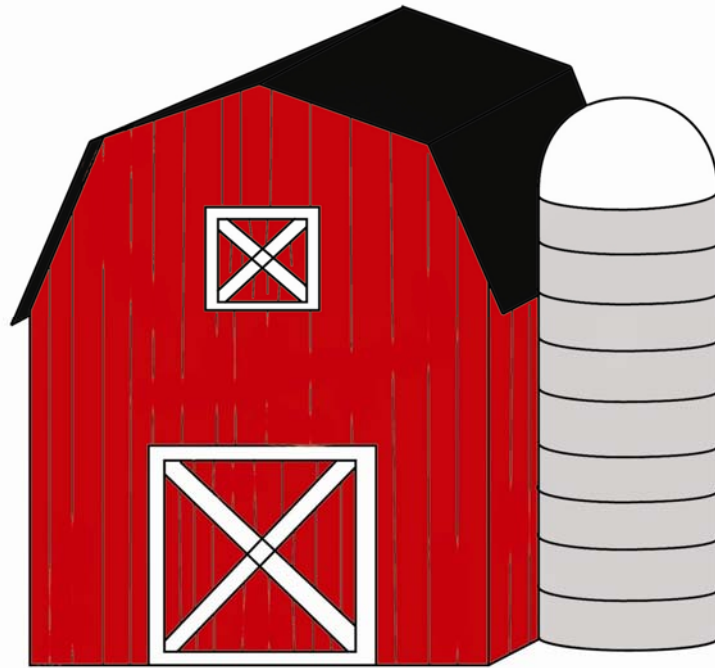


GET SMART



Know When Antibiotics Work On The Farm

Enteric Diseases Epidemiology Branch

Division of Foodborne, Bacterial and Mycotic Diseases

National Center for Zoonotic, Vectorborne, and Enteric Diseases

Centers for Disease Control and Prevention

Get Smart: Know When Antibiotics Work on the Farm

A program to promote appropriate antibiotic use in
veterinary medicine and animal agriculture

http://www.cdc.gov/narms/get_smart.htm

E-mail: getsmartfarm@cdc.gov

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BACKGROUND

The problem of antibiotic resistance

What do antibiotics do?

Antibiotics are powerful medications designed to kill or stop the spread of bacteria. These drugs are essential for the treatment of many bacterial infections in humans and animals.

What is antibiotic resistance and how does it occur?

Many disease-causing organisms, including bacteria, have the ability to defend themselves.

Through the process of mutation or gene transfer, bacteria can become resistant to the effects of antibiotics, allowing the bacteria to thrive even when a person or an animal is treated with an antibiotic. For example, an antibiotic will kill most susceptible bacteria exposed to the antibiotic, but a small mutation in the genome of the bacteria may occur, allowing the mutated bacteria to become resistant or escape the effects of the antibiotic. If this happens, this antibiotic-resistant bacteria can survive the antibiotic and replicate. The emergence and dissemination of resistant bacteria increases the chances that if a person or an animal is infected, this infection will be caused by a resistant organism, rather than an antibiotic-susceptible one. Since bacteria may be transmitted between people, between animals, and between animals and people, people and animals who have not recently taken antibiotics may still become infected with antibiotic-resistant bacteria. Depending upon the types of resistance that develop, it may be

difficult to treat an antibiotic-resistant infection, requiring additional antibiotics and more expensive treatments.

Is antibiotic resistance a public health problem?

In recent years, antibiotic resistance has increased in both human and veterinary medicine; such resistance now includes resistance to several critically important antibiotics. The Institute of Medicine has identified antibiotic resistance as one of the key microbial threats to health in the United States. The Institute listed “decreasing the inappropriate use of antimicrobials” as a primary solution to address this threat. Since antibiotic resistance can be transmitted from animals to human, particularly through the food supply, antibiotic resistance in both human and veterinary medicine is a public health concern. To control antibiotic resistance, in addition to education efforts in human efforts, it is crucial to educate veterinarians, pet owners, food-animal producers, and consumers about antibiotic resistance and appropriate antibiotic use.

Why are we concerned about antibiotic use in animals?

Antibiotic use in animals selects for resistant bacteria in the intestinal tract of animals, and therefore can be found in animal feces and contaminated animal products such as meat and eggs. People may become infected with resistant bacteria through contact with animal feces, consumption of contaminated meat, or consumption of foods cross-contaminated by contaminated meat or eggs.

All uses of antibiotics can select for resistance. Therefore, it is important to limit use to treatment of susceptible bacterial infections. The following are considered “inappropriate” uses of antibiotics;

- Giving the wrong type of antibiotic
- Giving antibiotics for uses other than treatment
- Giving antibiotics at incorrect doses
- Giving antibiotics at incorrect frequency or duration
- Giving antibiotics by incorrect routes of administration
- Administering re-treatments either too early or too late after the first antibiotic treatment

How can we combat antibiotic resistance?

- Consult with your veterinarian before using antibiotics
- Do not use antibiotics to solve management problems
- Use antibiotics to treat specific diseases
- Treat the fewest number of animals possible
- Diagnose diseases correctly and accurately
- Use your veterinarian and laboratory for diagnosis
- Follow label directions for antibiotic use
- Keep records for each animal treated including date treated, drug used, route administered, dosage, and withdrawal time
- Develop and review a written treatment protocol with the assistance of your veterinarian
- Train personal working with livestock to recognize signs of disease

CDC's answer to the problem

To address the public health problem of antibiotic resistance, CDC launched the *National Campaign to Promote Appropriate Antibiotic Use in the Community* in 1995 with a focus on reducing the inappropriate use of antibiotics outside of hospitals, particularly in the treatment of upper respiratory infections. The campaign changed its name to *Get Smart: Know When Antibiotics Work* in 1998. *Get Smart* has grown to a nationwide program supporting state-based programs devoted to raising awareness of antibiotic resistance. In 2005, *Get Smart* had over 100 partners involved in the campaign.

In 2004, a new program named *Get Smart: Know When Antibiotics Work on the Farm* emerged from *Get Smart*. *Get Smart: Know When Antibiotics Work on the Farm*, a program commonly referred to as *Get Smart on the Farm*, will work to promote appropriate antibiotic use in veterinary medicine and animal agriculture. *Get Smart on the Farm* follows the World Health Organization's definition of appropriate use of antibiotics as a use of antibiotics which maximizes therapeutic effect and minimizes the development of antimicrobial resistance.

Get Smart on the Farm will:

- Focus on educational effects within the agricultural industry promoting the appropriate use of antibiotics.
- Distribute practice recommendations and educational materials to the veterinary medical community.
- Establish and connect partners working on controlling antibiotic resistance in veterinary medicine and animal agriculture.

- Fund state-based educational activities and provide technical assistance to develop, implement, and evaluate these local campaigns.
- Support development of veterinary medical school curriculum.
- Fund national advertising promoting the appropriate use of antibiotics.
- Develop improved means of measuring antimicrobial use in veterinary medicine and agriculture.
- Develop and maintain a program website.
- Support an annual *Get Smart on the Farm* conference on antibiotic resistance and educational efforts.

CDC also operates other educational and national surveillance programs related to antibiotic resistance. These programs are mentioned elsewhere and at the end of this packet.

GET SMART ON THE FARM PROGRAM ACTIVITIES

Program history

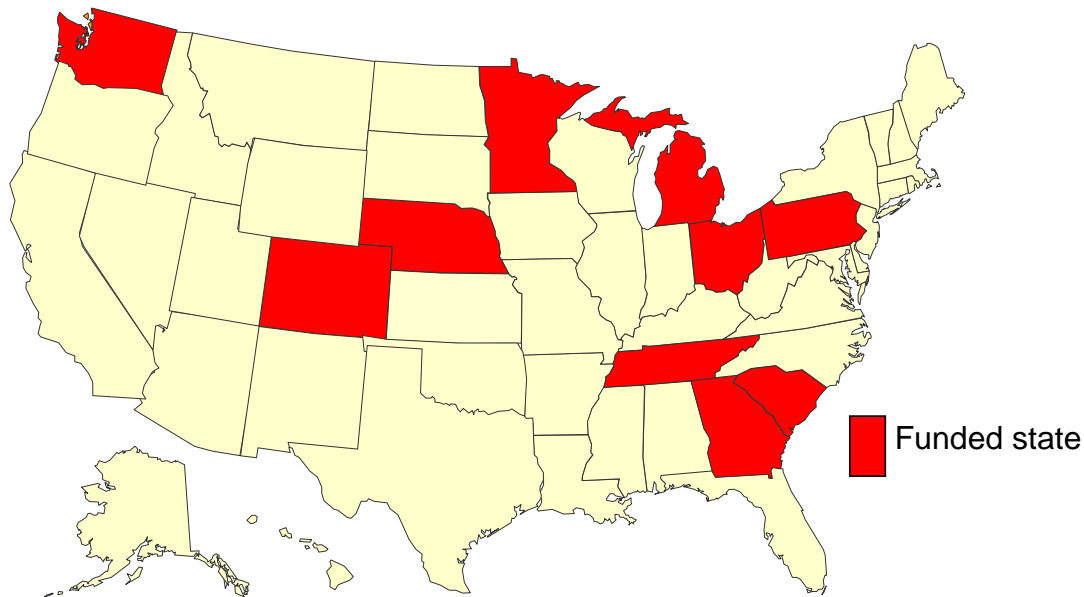
Get Smart: Know When Antibiotics Work on the Farm is a program whose main objective is to coordinate educational activities concerning appropriate antibiotic use in animals. The goal of *Get Smart on the Farm* is to work with food-animal and companion-animal industries and governmental stakeholders to create common messages about antibiotic use.

In 2005, *Get Smart on the Farm* distributed federal funds to five state health departments for interventions to reduce inappropriate antibiotic use. This number grew to ten states in 2006, and even more states submitted applications for proposed appropriate antibiotic use projects 2007. Project proposals vary, but most highlight the prominent animal industry in the submitting state. The proposals developed by these states show a variety of innovative educational approaches including: computer education modules, building coalitions between agriculture and public health, developing antibiograms, and distributing production handbooks.

Get Smart on the Farm has also supported the national “Dairy Summit” and the “Alliance for Bovine Health” conferences on antibiotic use in bovine medicine. Stakeholders from the dairy and beef industries, federal government, veterinary medicine, and animal pharmaceutical industry participated in these meetings and discussions on antibiotic resistance and appropriate antibiotic use in the dairy and beef industry.

Get Smart on the Farm is actively seeking additional partners in the animal and food industries. Establishment of a broad coalition of partners will assist in distributing educational messages and recruiting further funding for educational project.

Get Smart on the Farm funded states: 2006



Overview of state and campaigns (Fiscal Year 2007)

Colorado: Colorado will establish and organize a coalition between the agriculture and public health communities in the state to discuss antibiotic resistance issues pertaining to the cattle industry. This will include holding meetings with beef industry representatives and developing an action plan to address antibiotic resistance.

Georgia: Georgia will expand the *Georgia United against Antibiotic Resistant Disease* (GUARD) coalition to include antibiotic use in veterinary medicine and will develop educational messages and outreach materials. Georgia will also pilot studies on appropriate antibiotic use

interventions within the poultry and cattle industries using assessment tools, educational and training seminars.

Michigan: Michigan, through collaboration with Michigan State University, will continue to develop the web-based veterinary curriculum including additional species-specific modules. Michigan will promote and publicize the website among colleges of veterinary medicine for use within their curriculums in public health, pharmacology, or bovine health.

Minnesota: Minnesota, through collaboration with University of Minnesota, will continue to develop additional educational modules including modules for swine and small animals for the veterinary curriculum.

Nebraska: Nebraska will assimilate educational materials on appropriate use of antibiotics from FDA, USDA and CDC into booklets, power point presentations, and web pages for the education of veterinarians, technicians, producers, and other animal care givers.

Ohio: Ohio will survey food animal veterinarians about antibiotic use in Ohio agriculture to identify targets for the optimum delivery messages on appropriate use of antibiotics to Ohio veterinarians

Pennsylvania: Pennsylvania will assess the knowledge, attitudes, and practices of dairy veterinarian's use of antibiotics, and collaborate with the Pennsylvania State Veterinary Diagnostic Laboratory and Pennsylvania State University to develop educational materials on appropriate antibiotic use in dairy cattle. Pennsylvania plans to host four seminars on appropriate antibiotic use for large and small animal veterinarians. Pennsylvania will also survey consumers and farmers about the use of antibiotics in food animals.

South Carolina: South Carolina will develop an assessment tool, and evaluate the knowledge, attitudes, and practices about the use of antibiotics on dairy farms. Based on the assessment, educational materials will be developed and distributed, and follow-up assessment will be conducted to assess changes in attitudes of antibiotic use.

Tennessee: Tennessee will create partnerships between the beef and public health community and will assess the knowledge, attitudes and practices of antibiotic use among beef producers and

veterinarians. The results of the assessment will be used to create educational materials involving biosecurity, antibiotic resistance, and appropriate antibiotic use.

Washington: Washington will continue their collaboration with the Washington Dairy Federation and will assess antibiotic stewardship, biosecurity plans, and farm-specific antibiotic use recommendations at eight dairies. Based on this assessment, Washington will educate producers on appropriate documentation of antibiotic use and tracking treatment response using electronic record keeping. The collaboration with Washington state recently lead to the following published manuscript:

- MJ Raymond, RD Wohrle, DR Call. Assessment and Promotion of Judicious Antibiotic Use on Dairy Farms in Washington State. *Journal of Dairy Science*. 2006 89:3228–3240.

Veterinary Curriculum

Get Smart on the Farm is working with several colleges of veterinary medicine to develop a veterinary curriculum on appropriate use of antibiotics in veterinary medicine and animal agriculture. This interactive web-based curriculum combines aspects of microbiology, pharmacology, infectious disease and public health to promote appropriate antibiotic use by veterinarians. The veterinary curriculum is based on appropriate antibiotics use guidelines in the “WHO Global Principles for the Containment of Antimicrobial Resistance in Animals Intended for Food” and the American Veterinary Medical Association’s “Judicious Therapeutic Use of Antimicrobials”.

- A background module provides an introduction to the problem of antimicrobial resistance.

- Species-specific modules contain interactive case scenarios aimed at providing practical, clinical applications for appropriate use.

Education Materials

By developing and distributing educational materials to veterinarians, animal owners, and animal producers, *Get Smart on the Farm* aims to promote the appropriate use of antibiotics in animals.

Antibiotic use and resistance issues are different in each species. Based on innovative programs in Washington and Michigan, *Get Smart on the Farm* is concentrating its initial efforts on the dairy industry. The “Dairy Summit” and “Alliance for Bovine Health” meetings focused on encouraging dairy industry leaders to work together to develop a specific plan and educational messages for preserving the power of antibiotics in their constituency. *Get Smart on the Farm* hopes to use lessons learned from the dairy industry to develop materials in other species.

PARTNERSHIP OPPORTUNITIES

Types of partners and partnership activities

Get Smart on the Farm seeks to work with a wide variety of partners. Although many partners are already involved, opportunities exist for additional partnerships.

Partners include:

- State and local health departments
- Veterinary schools, hospitals, clinics
- Pet and farm supply stores
- Professional associations
- Universities and schools
- Pharmaceutical companies
- Businesses and business associations
- Community organizations
- Consumer advocacy groups
- Federal government agencies
- Agricultural related industries

Partners are involved in a variety of activities including:

- Developing local level appropriate antibiotic use campaigns, including educational products
- Delivering presentations on appropriate use to interested parties
- Providing assistance to local level campaigns in producing educational products
- Providing education to veterinarians, producers, animal owners, and consumers
- Collaborating with the *Get Smart on the Farm* campaign and local level programs

- Disseminating information to interested groups

Benefits to partners

Partnership with *Get Smart on the Farm* offers many benefits including:

- Proactively addressing antimicrobial resistance issues and the harmful effects of overuse and misuse of antimicrobials
- Becoming a part of a multi-state coalition to educate veterinarians, producers, animal owners, and consumers about antimicrobial resistance and appropriate antibiotic use
- Public recognition as a partner of *Get Smart on the Farm*
- Sharing scientific information and resources with CDC and other interested groups concerned about antibiotic use in veterinary medicine and animal agriculture
- Use of educational materials developed and approved by program partners
- Improve quality of animal care

How to partner

Please contact *Get Smart on the Farm* at getsmartfarm@cdc.gov for more information on partnership opportunities.

DEVELOPING A PROGRAM TO PROMOTE APPROPRIATE ANTIBIOTIC USE

CDC recommends a comprehensive approach

CDC recommends that appropriate antibiotic use programs utilize the following components and strategies:

- Form a coalition of diverse partners
- Target changes at multiple levels – individual, groups, and organizations or institutions
- Educate veterinarians
- Educate producers
- Educate animal owners
- Educate consumers
- Evaluate program efforts

CDC advises new programs aimed at promoting appropriate antibiotic use, as a first step form a coalition. Partners at the local level may include public health departments, professional veterinary organizations, state public health veterinarians, state veterinarians, state agriculture departments, species interest groups, universities and colleges of veterinary medicine, and the animal pharmaceutical industry. Partners bring a wealth of resources to local campaigns including knowledge of and access to target populations.

Recommended program components / strategies

Components / Strategies	Examples
Form a coalition	Coalition partners may include state and local health departments, professional veterinary organizations, species interest groups, and colleges of veterinary medicine.
Target changes at multiple levels – individual, groups, and organizations or institutions.	Veterinary and animal owner education targets changes in individuals and groups (e.g. social norms). Organizational changes may include production or food distribution company policies outlining appropriate use in animals.
Educate veterinarians	Distribution of guidelines; articles in journals; grand rounds, lectures, workshops and other continuing education (CE) events; veterinarian-led “peer” education.
Educate producers and animal owners	Messages in species interest group letters; conferences; e-mail.
Educate consumers	Educational materials may be distributed through television, newspapers, magazines, and brochures.
Evaluate program efforts	Program evaluation can be used to: monitor progress toward the program’s goals, demonstrate effectiveness of the program or specific activities, learn how to improve programs, justify the need for further funding and support, and communicate with stakeholders.

OTHER CDC PROGRAMS TARGETING ANTIBIOTIC RESISTANCE

CDC's National Center for Infectious Diseases Antimicrobial Resistance Web site may be found at: www.cdc.gov/drugresistance. This site can also direct you to some of the programs outlined below.

Campaign to Prevent Antimicrobial Resistance in Healthcare Settings

This CDC program is housed in the Division of Healthcare Quality Promotion, and aims to prevent antimicrobial resistance in healthcare settings. The campaign centers on four main strategies: prevent infection, diagnose and treat infection, use antimicrobials wisely, and prevent transmission. Within the context of these strategies, multiple 12-step programs are being developed targeting clinicians who treat specialty-specific patient populations including hospitalized adults, dialysis patients, surgical patients, hospitalized children, and long-term care patients. Educational tools and materials are being developed for each patient population.

Website: www.cdc.gov/drugresistance/healthcare/.

Get Smart: Know When Antibiotics Work

This campaign promotes the appropriate use of antibiotics in the community, particularly for upper respiratory infections. This CDC campaign was launched in 1995, and is housed in the Division of Bacterial Diseases, Respiratory Disease Branch. To reduce the spread of antibiotic resistance, the campaign aims to: promote adherence to appropriate prescribing guidelines among providers, decrease demand for antibiotics for viral upper respiratory infections among healthy adults and parents of young children, and increase adherence to antibiotics prescribed for

upper respiratory infections. The campaign targets the five respiratory conditions that account for a great majority of antibiotic prescriptions: otitis media, sinusitis, pharyngitis, bronchitis, and the common cold. This campaign is comprehensive and extensive and targets both consumers and healthcare providers.

Website: www.cdc.gov/getsmart

National Antimicrobial Resistance Monitoring System (NARMS)

Because antimicrobials are given to food-producing animals, antibiotic resistance is selected for in food animals and antimicrobial resistance can be transmitted to humans through the food supply. Antimicrobial resistance surveillance data is important for managing the human health risk of antibiotic resistance resulting from antibiotic use in human and veterinary medicine.

Website: www.cdc.gov/narms

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Additional Information

Websites:

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- WHO Global Strategy for Containment of Antimicrobial Resistance (2001)
 - <http://www.who.int/drugresistance/guidance/en/>
- Antibiotic resistance: synthesis of recommendations by expert policy groups (2001)
 - http://www.who.int/drugresistance/Antimicrobial_resistance_recommendations_of_expert_polic.pdf

2) National Antibiotic Resistance Monitoring System (NARMS)

www.cdc.gov/narms/

- NARMS is a collaboration among Centers for Disease Control and Prevention (CDC), U.S. Food and Drug Administration (Center for Veterinary Medicine) and U.S. Department of Agriculture (Food Safety and Inspection Service and Agricultural Research Services).
- NARMS was established in 1996, within the framework of the CDC's Emerging Infections Program's Epidemiology and Laboratory Capacity Program and the Foodborne Diseases Active Surveillance Network (FoodNet).

3) Global Salmonella Surveillance (GSS)

<http://www.cdc.gov/ncidod/dbmd/gss/>

- GSS is a collaboration between WHO, the Centers for Disease Control and Prevention, and other international public health organizations.
- GSS mission is to promote integrated, laboratory-based surveillance and foster intersectoral collaboration among human health, veterinary and food-related disciplines, thereby enhancing the capacity of countries to detect, respond to and prevent foodborne diseases.

4) American Veterinary Medical Association. “Judicious Therapeutic Use of Antimicrobials”

<http://www.avma.org/scienact/jtua/default.asp>

- This website gives universal and species specific links describing general guidelines to the ‘judicious use of antimicrobials’.
- The species covered by the AVMA are cattle (AABP), poultry (AAAP), swine (AASP), equine (AAEP), feline (AAFP), canine (AAHA), and fish.

5) National Pork Board. “Take Care: Use Antibiotics Responsibly”

www.porkboard.org

6) National Cattlemen’s Beef Association. “A Producers Guide for Judicious Use of Antimicrobials in Cattle”

www.beef.org

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