

# Antimicrobial Use in CA Livestock



February 2018

Rosie Busch, DVM

California Department of Food and Agriculture

# Relevant Terms



## Medically Important Antimicrobial Drug (MIAD)

- Those identified by the FDA as **significant to human health**

## Guidance For Industry (GFI)

- Federal Documents published by the FDA Center for Veterinary Medicine (GFI 209, 213, 152 specifically address antibiotic use in livestock feed and water)

## SB 27

- Senate Bill 27(Hill) was signed into California law in 2015, effective **Jan 1<sup>st</sup>, 2018**
  - **Antimicrobial Use & Stewardship Law**

# Consumer Expectations



## Nutritional Value

- Healthy
- Safe

## Taste

## Animal Welfare & Carbon Footprint



# Consumer Opinion



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### Farm animals

## Farmers must stop antibiotics use in animals due to human health risk, warns WHO

Overuse of antibiotics in animals is contributing to growing drug resistance in humans with serious health implications, says global health body



< 1,477

Fiona Harvey

Tuesday 7 November 2017 11:26 EST

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The Pew Charitable Trusts / Research & Analysis / Antibiotics and Animal Agriculture: A Primer

FACT SHEET

## Antibiotics and Animal Agriculture: A Primer


Why are antibiotics used in animal agriculture, and what can be done to ensure their appropriate use?

December 19, 2016 | Antibiotic Resistance Project

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 Karin Hoelzer  
Senior Officer  
The Pew Charitable Trusts



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PUBLIC HEALTH

## How Drug-Resistant Bacteria Travel from the Farm to Your Table

Antibiotic-resistant bacteria from livestock pose a deadly risk to people. But the farm lobby won't let scientists track the danger

By Melinda Wernser Mayer on December 1, 2016



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The Enemy within: A New Pathway of Antibiotic...

# International Policies



# Review of National Regulations



## Veterinary Feed Directive (VFD) for MIADs in Livestock Feed

- A written statement issued by a licensed veterinarian (in the State where it is used) for the use of VFD drugs or combination VFD drugs in or on feed.

## Limitations on Use

- Must be used according to the label (**no extra-label use**)
- Only for treatment, control or prevention of disease (**not for growth promotion**)

## Requirements

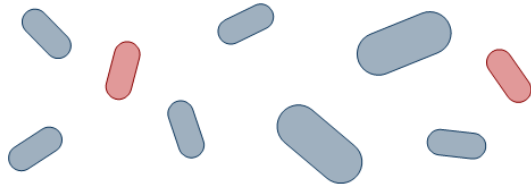
- Valid **Veterinarian-Client-Patient Relationship (VCPR)**
- New VFD if feeding continues beyond expiration of VFD document
- All parties, including the client and the veterinarian, must maintain a copy of the VFD for a minimum of **2 years**

Medications in Water → Require Prescription (not a VFD)

# Antimicrobial Resistance (simple)

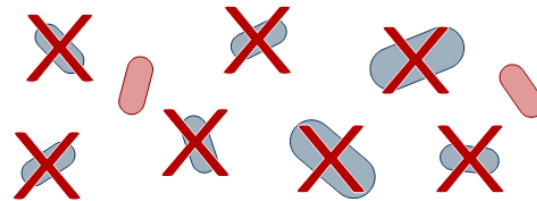
**1.**

Lots of germs.  
A few are drug resistant.



**2.**

Antibiotics kill bacteria  
causing the illness, as well as  
good bacteria protecting the  
body from infection.



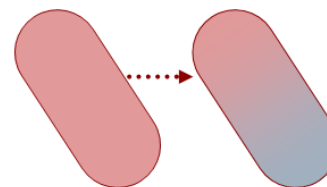
**3.**

The drug-resistant  
bacteria are now allowed  
to grow and take over.



**4.**

Some bacteria give their drug-  
resistance to other bacteria,  
causing more problems.



# Antimicrobial Resistance (complex)



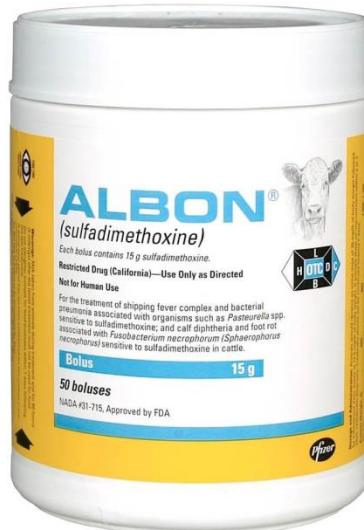
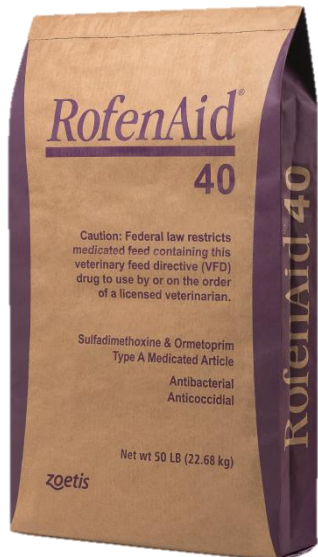
The more we learn the more  
we realize how little we know.

R. Buckminster Fuller

“ quote fancy



# Animal Health



# Animal Health



# One Health



# Antimicrobial Use & Stewardship Law



## CA Law for all MIADs in Livestock

- Effective **Jan. 1<sup>st</sup>, 2018**, over-the-counter injectable and all other forms of MIADs must be given with a prescription or VFD ordered by a California licensed veterinarian.



# Antimicrobial Use & Stewardship Law



## Limitations of Use

- Permitted when deemed necessary by the professional judgement of a California licensed veterinarian
- For treatment, control or, in some cases, prevention of disease (**not for growth promotion**)
  - *Necessary to treat a disease or infection*
  - *Necessary to control the spread of disease or infection*
  - *Necessary in relation to surgery or a medical procedure*
- **Necessary for prophylaxis to address an elevated risk of contraction of a particular disease**
  - Not administered in a “**Regular Pattern**”

## Requirements

- Valid **VCPR**
- Prescription or VFD



# MIADs vs non-MIADs



ANTIBIOTIC LIVESTOCK DRUGS IN CALIFORNIA	
Not Medically Important No prescription required	Medically Important Prescription or VFD required after January 1, 2018
<p><b>Aminocoumarins</b> Novobiocin (<i>only available in combination with a MIAD in California</i>)</p> <p><b>Glycolipids</b> Bambermycins (<i>Gainpro 10, Flavomycin</i>)</p> <p><b>Ionophores</b> Laidlomycin*** Lasalocid (<i>Avatec, Bovatec</i>) Monensin (<i>Rumensin, Coban</i>) Narasin (<i>Maxiban, Monteban</i>) Salinomycin (<i>Sacox, Bio-cox</i>)</p> <p><b>Pleuromutilins</b> Tiamulin (<i>Denagard, Triamulox</i>)</p> <p><b>Polypeptides</b> Bacitracin (<i>Pennitracin, BMD</i>)</p> <p><b>Quinoxalines</b> Carbadox (<i>Mecadox</i>)</p>	<p><b>Aminoglycosides</b> Dihydrostreptomycin*** Gentamicin** (<i>Garacin, Gen-Gard</i>) Hygromycin B** (<i>Hygromix</i>) Neomycin** (<i>Neo-Sol 50, Neovet</i>) Spectinomycin* (<i>L-S50, Spectinix-50</i>)</p> <p><b>Amphenicols</b> Florfenicol*** (<i>Nulflor</i>)</p> <p><b>Cephalosporins</b> Ceftiofur*** (<i>Naxcel, Excede, Excenel</i>) Cephapirin (<i>Today, Tomorrow</i>)</p> <p><b>Diaminopyrimidines</b> Ormetoprim (<i>Rofenaid</i>)</p> <p><b>Fluoroquinolones</b> Danofloxacin*** Enrofloxacin*** (<i>Baytril</i>)</p> <p><b>Lincosamides</b> Lincomycin** (<i>Lincosol, Lincomix</i>) Pirlimycin***</p> <p><b>Polymyxins</b> Polymyxin B (<i>Terramycin</i>)</p> <p><b>Macrolides</b> Erythromycin** (<i>Gallimycin</i>) Gamithromycin*** (<i>Zactran</i>) Tildipirosin*** Tilmicosin (<i>Pulmotil AC</i>) Tulathromycin*** (<i>Draxxin</i>) Tylosin** (<i>Tylan, Tylovet, Tyloved</i>) Tyvalosin (<i>Aivlosin</i>)</p> <p><b>Penicillins</b> Amoxicillin*** Ampicillin*** (<i>Polyflex</i>) Cloxacillin*** Penicillin** (<i>Pennchlor, R-Pen, Bactracillin</i>)</p> <p><b>Streptogramins</b> Virginiamycin** (<i>V-max, Stafac</i>)</p> <p><b>Sulfonamides (Sulfas)</b> Sulfadimethoxine** (<i>Salfadived, Albon, Sulfamed</i>) Sulfamerazine** (<i>Poultrysulfa</i>) Sulfamethazine** (<i>Poultrysulfa, Aureo</i>) Sulfaquinoxaline** (<i>Sul-Q-Nox, Poultrysulfa</i>)</p> <p><b>Tetracyclines</b> Chlortetracycline** (<i>ChlorMax, Pennchlor</i>) Oxytetracycline** (<i>LA-200, Duramycin, Bio-Mycin</i>) Tetracycline** (<i>Duramycin, Tetramed</i>)</p>
<p>* Feed/water drugs must follow FDA VFD and water prescription requirement as of 1/1/2017.            ** May be used in feed            *** Federally labeled as prescription-only (regulatory restrictions unchanged by SB 27)</p>	

# Livestock Antimicrobial Drugs



## Antimicrobial Livestock Drugs

### Non-Medically Important

**Federal/California Status:**

Over-the-counter

**Where to Purchase:**

Restricted livestock drug licensed retailer

**Types:**

Various

**Label:**

“Restricted Drug(s) (California)”

### Medically Important (MIADs)

**Federal Status:**

Over-the-counter

**\*NEW REQUIREMENT\***

**California Status:**

Prescription-only starting 1/1/2018

**Where to Purchase:**

Veterinarian, veterinary food animal drug retailer, or pharmacy

**Types:**

All routes of administration other than feed and water

**Label:**

No special designation

**Federal/California Status:**

Prescription-only

**Where to Purchase:**

Veterinarian, veterinary food animal drug retailer, or pharmacy

**Types:**

Water (since 1/1/2017) and all routes of administration other than feed

**Label:**

“R<sub>x</sub> Only”

**Federal/California Status:**

Veterinary Feed Directive (since 1/1/2017)

**Where to Purchase:**

Feed manufacturer, feed distributor, or participating restricted livestock drug licensed retailer

**Type:**

Feed

**Label:**

“Caution: Federal law restricts medicated feed containing this veterinary feed directive (VFD) drug to use by or on the order of a licensed veterinarian.”

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# Veterinary Oversight



## Veterinarian-Client-Patient Relationship (VCPR)

- ✓ Veterinarian assumed responsibility
  - ✓ Communicated with client
- ✓ Client authorized
- ✓ Knowledge of animal(s)
  - ✓ Examination of patient **OR**
  - ✓ Medically appropriate and timely visits



As defined in the **California Code of Regulations 2031.1**



# Veterinary Shortage



## Timely Access to Treatment

- Identify 'rural' areas with limited access to **veterinary care**
- Consult with livestock producers and licensed veterinarians

## Working on solutions in the following areas:

- **Availability of antimicrobials**
- Treatment protocols
  - Within an existing valid VCPR
- Supplemental **education** for all veterinarians
  - Herd Health (Preventative Medicine)
  - Responsible antimicrobial use



# Information Gathering



## CDFA mandate to collect

- **Sales & use** of MIADs
- **Livestock management practices** (including animal health outcomes)
- Trends in antimicrobial **resistance**

## Focus on California's...

- major **livestock** segments
- **regions** with considerable livestock production
- representative segments of the **food production chain**

All information gathered must be held confidential by law



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**INFORMATION**





**FDA U.S. FOOD & DRUG  
ADMINISTRATION**  
CENTER FOR VETERINARY MEDICINE

**2016**

## **SUMMARY REPORT**

On

*Antimicrobials Sold or Distributed for  
Use in Food-Producing Animals*

December, 2017

# National Reports



Comparison of the information in this summary report with information published elsewhere regarding sales and distribution of antimicrobial drugs for use in humans poses many challenges. A number of differences in the circumstances in which antimicrobial drugs are used in human and veterinary medicine must be carefully considered, including:

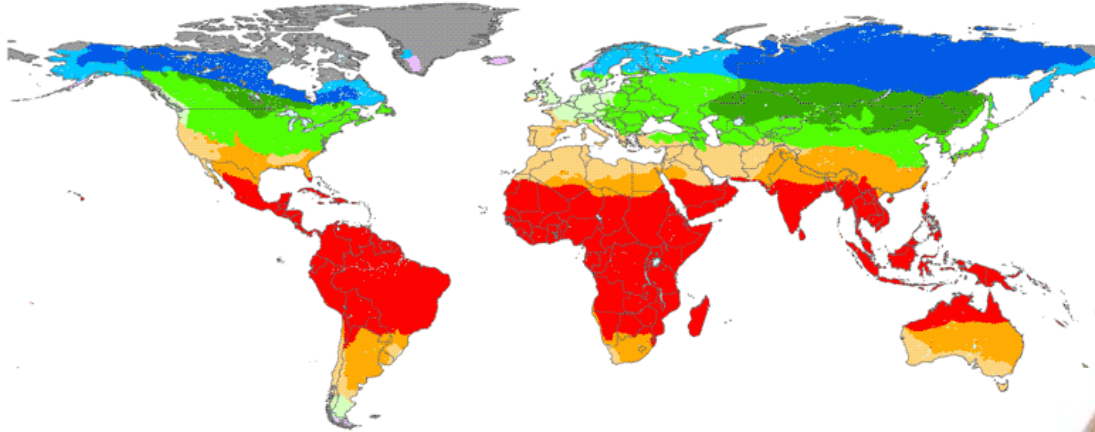
- The number of humans in the U.S. population (approx 320 million<sup>4</sup>) compared to the much larger number of animals in each of the many animal species (e.g., approx. 9 billion chickens slaughtered annually<sup>5</sup>).
- The differences in physical characteristics of humans compared to various animal species (e.g., physiology and weight— average adult human, 182 lb<sup>6</sup> vs adult cattle live weight, 1,363 lb<sup>7</sup>).
- Duration and dosage of antibacterial drug administration may also vary by indication and, in general, between the various animal species and humans due to differences in physiology.
- As noted above, the available animal sales and distribution data are not reported to the FDA by each use indication and, thus, do not allow the FDA to distinguish between or among the different types of uses. The data, therefore, do not allow a direct comparison of the amounts of antimicrobials sold for certain human uses with those sold for certain animal uses.
- Veterinarians commonly utilize human antimicrobial drugs in their companion animal patients; therefore, amounts presented for certain human antimicrobial drugs may represent some unknown portion sold for use in companion animals.

It is, therefore, difficult to draw conclusions from any direct comparisons between the quantity of antimicrobial drugs sold for use in humans and the animal drug sales and distribution data (and species-specific estimates) for use in animals.

# Antimicrobial Use Metrics



Map 4.1: Thermal climate zones of the world  
FGGD Module 4: Environmental conditions



**Thermal climate zones**

- |                              |                             |                          |              |
|------------------------------|-----------------------------|--------------------------|--------------|
| Tropics                      | Temperate (oceanic)         | Boreal (oceanic)         | Arctic       |
| Subtropics (summer rainfall) | Temperate (sub-continental) | Boreal (sub-continental) | Inland water |
| Subtropics (winter rainfall) | Temperate (continental)     | Boreal (continental)     |              |

Reference: FAO & IIASA, 2006. "Mapping biophysical factors that influence agricultural production and rural vulnerability", by H. van Velthuisen et al. Environmental and Natural Resources Series No. 11. Rome.  
This map was printed from the DVD included in "Food Insecurity, Poverty and Environment Global GIS Database: DVD and Atlas for the Year 2000", Environmental and Natural Resources Working Paper No. 26. FAO, Rome 2006.  
The geographic representations employed on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, or of its authorities, or concerning the delimitation of its borders.  
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# Surveys and Studies






## Current methods to collect information

- **On Farm data**
  - Indications for Use
    - Outcomes
  - Production Type Specific
  - Management Practices
- **Voluntary, anonymous surveys**
  - Mail-out
  - Online

## Future methods

- In-person surveys
- Longitudinal studies





**2016 Cow-Calf Beef  
California Antimicrobial Use and Stewardship  
Survey**

1220 N Street  
Sacramento, CA 95814

• Unless otherwise stated, this survey is asking about your operation during the 2016 calendar year.

• This is an **anonymous** survey. Please do not write your name anywhere on this survey.

• Only take this survey once.

• All information you provide will be used for statistical purposes only. Your responses will be kept **confidential** and only be looked at by CDFA-AUS staff. Your individual information will not be shared.

• You must have a Cow-Calf operation based in California to take this survey.

• You do not have to take this survey, but we would appreciate your input.

• We ask that the person most familiar with cattle care and treatment fill out the survey.

• You should have your herd records on-hand (including herd numbers and antibiotic usage information) before starting this survey.

• This survey should take you 15 to 30 minutes to complete

• Please return the completed survey in the self-addressed stamped envelope by September XX, 2017.

This survey will be used by the California Department of Food and Agriculture Antimicrobial Use and Stewardship program (CDFA-AUS) to evaluate antibiotic use and animal health in the state. This is an opportunity for you to help us better understand how antibiotics are used when raising beef cattle. Your input is very important and will help us to better serve California agriculture.

If you have any questions, please contact CDFA-AUS at 916-576-0300 or CDFA\_AUS@cdfa.ca.gov.

1. a. In what county is your Cow-Calf beef operation based? \_\_\_\_\_

b. Is a portion of your Cow-Calf operation out-of-state?  Yes  No

2. a. How many **beef cattle** did you have between Jan 1, 2016 and Dec 31, 2016? \_\_\_\_\_ head

b. Of these, how many were:

(i) Pre-weaned calves (aka nursing calves)? \_\_\_\_\_ head

(ii) Replacement heifers? \_\_\_\_\_ head

(iii) Cows? \_\_\_\_\_ head

(vi) [Add all 2b categories. Total should equal question 2a.] = \_\_\_\_\_ head

3. Which of the following best describes your role with this cattle operation? [Check one only.]

Owner

Manager

Family member (other than owner or manager)

Other hired employee

Other (specify: \_\_\_\_\_)

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Please Continue to Next Page

# Cooperation of Efforts



## Leverage Federal efforts

- National Animal Health Monitoring System (NAHMS)
- National Antimicrobial Resistance Monitoring System (NARMS)
- National Agricultural Statistics Service (NASS)

## Collaboration with Universities

- UC Davis School of Veterinary Medicine
- UC Davis Western Institute for Food Safety & Security
- Possibly other universities for future studies





# Participation is Key



## Pressure from consumer advocate groups

- Mandatory data collection
- Public accessible database

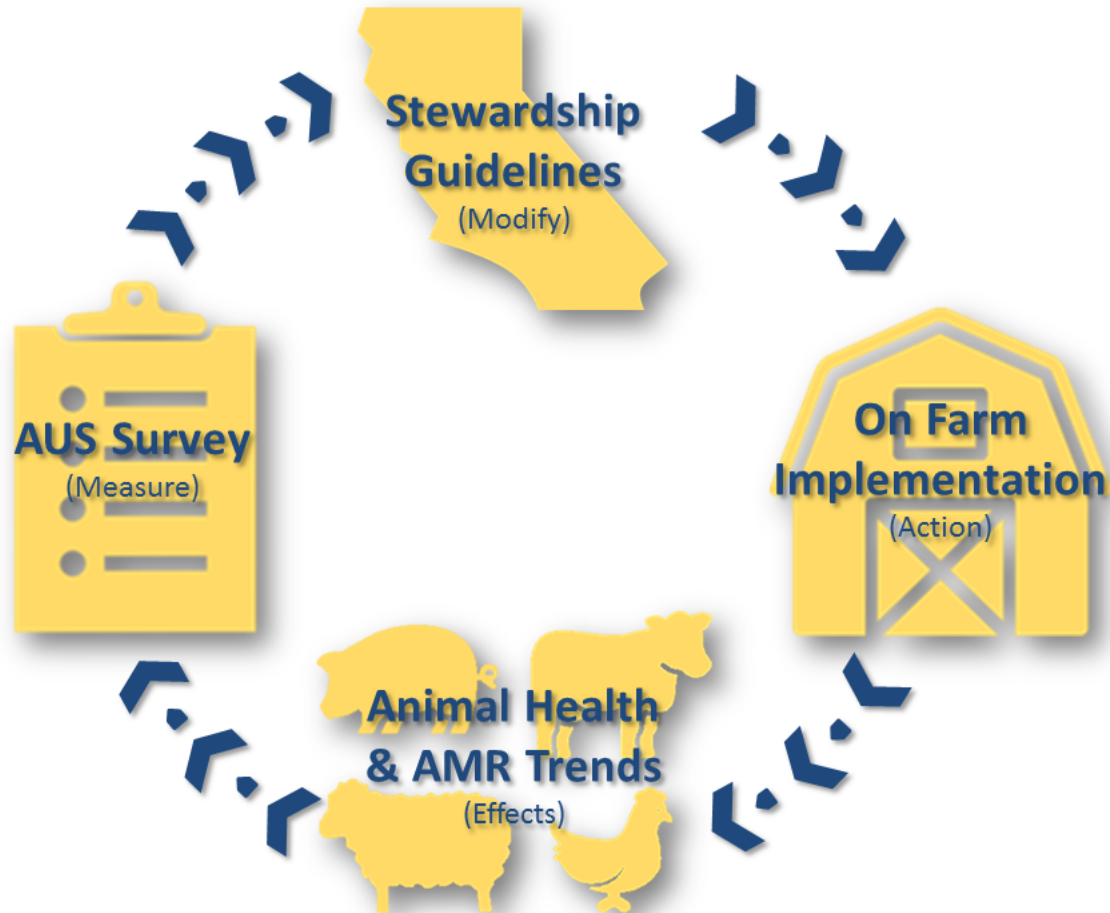
## Report to Legislature Jan 2019

### AB 1437 (Mullins, 2014)

- Mandatory antibiotic use reporting
- Name of livestock producers
- Public web accessible database for consumers

### San Francisco Ordinance (File no. 170763)

# Useful Information



# Antimicrobial Stewardship



## Definition

- **Reduce the need for antimicrobial drugs** with infectious disease prevention
- Use antimicrobials appropriately to **optimize livestock health and minimize selection for antimicrobial resistance.**



# 5 Key Principles



## Commitment to Leadership

- Combined effort with your veterinarian (VCPR)

## Minimize diseases that necessitate the use of MIADs

- Best Management Practices & Antimicrobial Stewardship Guidelines
- Existing **Quality Assurance** programs

## Judicious Use of Antimicrobials

## Record, Assess, & Report

- Treatment Records
- Antimicrobial Susceptible Testing
- Participation in Surveys

## Targeted Education

- Veterinarians
- Livestock Owners
- Employees



# Three C's of Antibiotic Use



## Three C's of Antibiotic Use in California

### Connect – Conserve – Collaborate

**Connect.** Establish or maintain a working relationship with your local livestock veterinarian.

**Conserve.** Keep medically important antibiotics effective through diligent animal stewardship and judicious use of these valuable tools.

**Collaborate.** You deserve a program to address your needs. By participating in our voluntary surveys and studies, we can help you address use, resistance and husbandry practices.

# Additional Information



## Antimicrobial Use and Stewardship Contact Information



CDFA\_AUS@CDFA.CA.GOV



<https://www.cdfa.ca.gov/ahfss/AUS>



(916) 576-0300



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