# Antibiotic Stewardship Training

*Ensuring judicious antibiotic use and mitigating the impact of antibiotic resistance*

*Developed in partnership with The Ohio State University College of Veterinary Medicine*



Funded by Beef Farmers and Ranchers

THE OHIO STATE UNIVERSITY
COLLEGE OF VETERINARY MEDICINE

www.Veal.org

# Overview

**Program Goal:** For farm personnel to accurately identify calves for treatment using veterinary-written treatment protocols which will lead to improvements in responsible antibiotic use.

## Program Outline

- Module 1 –Antibiotics and Antibiotic Resistance
- Module 2 –Clinical Evaluations
- Module 3 –Decision-tree Protocols

*This training series is a new addition to the Veal Quality Assurance (VQA) program and was developed in partnership with The Ohio State University College of Veterinary Medicine. The VQA program is funded by the Beef Checkoff.*

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MODULE 3

# Treatment Protocols

*Content developed by Greg Habing, DVM, PhD, Martey Masterson, DVM and Jessica Pempek, PhD*

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BEEF

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# Overview

- **Goal:** Improve treatment accuracy, according to veterinarian protocols
- **Note:** Different production systems likely have different protocols; these examples can be modified to fit the individual production system.

# By the end of Module 3, you will be able to…

1. Explain why treatment protocols are important
2. Describe the various components of treatment protocols
3. Use treatment protocols to select appropriate individual calf treatment strategies

# Importance of Protocols

- Support your treatment decisions
- Reduce unnecessary antibiotic use
- Avoid illegal use(s) of antibiotics
- Improve treatment success
- Improve animal welfare
- Decrease the risk of meat residues

# Components of Protocols

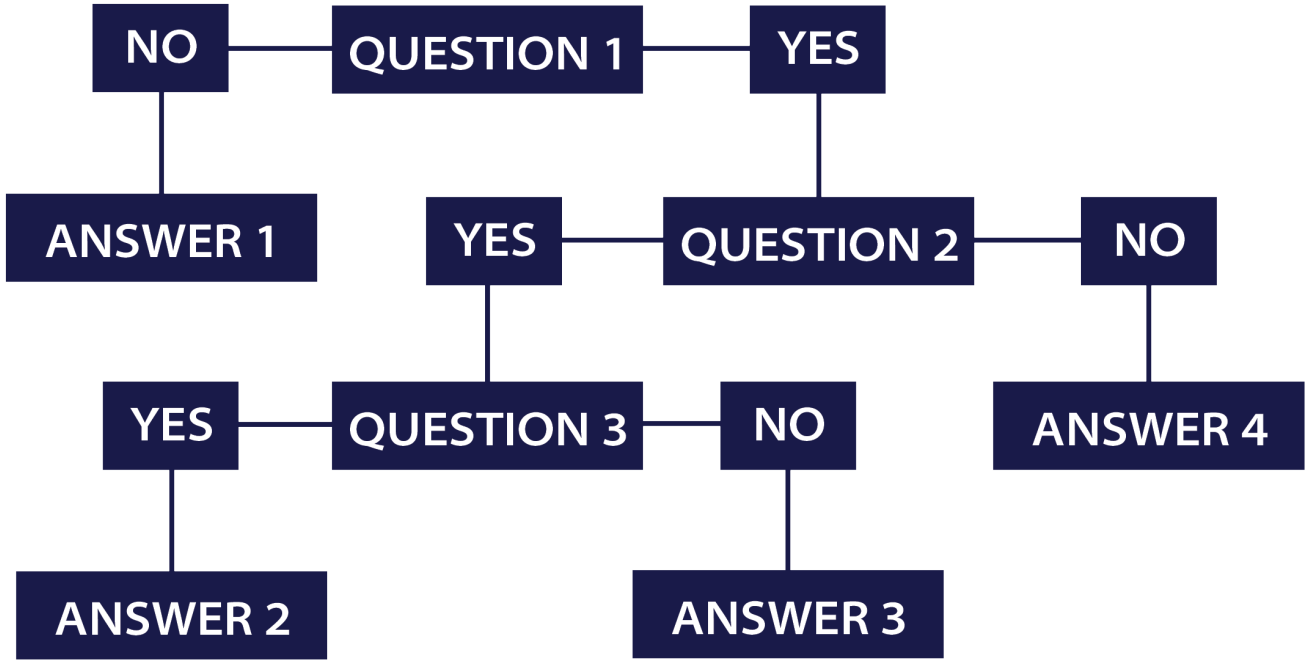
- Specific disease signs
- Medication name
- Dose
- Route of administration
- Use
- Frequency of treatment
- Length of treatment
- Meat withdrawal (if any)
- Follow-up steps

# Components of Protocols

| Specific disease signs |
| --- |
| Medication name |
| Dose |
| Route of administration |
| Use |
| Frequency of treatment |
| Length of treatment |
| Meat withdrawal (if any) |
| Follow-up steps |

# Decision Trees

- What is a decision tree?
  - Chart-like tool that uses specific disease signs to help guide treatment decisions
- Benefits of decision trees:
  - Helps remove “guesswork”
  - Easy to use
  - Consistent treatment



# Diarrhea Treatment Protocol

**FECAL SCORE**

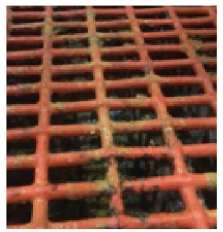
**NORMAL**
**No treatment recommended**

SCORE = 0

SCORE = 1

SCORE = 2

SCORE = 3



**DIARRHEA**
**Treatment recommended**

**Key:**
- IV = Into the vein

**Temp below 103°F**
**Drinks all milk + active**

- Oral electrolytes

**Temp = 103°F or above. Drinks slow + dull, slow to stand**

- Oral electrolytes
- Meloxicam
- Kao-Pectate
- Start antibiotics

*

**Temp below 99°F or =103°F or above.**
**Drinks slow or not at all + floppy or down**

- IV fluids; call the vet
- Meloxicam
- Kao-Pectate
- Start antibiotics

*

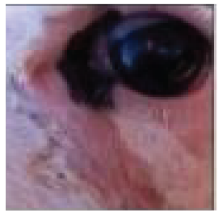
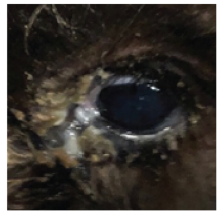
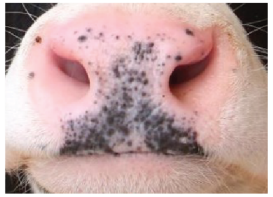
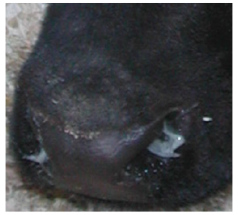
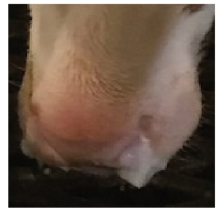
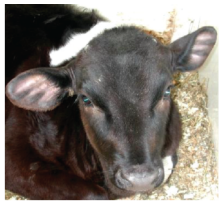
*This is one example of a treatment protocol. Farm-specific drug recommendations should be made by a veterinarian with a valid veterinary client patient relationship.

# Respiratory Treatment Protocol

DIRECTIONS: Add scores for all clinical signs.

| SCORE | TREATMENT |
|---|---|
| = 0 or 2 | → No treatment, check next day. |
| = 4 | → Take calf's temperature. |
| = 5 or more | → Antibiotics + Meloxicam.* |

- Below 102.5 °F → +0 → No treatment, just monitor.
- 102.5 °F or above → +2 → Antibiotics + Meloxicam. *

| SIGN | NORMAL SCORE | | ABNORMAL SCORE (ANY SEVERITY) | |
|---|---|---|---|---|
| Eye discharge | 0 |  | 2 |  or  or  |
| Nose discharge | 0 |  | 4 |  or  or  |
| Ear droop | 0 |  | 5 |  or  or  |
| Cough | 0 | No cough | 2 | Cough (occasional or repeated) |
| Breathing | 0 | Normal | 2 | Rapid or difficult breathing |

*This is one example of a treatment protocol. Farm-specific drug recommendations should be made by a veterinarian with a valid veterinary client patient relationship.

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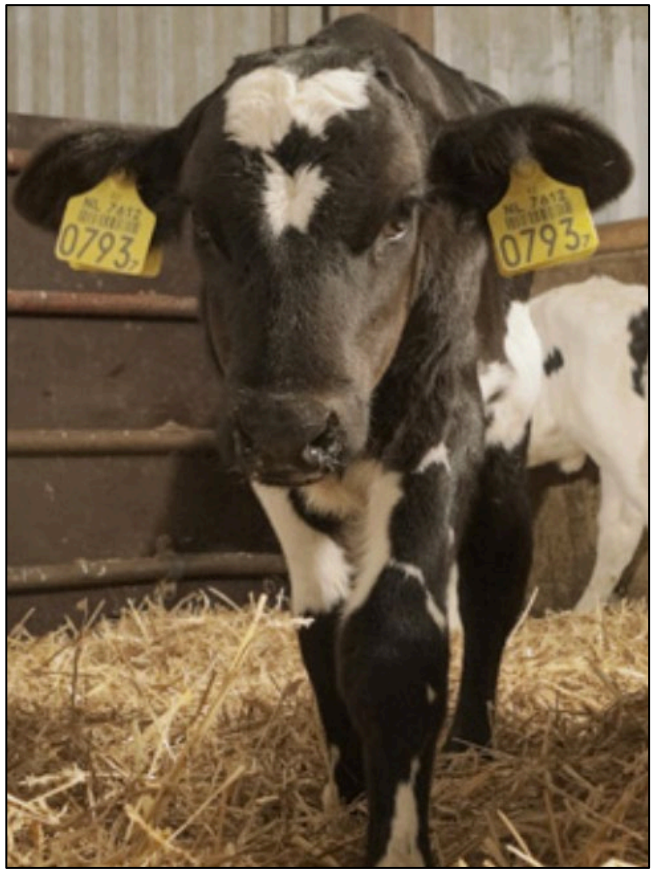
UCDAVIS VETERINARY MEDICINE Veterinary Medicine Teaching and Research Center

UC CE University of California Agriculture and Natural Resources Cooperative Extension

UCDAVIS ANIMAL SCIENCE

# Case Example

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# Diarrhea Treatment Protocol

**FECAL SCORE**

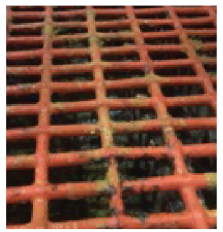
**NORMAL**
**No treatment recommended**

SCORE = 0

SCORE = 1

SCORE = 2

SCORE = 3



**DIARRHEA**
**Treatment recommended**

**Key:**
- IV = Into the vein

**Temp below 103°F**
**Drinks all milk + active**

- Oral electrolytes

**Temp = 103°F or above. Drinks slow + dull, slow to stand**

- Oral electrolytes
- Meloxicam
- Kao-Pectate
- Start antibiotics

*

**Temp below 99°F or =103°F or above. Drinks slow or not at all + floppy or down**

- IV fluids; call the vet
- Meloxicam
- Kao-Pectate
- Start antibiotics

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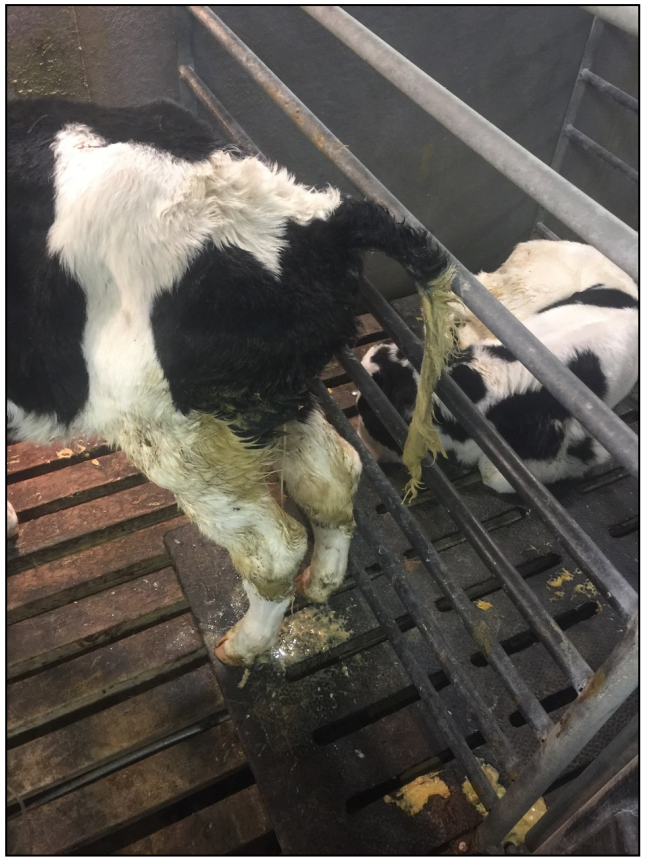
# Case Example: Scoring Diarrhea



Score = 3

Feces is like water.

# Diarrhea Treatment Protocol

**FECAL SCORE**

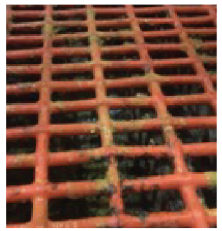
**NORMAL**
**No treatment recommended**

SCORE = 0

SCORE = 1

SCORE = 2

SCORE = 3



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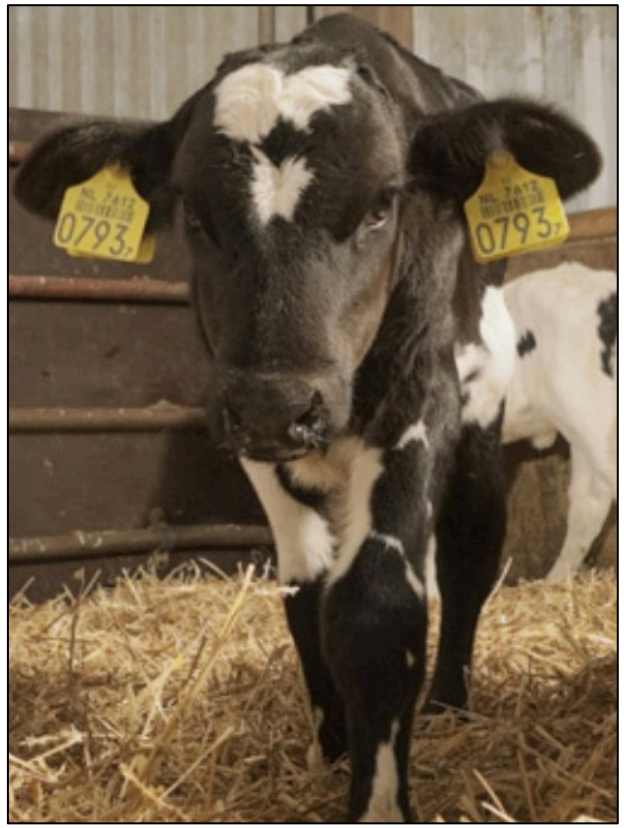
# Case Example: Scoring Diarrhea

***Does the calf have a fever?***

***Is the calf dehydrated or depressed?***

# Case Example: Fever + Depression




Temperature = 104.0 °F

# Diarrhea Treatment Protocol

**FECAL SCORE**

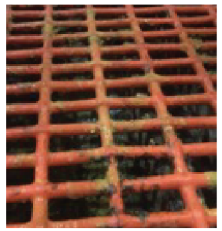
**NORMAL**
**No treatment recommended**

SCORE = 0

SCORE = 1

SCORE = 2

SCORE = 3



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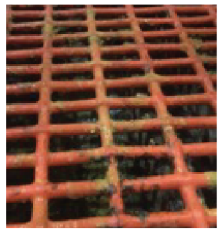

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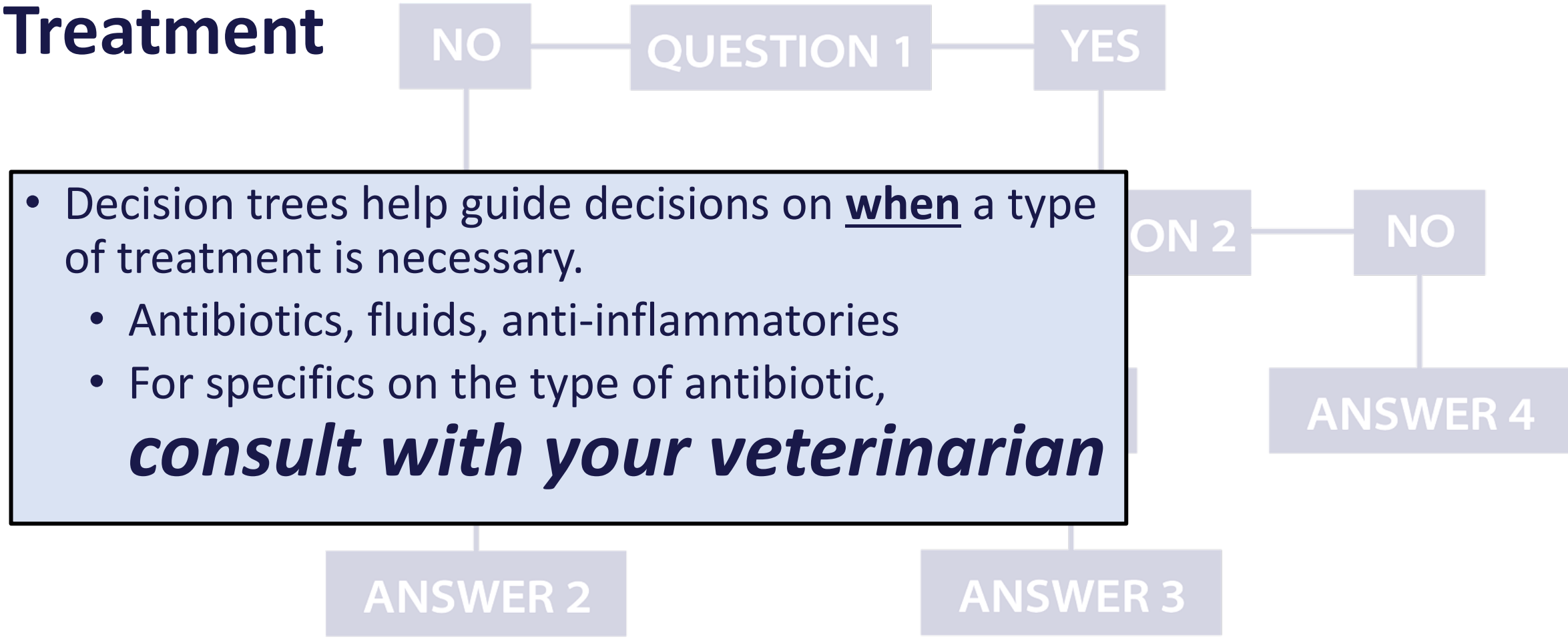
# Treatment




- Decision trees help guide decisions on **<u>when</u>** a type of treatment is necessary.
  - Antibiotics, fluids, anti-inflammatories
  - For specifics on the type of antibiotic, ***consult with your veterinarian***

# Components of Protocols

Specific disease signs

**Medication name**

Dose

Route of administration

Use

Frequency of treatment

Length of treatment

Meat withdrawal (if any)

Follow-up steps

# Medication Names

- Brand name
  - The commercial name of the drug
  - Example: Polyflex
- Generic name
  - The chemical name of the drug
  - Example: Ampicillin



*Farm-specific drug recommendations should be made by a veterinarian with a valid veterinary client patient relationship.

# Components of Protocols

- Specific disease signs
- Medication name
- **Dose**
- Route of administration
- Use
- Frequency of treatment
- Length of treatment
- Meat withdrawal (if any)
- Follow-up steps

# Dose

- The amount of drug given at one time
- Common units: cc (cubic centimeter) or mL (milliliter)
- 1 cc = 1 mL
- Polyflex example: 1 cc per 50 lb. body weight

# Components of Protocols

- Specific disease signs
- Medication name
- Dose
- **Route of administration**
- Use
- Frequency of treatment
- Length of treatment
- Meat withdrawal (if any)
- Follow-up steps

# Route Of Administration

## Oral

[Into mouth]

## Intravenous (IV)

[Into vein]

# Route Of Administration

## Subcutaneous (SQ)

[Between skin and muscle]

## Intramuscular (IM)

[Into muscle]

# Benefits of Neck Injections

- The skin on the neck is flexible, so giving the shot is relatively easy.
- Skin can be “tented” or pulled up, giving more room to move the needle and syringe.
- Fewer economic losses due to injection site reactions in areas like the rump or hind legs.

# Components of Protocols

- Specific disease signs
- Medication name
- Dose
- Route of administration
- Use
- **Frequency of treatment**
- **Length of treatment**
- Meat withdrawal (if any)
- Follow-up steps

# Frequency And Length

## Frequency

- The number of times per day the medication is given.
- Polyflex example: Twice per day (BID)

## Length

- The number of days the medication is given.
- Polyflex* example: 3 – 7 days

**IMPORTANT:**
Finish the course of treatment and give the medication time to work before switching!

Polyflex* example: At least 3 days

*This is one example of a treatment protocol. Farm-specific drug recommendations should be made by a veterinarian with a valid veterinary client patient relationship.

# Components of Protocols

- Specific disease signs
- Medication name
- Dose
- Route of administration
- **Use**
- Frequency of treatment
- Length of treatment
- **Meat withdrawal (if any)**
- Follow-up steps

# Use, Withdrawal and Comments

## Use

- Refers to the specific indication or diseases for the drug
- Polyflex* example:  Pneumonia

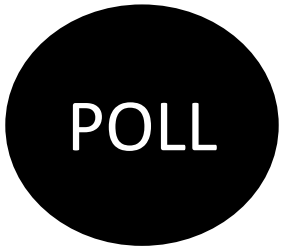
## Meat Withdrawal

- Number of days after the last treatment before an animal can be sent to slaughter.
- Polyflex* example: 8 days

## Comments

- Add 79 mL water
- Refrigerate

Farm-specific drug recommendations should be made by a veterinarian with a valid veterinary client patient relationship.




# Let’s review…

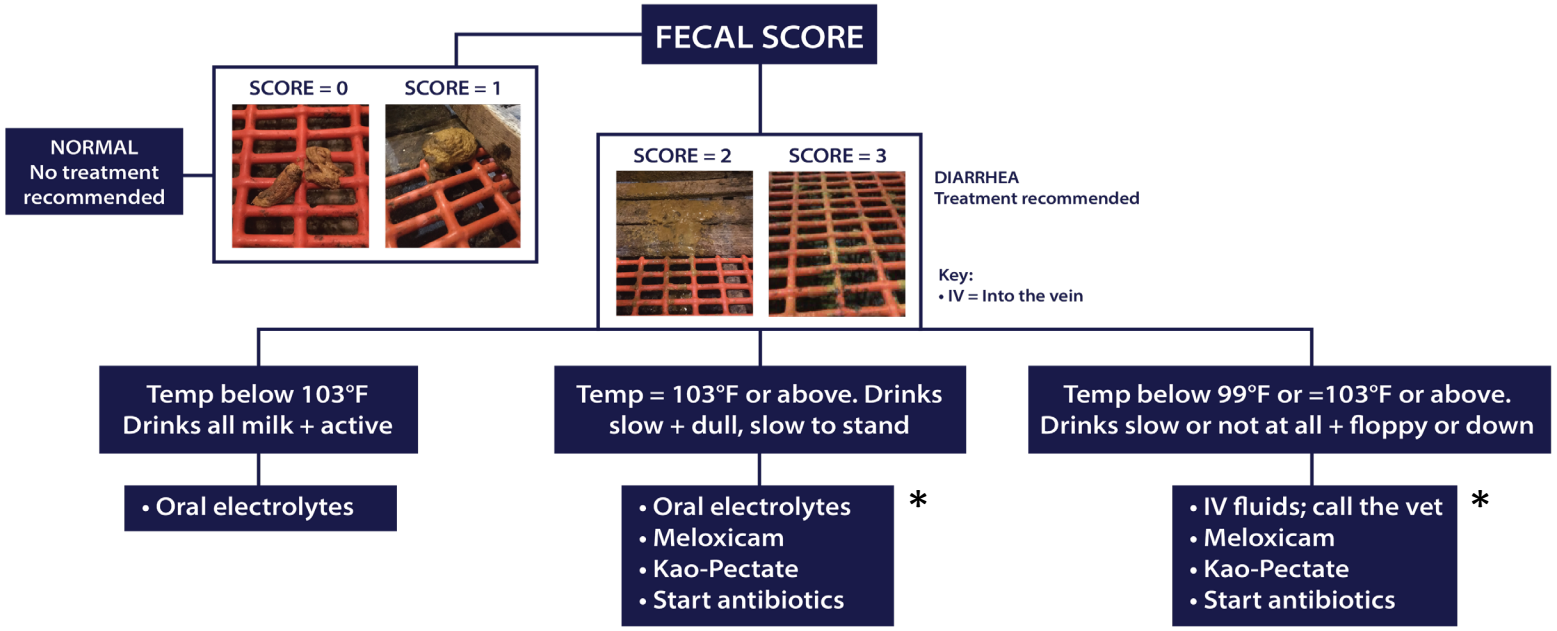
For the following scenarios, what **type of treatment** (or treatments) would you give each calf?

# Scenario #1

- Loose stool does not form a pile
- Temperature = 102.5°F
- Eating well and is active
- Skin does not tent

*What type of treatment(s) would you give this calf?*

# Scenario 1




- Loose stool does not form a pile
- Temperature = 102.5°F
- Eating well and is active
- Skin does not tent

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# Diarrhea Treatment Protocol

**FECAL SCORE**

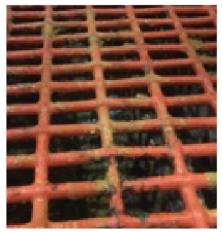
**NORMAL**
**No treatment recommended**

SCORE = 0

SCORE = 1

SCORE = 2

SCORE = 3



**DIARRHEA**
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- Start antibiotics

*

**Temp below 99°F or =103°F or above. Drinks slow or not at all + floppy or down**

- IV fluids; call the vet
- Meloxicam
- Kao-Pectate
- Start antibiotics

*

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# Scenario #2

- Eyes/nose/ears as pictured
- No cough
- Normal breathing

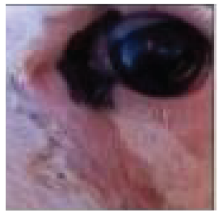
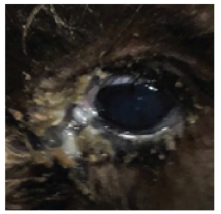
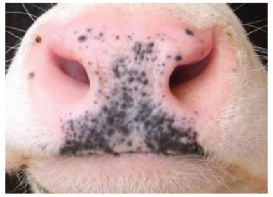
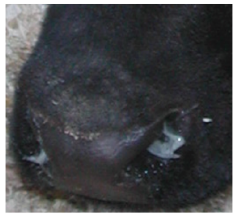
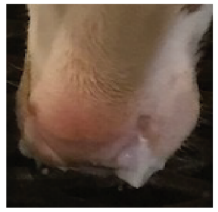
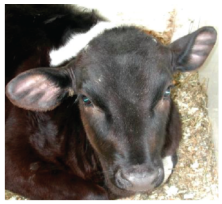
*What type of treatment(s) would you give this calf?*

# Respiratory Treatment Protocol

DIRECTIONS: Add scores for all clinical signs.

| SCORE | TREATMENT |
|---|---|
| = 0 or 2 | → No treatment, check next day. |
| = 4 | → Take calf's temperature. |
| = 5 or more | → Antibiotics + Meloxicam.* |

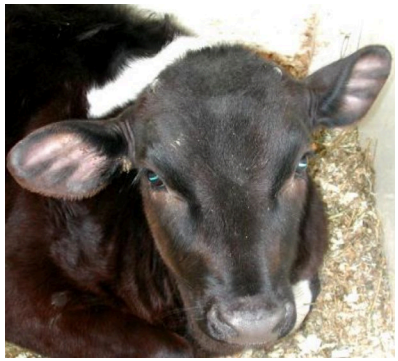
- Below 102.5 °F → +0 → No treatment, just monitor.
- 102.5 °F or above → +2 → Antibiotics + Meloxicam.*

| SIGN | NORMAL SCORE | | ABNORMAL SCORE (ANY SEVERITY) | |
|---|---|---|---|---|
| Eye discharge | 0 |  | 2 |  or  or  |
| Nose discharge | 0 |  | 4 |  or  or  |
| Ear droop | 0 |  | 5 |  or  or  |
| Cough | 0 | No cough | 2 | Cough (occasional or repeated) |
| Breathing | 0 | Normal | 2 | Rapid or difficult breathing |

*This is one example of a treatment protocol. Farm-specific drug recommendations should be made by a veterinarian with a valid veterinary client patient relationship.

# Scenario #2

- Eye/nose/ears as pictured
- No cough
- Normal breathing



DIRECTIONS: Add scores for all clinical signs.

| SCORE | TREATMENT |
|---|---|
| = 0 or 2 | → No treatment, check next day. |
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| SIGN | NORMAL SCORE | | ABNORMAL SCORE (ANY SEVERITY) | |
|---|---|---|---|---|
| Eye discharge | 0 |  | 2 |  |
| Nose discharge | 0 |  | 4 |  |
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# Scenario #2

- Eye/nose/ears as pictured
- No cough
- Normal breathing

*Total score = 5*

*What type of treatment(s) would you give this calf?*

# Respiratory Treatment Protocol

DIRECTIONS: Add scores for all clinical signs.

| SCORE | TREATMENT |
|---|---|
| = 0 or 2 | No treatment, check next day. |
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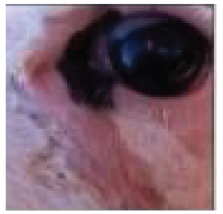
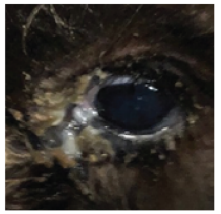
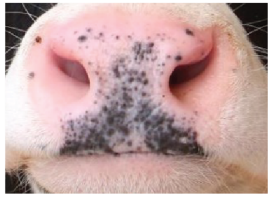
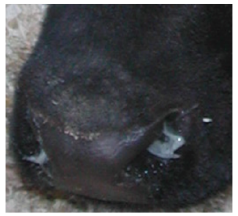
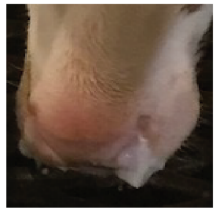
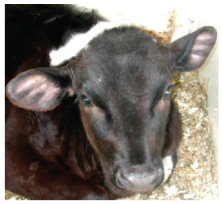
- Below 102.5 °F → +0 → No treatment, just monitor.
- 102.5 °F or above → +2 → Antibiotics + Meloxicam. *

= 5 or more → Antibiotics + Meloxicam.*

| SIGN | NORMAL SCORE | | ABNORMAL SCORE (ANY SEVERITY) | |
|---|---|---|---|---|
| Eye discharge | 0 |  | 2 |  or  or  |
| Nose discharge | 0 |  | 4 |  or  or  |
| Ear droop | 0 |  | 5 |  or  or  |
| Cough | 0 | No cough | 2 | Cough (occasional or repeated) |
| Breathing | 0 | Normal | 2 | Rapid or difficult breathing |

*This is one example of a treatment protocol. Farm-specific drug recommendations should be made by a veterinarian with a valid veterinary client patient relationship.

VEAL QUALITY ASSURANCE CERTIFIED

UCDAVIS VETERINARY MEDICINE Veterinary Medicine Teaching and Research Center

UC CE University of California Agriculture and Natural Resources Cooperative Extension

UCDAVIS ANIMAL SCIENCE

# Group Antibiotic Treatment

- We've focused on individual treatment so far, but group treatment is sometimes also needed.
- The number of sick calves on antibiotic treatment in the barn at one time determines when group treatment is necessary.
- When to start group treatment?

**Talk to your veterinarian <u>before</u> starting treatment!**

# Let's Review

- Antibiotics are necessary to treat bacterial infections, but antibiotic resistance can negatively impact human and animal health.
- Antibiotic Stewardship programs work to minimize unnecessary antibiotic use by through disease prevention and judicious use.
- Recognizing early clinical signs of disease and using objective scoring systems can improve the accuracy and consistency of antibiotic (and other) treatments.

POLL

# Questions?
# Please share them using the Q&A box.

*This concludes MODULE 3*

MODULE 3

# Treatment Protocols



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