UPDATE ON IMPLEMENTATION OF NEW MARYLAND LAW SB471
USE OF ANTIMICROBIAL DRUGS – LIMITATIONS AND REPORTING REQUIREMENTS

NJ CHAPMAN DVM MPH      NEUSAHA DISTRICT MEETING      OCTOBER 29, 2019
WILL REVIEW....

- SB471 Summary & Deadlines

- Medically Important Antibiotic Use Reporting Requirements - Progress Report

- Blanket vs. Select Dry Cow Treatment Restrictions - Progress Report on BMPs
Prohibits use of medically important antimicrobial drugs (MIAD) “in a regular pattern” by feed or water in large cattle, swine and poultry operations and requires vet eval for RX or VFD by **January 1, 2018.**

Requires submission by veterinarians of copy of VFD or RX for MIAD in feed or water for large cattle, swine & poultry operations beginning **January 1, 2020**
“Elevated risk” means

- a risk that is significantly higher than that present under normal or standard operating conditions, and
- does not include a risk typically or frequently present under normal or standard operating conditions
VFD SUBMISSION & REPORTING

Veterinary Feed Directive

Veterinarian:__________________________
Client:______________________________
Address:_____________________________

Phone:__________________________
Fax or email (if any):__________________

Drug(s):__________________________
Drug Level: ________________________
Duration of Use: ____________________

Approximate number of animals:_________

Special instructions (if any):__________________________

Affirmation of Intent (for combination VFD drugs) (mark one statement)

This VFD only authorizes the use of the VFD drug(s) cited in this order and is not intended to authorize the use of such drug(s) in combination with any other animal drug(s).

This VFD authorizes the use of the VFD drug(s) cited in this order in the following FDA-approved, conditionally approved, or indexed combination(s) in medicated feed that contains the VFD drug(s) as a component: __________________________

Drug(s):__________________________
Drug Level(s):______________________

This VFD authorizes the use of the VFD drug(s) cited in this order in any FDA-approved, conditionally approved, or indexed combination(s) in medicated feed that contains the VFD drug(s) as a component.

Warning: Do not feed to chickens producing eggs for human consumption.

Date of VFD issuance:__________________
Date of VFD expiration:__________________

Veterinarian’s signature:__________________________

AVMA
VFD SUBMISSION & REPORTING

Veterinary Feed Directive for Chickens
ChlorMax®
(chlorotetraycline)

Indications, Drug Level, and Duration of Use: (select one and specify additional required information)

1) Chickens: Control of infectious synovitis caused by Mycoplasma synoviae susceptible to chlortetraacycline.
   Drug level: _____g/ton (100 to 200 g/ton)
   Duration of use: ________ days (7 to 14 days)

2) Chickens: Control of chronic respiratory disease (CRD) and air sac infection caused by Mycoplasma gallisepticum and Escherichia coli susceptible to chlortetraacycline.
   Drug level: ______g/ton (200 to 400 g/ton)
   Duration of use: ________ days (7 to 14 days)

3) Chickens: Reduction of mortality due to Escherichia coli infections susceptible to chlortetraacycline.
   Drug level: 500 g/ton
   Duration of use: 5 days

This VFD authorizes the use of the VFD drug(s) cited in this order in any FDA-approved, conditionally approved, or indexed combination(s) in medicated feed that contains the VFD drug(s) as a component.

Withdrawal time (if any): This VFD must be withdrawn: ________ days prior to slaughter.

VFD date of issuance: ________/______/______ VFD expiration date: ________/______/______
Veterinarian’s signature: ____________________________________________

AVMA
DRY COW LAW

- Prohibits blanket treatment of dairy cows at dry-off using medically important antimicrobial drugs by **January 1, 2021**
  - Must have **assessment of the presence** of an intra-mammary infection to treat with MIADs (does not specify by veterinarian)
  - MIAD may be administered if veterinarian judges the MIAD is “necessary for prophylaxis to address an elevated risk of contraction of a particular disease or infection”…. 
  - unclear in law if blanket treatment is allowed under this stipulation
  - Farms with fewer than 300 cattle are exempt

**WORKING GROUP SET UP WITH GOAL:**

REACH CONSENSUS ON REGULATIONS TO IMPLEMENT SELECTIVE DRY COW TREATMENT REQUIREMENT UNDER SB471
**DRY COW THERAPY**

- Dry cows are at ↑ risk of mastitis
  - Fewer management techniques
  - Immune suppression
- Subclinical mastitis in dry cows leads to
  - ↑ clinical mastitis
  - ↑ SCC in next lactation

http://www2.ca.uky.edu/agcomm/pubs/ID/ID209/ID209.pdf
CURRENT DRY COW ANTIBIOTIC USAGE

Percentage of Operations

- Blanket Treatment
- SCC
- Mastitis History
- Other
- Total operations

Type of Treatment

- IMM antimicrobial
- Internal teat sealant
- External teat sealant

USDA APHIS, 2016
DESIGN THAT FAILED

97 Dutch herds; 1,657 low SCC cows
(L1 < 150,000 SCC, L2+ < 250,000 SCC)
- Split udder design: Randomly assign quarters

BDCT Group
All quarters treated

“SDCT” Group
Quarters not treated

Tracked from calving to 100 days in milk (DIM)

From Godden, Royster, Timmerman, and Patel, College of Veterinary Medicine, University of Minnesota
### Results

<table>
<thead>
<tr>
<th></th>
<th>BDCT</th>
<th>SDCT</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence of IMI at calving</td>
<td>38%</td>
<td>49%</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Clinical mastitis (cases/qtr day at risk)</td>
<td>$0.24 \times 10^{-3}$</td>
<td>$0.41 \times 10^{-3}$</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>SCC at 14 DIM (median)</td>
<td>30,000</td>
<td>40,000</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Drug use at dry off (dose/animal)</td>
<td>3,314</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>All antibiotic drug use by 100 DIM</td>
<td>3,692</td>
<td>542</td>
<td></td>
</tr>
</tbody>
</table>

**Why?**
WHY DID SELECT TREATMENT FAIL?

Conclusion: SDCT reduced drug use but resulted in more clinical mastitis and ↑SCC

- Why did this SDCT program fail?
  1) Insensitive diagnostic test (SCC) (did not identify subclinical cases)
  2) No teat sealant (did not protect from new infections)
  3) No modification of environment top protect from mastitis

- Scherpenzeel, et al., 2014. JDSci 97
DESIGNS THAT SUCCEEDED

- Sensitive Diagnostic Test
- Treat Current Mastitis Cases
- Protect from New Infections
RECOMMENDATIONS

- Reduce risk of dry period infections
  - Clean, dry, even bedding in dry-cow yards
  - Gradual dry-off over 1-2 weeks to <10kg per day
    - Gradually decrease concentrate fed
    - Decrease number of milkings per day
  - Dry-cow rations by nutritionist
  - Individual calving pens
  - Milk cows within 24h of calving
  - **Proper infusion technique of teat sealant**
RECOMMENDATIONS

- Herds with bulk tank SCC <250,000
- No contagious mastitis organisms on farm
  - *Strep. agalactiae, Staph. aureus, and Mycoplasma* primary contagious pathogens
- No introduction of new cows to dry herd
- Gram-negative core antigen vaccination
- Monitoring outcomes
  - Dairy Herd Improvement Association
UK’s AHDB Dairy Mastitis Control Plan

- Formulated for each farm by trained veterinarians
  - Cow housing, including dry cows and heifers
  - Milking parlour function and milking routine
  - Management of the dry period
  - Treatment of mastitis
  - Other areas such as biosecurity and youngstock management

https://dairy.ahdb.org.uk/technical-services/mastitis-control-plan/#.WgIrrWi0OUk
MORE RECOMMENDATIONS!

- Cow-level criteria
  - In last three months, individual SCC:
    - <150,000 for cows
    - <100,000 for heifers
  - Maximum of one episode of clinical mastitis during current lactation
    - No mastitis in last three months
  - Negative CMT test at dry-off
  - Negative milk culture
<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Speed</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cow level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMT (≥ trace)</td>
<td>70%</td>
<td>48%</td>
<td>Rapid (cowside)</td>
<td>Sanford et al., 2006</td>
</tr>
<tr>
<td>SCC (&gt; 200,000)</td>
<td>70%</td>
<td>51%</td>
<td>Rapid (if use DHIA)</td>
<td>Torres et al., 2008</td>
</tr>
<tr>
<td>On-farm culture</td>
<td>85%</td>
<td>73%</td>
<td>1-2 day turnaround</td>
<td>Cameron et al., 2013 (Petrifilm system, 3M)</td>
</tr>
<tr>
<td><strong>Quarter level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMT (≥ trace)</td>
<td>61%</td>
<td>80%</td>
<td>Rapid (cowside)</td>
<td>Middleton et al., 2004</td>
</tr>
<tr>
<td>SCC (&gt; 200,000)</td>
<td>57-64%</td>
<td>66-86%</td>
<td>0.5-1 day turnaround</td>
<td>Pantoja et al., 2009; Middleton et al., 2004</td>
</tr>
<tr>
<td>On-farm culture</td>
<td>92%</td>
<td>52%</td>
<td>1-2 day turnaround</td>
<td>Royster et al., 2016 (MN Easy™ 4Cast™, UMN)</td>
</tr>
</tbody>
</table>

From Godden, Royster, Timmerman, and Patel, College of Veterinary Medicine, University of Minnesota
ASSESSMENTS PROPOSED ACCEPTABLE TO INDICATE THE PRESENCE OF AN INTRA-MAMMARY INFECTION

<table>
<thead>
<tr>
<th>Test</th>
<th>Speed</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cow or Quarter Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Signs of Mastitis (visibly abnormal milk including the presence of clots, heat, pain, or swelling of a gland)</td>
<td>Rapid (cowside)</td>
<td>None</td>
</tr>
<tr>
<td>Clinical Signs of Mastitis at any point in immediate prior lactation</td>
<td>Rapid (cowside)</td>
<td>None</td>
</tr>
<tr>
<td>California Mastitis Test = “Paddle Test” (≥ trace)</td>
<td>Rapid (cowside)</td>
<td>$2-$7</td>
</tr>
<tr>
<td>SCC &quot;high&quot; (&gt; 200,000) 2 or more x in immediate prior lactation (alternatives: 250K, or &gt;100K Heifers, &gt;150K cows)</td>
<td>Rapid (if use DHIA) Or 0.5-1 day turnaround</td>
<td>$2/test ?</td>
</tr>
<tr>
<td>On-farm culture</td>
<td>1-2 day turnaround</td>
<td>$3/test, $100 startup</td>
</tr>
<tr>
<td>Referral Lab Aerobic culture (MDA)</td>
<td>24-48+ hr turnaround</td>
<td>$2.50 subsidized $15+ actual Courier needed</td>
</tr>
</tbody>
</table>
In California Maryland, the potential use of medically important antimicrobial drugs (hereafter referred to as antibiotics) in livestock must be deemed necessary under the professional judgment of a California Maryland licensed veterinarian, within the context of a valid veterinarian-client-patient relationship (VCPR) and in accordance with current veterinary medical practice and legal parameters.

To use antibiotics effectively and responsibly, a veterinarian must first develop a preliminary or general diagnosis, or have an indication of elevated risk of disease or infection.

The diagnostic process includes consideration of the history, clinical judgment, and epidemiological knowledge of the veterinarian.

https://www.cdfa.ca.gov/AHFSS/aus/
# Herd Assessment to Support Blanket Dry Cow Treatment

<table>
<thead>
<tr>
<th>Test</th>
<th>Speed</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Tank or Herd Representative Sample</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCC &quot;high&quot; (&gt; 400,000)</td>
<td>Rapid (if use DHIA)</td>
<td>$2/test?</td>
</tr>
<tr>
<td>2 or more x in immediate prior lactation</td>
<td>Or 0.5-1 day turnaround</td>
<td></td>
</tr>
<tr>
<td>Herd Culture (50 samples/herd)</td>
<td>48 hr+ turnaround</td>
<td>$125/herd</td>
</tr>
</tbody>
</table>
THE ROAD AHEAD.....

LESSONS LEARNED

- Increase Outreach to Vets, Stakeholders on ABX Use
- Consider Requiring Veterinary CEU on ABX Use
- Establish an Advisory Group Sooner than Later
- Explore Funding Sources to expand support to state Dairy Industry, including promotion of Judicious Use of Antibiotics

COMMENTS/IDEAS/QUESTIONS:

njo.chapman@maryland.gov 410-841-5810