

# Dairy Production Medicine Rotation Orientation

## 1. Objectives of Rotation

- a. Enhance knowledge of population medicine and dairy cattle management
- b. Develop epidemiologic skills to monitor herd performance and investigate outbreaks
- c. Enhance understanding of reproductive programs and performance in dairy cattle
- d. Enhance understanding of milk quality and mastitis monitoring and control
- e. Enhance physical exam, diagnostic and therapeutic skills with dairy cattle
- f. Enhance knowledge of dairy nutrition
- g. Develop skills for critically reviewing veterinary literature
- h. Enhance professional communication skills
- i. Develop pregnancy diagnosis skills involving palpation and ultrasound

2. The **UC Davis Veterinary Medicine Teaching and Research Center (VMTRC)** provides clinical services to 9 dairies and one calf ranch in areas related to reproduction, udder health, milk quality, food safety, calf and young stock health, nutrition and epidemiology. In addition to the clinical program, the VMTRC also contains the Milk Quality Laboratory which performs microbiological testing of over 50,000 milk samples per year from local dairies and creameries, as well as from out-of-state dairies. The Tulare branch of the California Animal Health and Food Safety System (CAHFS) laboratory is also located on-site at the VMTRC. The CAHFS laboratories provide diagnostic services for livestock, horses and poultry and are responsible for surveillance and control of livestock and poultry diseases throughout California.

## 3. Organization of Rotation

- a. Routine herd checks
  - Students will perform palpation and pregnancy diagnosis as a part of the routine herd reproductive monitoring. During herd checks, students will participate in evaluation of dairies, including milking management, cow comfort, lameness, body condition scoring, etc.
- b. Necropsy (Every other Monday)
  - Students will perform necropsies on calves as a part of a routine disease surveillance program at a calf ranch.
- c. Milk Quality Laboratory (Every other Wednesday/Thursday)
  - Students will perform a whole herd milk culture, including aseptic milk sample collection, teat end scoring, sample culture and organism identification.
- d. Epidemiology Series and Herd Monitoring (As schedule permits)
  - Students will participate in discussions of basic epidemiologic principles, including study design, descriptive statistics, diagnostic test evaluation, etc. Students are expected to read assigned articles and complete epidemiologic exercises. Students will participate in collection of data on herds as part of routine monitoring of dairy systems, including transition cows, colostrum management, pre-weaning calf health, heifer growth, etc.
- e. Dairy Nutrition (As schedule permits)

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- Students will participate in an on-farm evaluation of dairy feedstuffs, feeding equipment and fecal screening.
- f. Pathology Rounds (Every other Thursday 2-3pm, before Clinical Review Series)
  - Students will participate in a discussion of recent cases presented to the CAHFS laboratory.
- g. Journal Club (Every other Thursday 3-5pm)
  - Students will read and critically evaluate a peer-reviewed journal article related to dairy cattle and participate in a discussion of the article, using the “Criteria to assess when reading the paper” as a guide. This guide can be found in the learn drive ("Learn drive:\Journal Club Articles\Guides to Reading Papers\Criteria to assess when reading the paper.docx")
- h. Clinical Review Series (Every other Thursday 3-5pm, opposite Journal Club)
  - Students will participate in a discussion of current topics related to dairy medicine. Students will be expected to read any assigned articles. Students are encouraged to suggest topics of interest to be covered during the clinical review series.
- i. Herd Health Topics and Review (Every Friday afternoon, approx. 2-3pm)
  - Students will participate in a discussion of topics related to dairy production medicine with specific focus on current issues or problems associated with our core herds.
- j. Emergency Services
  - Students will participate in any emergencies (dystocias, prolapses, etc.) that occur during normal hours and are invited to participate after hours.
- k. Miscellaneous
  - Students will participate in physical examination and record write-up of any sick animals that are presented to the service. Students will also participate in investigations of outbreaks that may occur during their rotations.

#### 4. Cell Phones and Laptops

- a. Cell phones are not permitted to be carried on the premises at Corcoran State Prison Dairy. Cell phones may be left locked in the van or truck if you chose to bring them with you to the visit.
- b. Cell phones and laptops will not be permitted during Journal Club, the Clinical Review Series or Herd Health Topics and Review. Please print out any documents that you will need for these sessions.

#### 5. Student Exercises and Reading Material

- a. Students will participate in exercises designed to teach principles of basic epidemiology and population health, as well as to improve data management skills using Microsoft Excel.
- b. These exercises are located on the “Learn Drive” under the Epi Exercises folder and will be assigned throughout your rotation.

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- c. The minimum required reading for these exercises is located in the Required Reading folder within the Epi Exercises folder. Students are encouraged to read these articles as soon as possible to facilitate their understanding and ability to engage in discussions of epidemiological concepts and to complete the exercises as they are assigned.
- d. Additional reading related to each specific exercise can be found in the recommended reading folders within each exercise.

### 6. Departure Times for Herd Visits and Punctuality

- a. Students will be informed verbally of the departure times each afternoon for the next day by the clinicians or residents. In addition, a schedule with daily departure times for each herd visit is located on the corkboard on the wall in the northwest corner of the clinical building (next to the residents' office).
- b. The times listed are when we will be leaving for each herd visit. Students are expected to be loaded and ready to leave in the vehicle at that time. Students should arrive to the vehicle loading area with as much time needed prior to departure to gather coveralls and belongings needed for the day.

### 7. Overview of California and Tulare Dairy Industries

- a. California is the #1 milk producing state in the United States, accounting for 20.5% of the total US milk production in 2014. Tulare County is the number #1 milk producing county within California and the United States.
- b. Milk is California's #1 agricultural commodity, producing \$7.6 billion in sales in 2013 (CDFA).
- c. California Dairy Statistics for 2014 (CDFA 2014 Dairy Statistics Annual)
  - California had 1.79 million dairy cattle on 1,496 dairies and Tulare County had approximately 484,000 dairy cattle on 285 dairies. The average number of cows per dairy is 1,186 in California and 1,701 in Tulare County.
  - California produced 42.3 billion pounds of milk, 99.5% of which was Grade A milk. The average milk production per cow was 23,785 pounds of milk.
  - A total of 32 out of 58 counties in California produced milk. The top 5 counties in milk production (accounting for 73% of California's total milk production) were:
    1. Tulare county: 11.5 billion pounds, 27% of CA milk production
    2. Merced county: 6.4 billion pounds, 15% of CA milk production
    3. Kings county: 4.4 billion pounds, 10% of CA milk production
    4. Stanislaus county: 4.3 billion pounds, 10% of CA milk production
    5. Kern county: 4.1 billion pounds, 10% of CA milk production
  - Milk Utilization (% of total California milk production)
    1. Class 1- fluid dairy products: 12.8% of milk
    2. Class 2- soft dairy products: 5.0% of milk
    3. Class 3- frozen dairy products: 3.4% of milk
    4. Class 4a- butter and dried milk products: 33.0% of milk
    5. Class 4b- cheese: 45.8% of milk

### 8. Conversions for international students

#### a. Length

- 1 inch = 2.5 centimeters
- 12 inches = 1 foot
- 3 feet = 1 yard
- 1 yard = 0.91 meters
- 1 mile = 1.6 kilometers

#### b. Weight

- 1 pound = 0.45 kg
- 1 kg = 2.2 pounds

#### c. Temperature

- 50°F = 10°C
- 70°F = 21.1°C
- 90°F = 32.2°C

#### d. Volume

- 1 quart = 0.95 liters
- 4 quarts = 1 gallon
- 1 gallon = 3.8 liters
- 1 gallon = 8 pounds of water, 8.6 pounds of whole milk

#### e. Milk

- Milk production is measured in pounds in the US. Milk is priced per 100 pounds (cwt).
- Milk is sold to consumers in pints, quarts, half gallons and gallons.
- 100 pounds of milk = 11.6 gallons = 46.4 quarts = 92.8 pints = 44.1 liters

#### f. Milk Pricing

- The average price paid to producers for milk in California in 2014 was \$22.08/cwt.
- \$22.08/cwt = \$1.90/gallon = \$0.50/L
- The average retail price paid by consumers for milk in 2014 in California ranged from approximately \$3.81 to \$4.56/gallon, depending on region.