### CALIFORNIA ANIMAL HEALTH & FOOD SAFETY LABORATORY (CAHFS)

#### PART 1: CREATION OF SUSCEPTIBILITY DATA

<table>
<thead>
<tr>
<th>ACTION</th>
<th>NOTES &amp; HELPFUL TIPS</th>
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<tbody>
<tr>
<td><strong>Collect sample</strong></td>
<td>Follow the lab’s recommendations to ensure proper sample collection</td>
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<tr>
<td><strong>Complete submission form</strong></td>
<td>Provide sufficient information to ensure appropriate tests are performed (i.e., animal signalment, reason for submission, history and prior treatments)</td>
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<tr>
<td><strong>Transport to laboratory</strong></td>
<td>Transport to lab using appropriate transport media and conditions to ensure target organism survival</td>
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**Veterinarian**

**Day 1**
- **Aerobic culture**
  - Initial culture using correct media based on suspected organisms incubated overnight

**Day 2**
- **Subculture**
  - Subculture suspect significant organisms for isolation with overnight incubation to ensure pure growth

**Day 3**
- **Pathogen identification**
  - CAHFS uses MALDI-TOF
  - Known amount of identified bacteria suspended in broth
- **Broth microdilution**
  - Broth is used to inoculate each well. Each well contains a different concentration of drug that would be expected to be therapeutic and achievable in the animal host.

**Day 4**
- **MIC report generated**
  - Report reflects MIC for bacterial isolate cultured from submitted sample

**MALDI-TOF** mass spectrometry: a rapid diagnostic test utilizing a pure growth colony to generate a protein spectrum that is compared to a library of characterized organisms. Each bacterial species has a unique spectrum, which is akin to a fingerprint.

**MIC (Minimum Inhibitory Concentration):** The lowest concentration of an antibiotic that inhibits the growth of a specific type of bacteria.
How to Utilize MIC Results

- **Individual animal**
  - MIC report
  - Used to make treatment decisions specific to a particular animal

- **Group of animals**
  - Antibiogram
  - Antibiogram: An analysis of cumulative antimicrobial susceptibility data specific to production group, pathogen, region and time period
  - Isolates from sick animals
    - Indicates resistance trends and may guide initial empiric therapy.
  - Isolates from presumed healthy animals or the environment
    - Used to demonstrate baseline resistance trends.

Antibiograms **should not** replace the need for culture & sensitivity as determined by clinical judgement.