

VET01S

Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals

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This document provides updated tables for the CLSI antimicrobial susceptibility testing standard VET01.

An informational supplement for global application developed through the Clinical and Laboratory Standards Institute consensus process.

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Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals

Abstract

The supplemental information presented in this document is intended for use with the antimicrobial disk and dilution testing procedures published in CLSI document VET01—*Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals; Approved Standard—Fourth Edition*.

The tabular information in this document presents the most current information for drug selection, interpretation, and QC. Additional supplements will publish as more veterinary-specific information becomes available. As such, users should ensure that the most current versions of the tables replace previously published tables. For ease of use, changes in the tables since the previous edition appear in boldface type.

Clinical and Laboratory Standards Institute (CLSI). *Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals*. 3rd ed. CLSI supplement VET01S (ISBN 1-56238-907-6 [Print]; ISBN 1-56238-908-4 [Electronic]). Clinical and Laboratory Standards Institute, 950 West Valley Road, Suite 2500, Wayne, Pennsylvania 19087 USA, 2015.

The data in the supplement's interpretive tables are valid only if the methodology is followed in CLSI document VET01—*Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals; Approved Standard—Fourth Edition*.

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Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals

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Summary of Changes

This list includes the “major” changes in this document. Other minor or editorial changes were made to the general formatting and to some of the table footnotes and comments. Changes to the tables since the previous edition appear in boldface type.

Additions, Changes, and Deletions

The following are additions or changes unless otherwise noted as a “*deletion.*”

Table 1 – Antimicrobial Agents That Could Be Considered for Routine Testing by Veterinary Microbiology Laboratories

Group A:

Swine:

Added tildipirosin and penicillin G.

Cattle:

Added gamithromycin and tildipirosin.

Horses:

Added amikacin.

Dogs and Cats:

Added amikacin (dogs only), pradofloxacin, doxycycline (dogs only), and tetracycline (dogs only).

Changed amoxicillin-clavulanate from dogs and cats to dogs only.

Group B:

Dogs and Cats:

Changed amikacin from dogs and cats to cats only.

Added doxycycline (cats only).

Changed tetracycline from dogs and cats to cats only.

Group D:

Dogs and Cats:

Added cephalixin.

Tables 2A Through 2J (Interpretive Criteria)

For this edition of VET01S, the interpretive criteria tables are separated by organism, with each table further subdivided by drug class and animal species.

***Enterobacteriaceae* (Table 2A):**

Updated recommendations for placement of disks on a 100-mm plate.

Summary of Changes (Continued)

Added information on the use of interpretive criteria based on human data (gray-shaded) only when the animal species/antimicrobial agent combinations are not listed in the table.

Added new amikacin minimal inhibitory concentration (MIC) interpretive criteria with dosing regimen for dogs and horses (foals and adults).

Added information on the appropriate use of amoxicillin or amoxicillin-clavulanate in dogs for treating infections caused by *Escherichia coli*.

Added new pradofloxacin disk diffusion and MIC interpretive criteria for dogs and cats.

***Pseudomonas aeruginosa* (Table 2B):**

Added information on the use of interpretive criteria based on human data (gray-shaded) only when the animal species/antimicrobial agent combinations are not listed in the table.

Added new amikacin MIC interpretive criteria with dosing regimen for dogs and horses (foals and adults).

***Staphylococcus* spp. (Table 2C):**

Added information on the use of interpretive criteria based on human data (gray-shaded) only when the animal species/antimicrobial agent combinations are not listed in the table.

Added new amikacin MIC interpretive criteria with dosing regimen for dogs and horses (foals and adults).

Added new pradofloxacin disk diffusion and MIC interpretive criteria for dogs and cats.

Added new doxycycline disk diffusion and MIC interpretive criteria with dosing regimen for dogs.

Added new tetracycline disk diffusion and MIC interpretive criteria for dogs with testing and reporting information.

***Streptococcus* spp. (Table 2D):**

Added information on the use of interpretive criteria based on human data (gray-shaded) only when the animal species/antimicrobial agent combinations are not listed in the table.

Added new amikacin MIC interpretive criteria with dosing regimen for dogs and horses (foals and adults).

Added new penicillin G MIC interpretive criteria with dosing regimen for swine.

Added new pradofloxacin disk diffusion and MIC interpretive criteria for cats.

***Enterococcus* spp. (Table 2E):**

Added information on disk placement and zone reading.

Added warning for testing and reporting information for cephalosporins, aminoglycosides, clindamycin, and trimethoprim-sulfamethoxazole.

Provided information for predicting synergy between ampicillin, penicillin, or vancomycin and an aminoglycoside.

***Bordetella bronchiseptica* (Table 2F):**

Noted antimicrobial agents with *B. bronchiseptica*-specific interpretive criteria.

Summary of Changes (Continued)

Added new tildipirosin disk diffusion and MIC interpretive criteria for swine.

***Mannheimia haemolytica* (Table 2G):**

Added new gamithromycin disk diffusion and MIC interpretive criteria for cattle.

Added new tildipirosin disk diffusion and MIC interpretive criteria for cattle.

***Pasteurella multocida* (Table 2H):**

Added new penicillin G MIC interpretive criteria with dosing regimen for swine.

Added new pradofloxacin disk diffusion and MIC interpretive criteria for cats.

Added new gamithromycin disk diffusion and MIC interpretive criteria for cattle.

Added new tildipirosin disk diffusion and MIC interpretive criteria for cattle and swine.

***Actinobacillus pleuropneumoniae* (Table 2I):**

Added information on placement of disks and reading of zones.

Added new tildipirosin MIC interpretive criteria for swine.

***Histophilus somni* (Table 2J):**

Added new gamithromycin disk diffusion and MIC interpretive criteria for cattle.

Added new tildipirosin disk diffusion and MIC interpretive criteria for cattle.

Tables 4 and 5 – Quality Control

QC ranges added for:

Table 4:

Added QC ranges for:

E. coli ATCC® 25922

Cefoperazone

Staphylococcus aureus ATCC® 25923

Cefoperazone

S. aureus ATCC® 25923

Tylosin

Table 5:

Added QC ranges for:

Enterococcus faecalis ATCC® 29212

Avilamycin

S. aureus ATCC® 29213

Cephalexin

Summary of Changes (Continued)

E. coli ATCC® 25922
Cephalexin

Table 5D:
Added QC range for:

C. difficile ATCC® 700057
Avilamycin

Table 8 – Solvents and Diluents

Added pradofloxacin.

Glossary 1

Added cefoperazone.

Abbreviations and Acronyms

ATCC® ^a	American Type Culture Collection
BHI	Brain Heart Infusion
CAMHB	cation-adjusted Mueller-Hinton broth
CoNS	coagulase-negative staphylococci
DNA	deoxyribonucleic acid
ESBL	extended-spectrum β -lactamase
HLAR	high-level aminoglycoside resistance
I	intermediate
IM	intramuscularly
IV	intravenously
LHB	lysed horse blood
MHA	Mueller-Hinton agar
MIC	minimal inhibitory concentration
MRSA	methicillin-resistant <i>Staphylococcus aureus</i>
PBP 2a	penicillin-binding protein 2a
PCR	polymerase chain reaction
PD	pharmacodynamic
PK	pharmacokinetic
PK-PD	pharmacokinetic-pharmacodynamic
QA	quality assurance
QC	quality control
R	resistant
RNA	ribonucleic acid
S	susceptible
SC	subcutaneously
UTI	urinary tract infection
VFM	veterinary fastidious medium

^a ATCC® is a registered trademark of the American Type Culture Collection.

The Quality Management System Approach

Clinical and Laboratory Standards Institute (CLSI) subscribes to a quality management system (QMS) approach in the development of standards and guidelines, which facilitates project management; defines a document structure via a template; and provides a process to identify needed documents. The QMS approach applies a core set of “quality system essentials” (QSEs), basic to any organization, to all operations in any health care service’s path of workflow (ie, operational aspects that define how a particular product or service is provided). The QSEs provide the framework for delivery of any type of product or service, serving as a manager’s guide. The QSEs are as follows:

Organization	Personnel	Process Management	Nonconforming Event Management
Customer Focus	Purchasing and Inventory	Documents and Records	Assessments
Facilities and Safety	Equipment	Information Management	Continual Improvement

VET01S does not address any of the QSEs. For a description of the documents listed in the grid, please refer to the Related CLSI Reference Materials section on the following page.

Organization	Customer Focus	Facilities and Safety	Personnel	Purchasing and Inventory	Equipment	Process Management	Documents and Records	Information Management	Nonconforming Event Management	Assessments	Continual Improvement
						M11 VET01					

Path of Workflow

A path of workflow is the description of the necessary processes to deliver the particular product or service that the organization or entity provides. A laboratory path of workflow consists of the sequential processes: preexamination, examination, and postexamination and their respective sequential subprocesses. All laboratories follow these processes to deliver the laboratory’s services, namely quality laboratory information.

VET01S addresses the clinical laboratory path of workflow steps indicated by an “X.” For a description of the other documents listed in the grid, please refer to the Related CLSI Reference Materials section on the following page.

Preexamination				Examination			Postexamination	
Examination ordering	Sample collection	Sample transport	Sample receipt/processing	Examination	Results review and follow-up	Interpretation	Results reporting and archiving	Sample management
				M11 VET01	X M100S M11 VET01	X M100S M11 VET01	X M100S M11 VET01	

Related CLSI Reference Materials*

- M11** **Methods for Antimicrobial Susceptibility Testing of Anaerobic Bacteria. 8th ed., 2012.** This standard provides reference methods for the determination of minimal inhibitory concentrations of anaerobic bacteria by agar dilution and broth microdilution.
- M100S** **Performance Standards for Antimicrobial Susceptibility Testing. 25th ed., 2015.** This document provides updated tables for the Clinical and Laboratory Standards Institute antimicrobial susceptibility testing standards M02-A12, M07-A10, and M11-A8.
- VET01** **Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals. 4th ed., 2013.** This document provides the currently recommended techniques for antimicrobial agent disk and dilution susceptibility testing, criteria for quality control testing, and interpretive criteria for veterinary use.

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* CLSI documents are continually reviewed and revised through the CLSI consensus process; therefore, readers should refer to the most current editions.

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