

Antibiograms: New NCCLS Guidelines, Development, and Clinical Application

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Abstract — Antibiograms are an important resource for health care providers. All clinicians involved in antibiotic selection and monitoring should become familiar with the NCCLS M39-A document "Analysis and Presentation of Cumulative Antimicrobial Susceptibility Test Data: Approved Guideline." Providers who interpret and apply antibiogram data in clinical practice should know about susceptibility testing methods, the susceptibility breakpoint determination process, and problems associated with antibiogram data analysis. The M39-A guidelines contain more than 40 recommendations, including the following: antibiogram data should be analyzed at least annually; an attempt should be made to remove duplicate isolates, and only organisms with 10 isolates or more should be presented. Accurate antibiograms facilitate improved empiric antibiotic selection and more precise monitoring of bacterial resistance in the hospital. This article reviews common antimicrobial susceptibility testing methods and relevant issues, highlights the major NCCLS M39-A recommendations, discusses the antibiogram preparation process and challenges in data interpretation, and provides a general overview of how antibiogram data may be applied to clinical practice.

Key Words — antibiograms, NCCLS, M39-A, susceptibility reporting, susceptibility testing

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Antibiograms, when properly prepared and interpreted, are an important source of information for health care providers. The development of antibiograms should be a collaborative effort between microbiology, pharmacy, physicians, and hospital policy committees such as infection control and

anti-infective subcommittees.

Although the term "antibiogram" has different connotations, the NCCLS (formerly known as the National Committee for Clinical Laboratory Standards) defines antibiograms as the overall profile of antimicrobial susceptibility results of a microbial species to a battery of antimicrobial agents.¹ Data

from antibiograms are most useful when initiating empiric therapy and when tracking antimicrobial resistance trends over time within a hospital or health care system.

The lack of standardization in the preparation of hospital antibiograms may lead to the misinterpretation and misapplication of aggregate susceptibility data in making empiric antimicrobial decisions. The paucity of published data on the clinical application of institution-specific antibiogram data and related microbiologic reporting issues has further hindered efforts to maximize the use of these data in clinical practice.

To assist health care institutions, the NCCLS organization published a document entitled "Analysis and Presentation of Cumulative Antimicrobial Susceptibility Test Data: Approved Guideline" (NCCLS M39-A).¹

This article will review common antimicrobial susceptibility testing methods and relevant issues, highlight important NCCLS M39-A recommendations, discuss the antibiogram preparation process and challenges in data interpretation, and provide an overview of how antibiogram data may be applied to clinical practice.

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Daniela Niemeyer

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Table of Contents Nccls Guidelines Antibiotics

1. Understanding the eBook Nccls Guidelines Antibiotics
 - The Rise of Digital Reading Nccls Guidelines Antibiotics
 - Advantages of eBooks Over Traditional Books
2. Identifying Nccls Guidelines Antibiotics
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Nccls Guidelines Antibiotics
 - User-Friendly Interface
4. Exploring eBook Recommendations from Nccls Guidelines Antibiotics
 - Personalized Recommendations
 - Nccls Guidelines Antibiotics User Reviews and Ratings
 - Nccls Guidelines Antibiotics and Bestseller Lists
5. Accessing Nccls Guidelines Antibiotics Free and Paid eBooks
 - Nccls Guidelines Antibiotics Public Domain eBooks
 - Nccls Guidelines Antibiotics eBook Subscription Services
 - Nccls Guidelines Antibiotics Budget-Friendly Options

6. Navigating Nccls Guidelines Antibiotics eBook Formats
 - ePub, PDF, MOBI, and More
 - Nccls Guidelines Antibiotics Compatibility with Devices
 - Nccls Guidelines Antibiotics Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Nccls Guidelines Antibiotics
 - Highlighting and Note-Taking Nccls Guidelines Antibiotics
 - Interactive Elements Nccls Guidelines Antibiotics
8. Staying Engaged with Nccls Guidelines Antibiotics
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Nccls Guidelines Antibiotics
9. Balancing eBooks and Physical Books Nccls Guidelines Antibiotics
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Nccls Guidelines Antibiotics
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Nccls Guidelines Antibiotics
 - Setting Reading Goals Nccls Guidelines Antibiotics
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Nccls Guidelines Antibiotics
 - Fact-Checking eBook Content of Nccls Guidelines Antibiotics
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements

- Interactive and Gamified eBooks

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