BD Phoenix™
Automated Microbiology System

Resistance Detection
Workflow Efficiency
Analysis and Communication

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Helping all people live healthy lives
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...rapid, accurate and reliable antimicrobial susceptibility results...

Resistance Detection

Detecting Resistance Today and in the Future

The BD Phoenix Susceptibility System incorporates the use of an oxidation-reduction indicator, turbidometric growth detection, full on-panel antimicrobial concentrations and the BDXpert™ System. Together these make up the Phoenix Susceptibility System resulting in rapid, accurate and reliable antimicrobial susceptibility results. These results are further enhanced by specific delayed resistance features, providing additional assurance that Phoenix results are not only rapid but accurate.

The inclusion of all reported antimicrobial concentrations on the panel provides the foundation for detection of emerging resistance. Simply stated, the Phoenix Susceptibility System was designed to detect antimicrobial resistance today and in the future.
**Confirmation** is the key feature of the BD Phoenix ESBL Resistance Marker Detection.

- Confirmatory extended spectrum beta-lactamase (ESBL) testing for *Escherichia coli*, *Klebsiella pneumoniae* and *Klebsiella oxytoca*
- Definitive beta-lactamase detection in staphylococci
- Methicillin Resistance in *Staphylococcus aureus*
- Predictive *mecA* detection utilizing Cefoxitin for *Staphylococcus aureus*
- Vancomycin resistance in enterococci
- High-level aminoglycoside resistance in enterococci
- Vancomycin resistance in *Staphylococcus aureus*

All resistance marker testing is included on every panel of the appropriate type so there is no need for additional tests or added incubation. This results in faster reporting and less additional or repeat testing.

3 • BD Phoenix
Emerging Resistance Detection

In addition to accurately confirming known resistance, the Phoenix Susceptibility System is an industry leader in rapidly detecting resistance in organisms to antimicrobials that historically have been susceptible. This rapid detection allows for appropriate patient therapeutic intervention. The combination of the Phoenix Susceptibility System and extensive resistance marker detection provides rapid results from instrument to report without delays.

Beta-Lactam Susceptibility and Pseudomonas aeruginosa
Juretschko, et. al., JCM Vol 45, No 4, Apr 2007

Detection of Carbapenem Resistance in Klebsiella pneumoniae – Meropenem
Tenover, et. al. Emerging Inf. Dis. Vol 12 No 8, Aug 06

Detection of Carbapenem Resistance in Klebsiella pneumoniae – Imipenem
Tenover, et. al. Emerging Inf. Dis. Vol 12 No 8, Aug 06
With the availability of the BD Phoenix AP, the Phoenix System incorporates state-of-the-art technology, providing the laboratory workflow efficiency and standardized isolate inoculum. The BD Phoenix AP is the first system to incorporate automated nephelometry in ID/AST testing. This step has traditionally been the most time consuming, manual step associated with isolate preparation.

To inoculate a panel using Phoenix AP, laboratory technologists simply make a ‘heavy’ suspension of the isolate to be tested in Phoenix ID broth. The Phoenix AP is capable of processing a starting McFarland of 0.20 to 4.0 to the appropriate testing McFarland. The ID broth and corresponding AST broth are placed in a Phoenix AP rack and loaded onto the system for preparation.

The estimated rack processing time is 5-7 minutes. Each Phoenix AP is capable of processing 200 ID/AST sets in less than 4.5 hours.

The Phoenix AP incorporates the BD EpiCenter™ Barcode Printing Software into the workflow. Each ID broth may be identified with an EpiCenter generated barcode label that may include patient name, patient location, sample accession number, specimen type, Phoenix panel type, and isolate number. Utilizing the EpiCenter barcode eliminates the need for additional keystrokes by the technologist, further streamlining the panel loading process.

**Starting – Ending McFarland Per Isolate**

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**BD Phoenix™ AP Workflow Efficiency**

- Decreases technologist time and labor to prepare panel
- Standardizes inoculum in laboratory
- Incorporates state-of-the-art automated nephelometry
BD Phoenix™ AP Workflow – Prep and Pour

1 PREPARE INOCULUM
   - Label ID tube with EpiCenter™ or LIS barcode
   - Select colonies and make a heavy suspension in ID broth
   - Place in rack with AST broth

2 BD PHOENIX AP
   - Performs automatic nephelometry to 0.5 or 0.25 McFarland
   - Adds AST indicator to AST broth
   - Transfers isolate to AST broth
   - Mixes both samples

3 REMOVE PROCESSED TUBES AND PLACE ON INOCULATION STATION WITH PHOENIX PANELS
   - Single or batch inoculation
   - Central or individual work stations

4 SCAN BARCODES INTO BD EPICENTER™ AND INOCULATE PANELS
   - Provides rapid, efficient batch sample login
   - Supports single-handed barcode scanning
   - Provides positive sample ID for Phoenix isolate

5 OPEN BD PHOENIX DOOR AND PLACE PANEL IN ANY AVAILABLE STATION
Monitoring, analyzing and communicating microbiology data in a timely manner can directly impact patient care and should be the goal of every facility. Obtaining, organizing and communicating this information is labor intensive and current information systems can make even routine antibiogram generation difficult. Today microbiologists, infection control officers, physicians and pharmacists need immediate access to patient focused information to rapidly identify and react to emerging resistance or HAI events. EpiCenter provides the real-time data access and analysis tools these professionals can use to improve patient care.

BD EpiCenter™ System
Monitor....Analyze....and Communicate

Monitoring, analyzing and communicating microbiology data in a timely manner can directly impact patient care and should be the goal of every facility. Obtaining, organizing and communicating this information is labor intensive and current information systems can make even routine antibiogram generation difficult. Today microbiologists, infection control officers, physicians and pharmacists need immediate access to patient focused information to rapidly identify and react to emerging resistance or HAI events. EpiCenter provides the real-time data access and analysis tools these professionals can use to improve patient care.
Expert Systems
ID/AST Result Consistency
Quality Assurance Policy Compliance

The BD Phoenix™ Automated Microbiology System, when connected to EpiCenter, employs an enhanced BDxpert system that presents expertised results to technologists. The BDxpert system represents a “best practice” microbiology system as it incorporates Clinical and Laboratory Standards Institute standards in the analysis of ID/AST results.

To complement the BDxpert system, the optional EpiCenter Clinical Application Rule Editor, BD EpiCARE™, is available to EpiCenter users. The EpiCARE software provides managers in microbiology and other departments the ability to define specific rules and actions to ensure policy compliance for the reporting of microbiology data.

The software allows users to define rules based on any patient or facility demographic coupled with an ID/AST result outcome. Managers can utilize the proactive alerting capability integrated into the EpiCenter software to ensure that the proper action is taken when each event is identified. Using EpiCenter, an Infection Control Officer is able to ensure that the correct individuals are notified when an HAI event occurs and/or what specific organisms or resistance patterns are detected.

**Rule 1** Generates the message for the system message

**Rule 2** Generates the message for the e-mail to blackberry
Epidemiology

Performing time-sensitive epidemiology studies as well as quality and workload management analysis is simplified and intuitive using the software’s powerful data mining tools, graphical interface and Microsoft XP™ and SQL Server™ architecture. Compiling, analyzing and communicating information has never been easier because the software is easily networked so that everyone can have secure access to this time-sensitive patient data.

The EpiCenter library is enhanced with over one hundred predefined queries and reports. This extensive library provides the ability to quickly access data, analyze it in multiple formats, and share your findings with others. Integrated into the software are simple-to-use tools to customize the predefined reports and save them as personal favorites.

Communication

Using BD EpiCenter Multi-User™ software opens up avenues for improved laboratory productivity and communication between the laboratory and other departments. The laboratory can add workstations to improve workflow between different areas within the lab. In addition, physicians, infection control professionals and pharmacists can gain real-time access to information and EpiCenter data analysis tools from the convenience of their own computers. Whether it is monitoring organism phenotypic trends to resistance marker alerts and organism surveillance, BD EpiCenter provides real-time information to those clinicians that can affect patient care.

Adding the BD Sentinel™ option to the BD EpiCenter™ System improves communication capabilities within the Multi-User network. The System Message Distribution feature allows messages to be directed to specific user clients or to multiple EpiCenter workstations. In addition, Sentinel messages can be distributed by e-mail to a computer, PDA or text message phone.
Data management for BD Diagnostics instrumentation and manual testing. Communication of data within the lab and beyond.