



BD BACTEC™ 9000 System

Performance, Safety and Financial Impacts



Helping all people
live healthy lives



BD BACTEC™ 9000 System

BD BACTEC™ Blood Culture instruments and media are designed to meet the wide range of needs required by today's laboratories. The combination of BACTEC instruments and media help to improve patient care while providing enhanced safety to healthcare workers.

Performance

BACTEC media have been shown to have increased recovery and significantly faster time to detection compared to other automated systems which might facilitate quicker and more appropriate therapy.^{1,2} BACTEC media with patented resins have shown to effectively remove antibiotics (penicillins, cephalosporins and vancomycins) when other systems fail.

Safety

Unique bottle design allows use of standard and readily available safety adapters for blood collection, reducing the risk of needlesticks among healthcare workers.

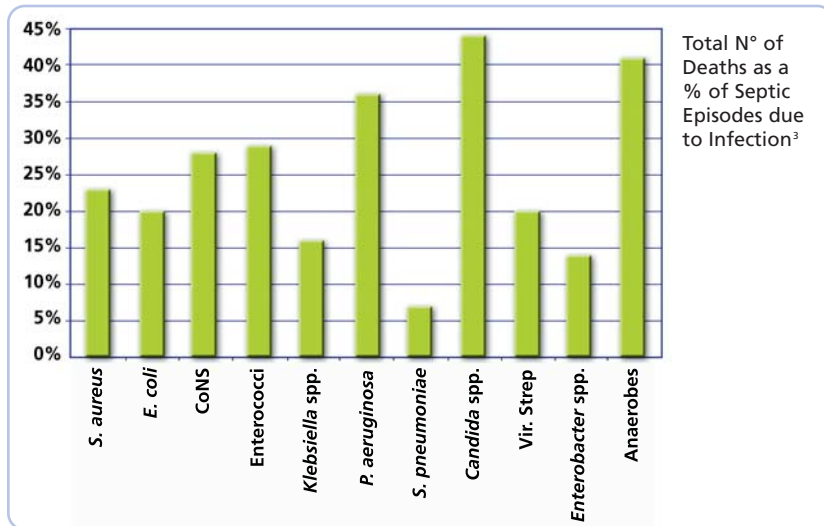
Financial Impact

Patented media containing resins have been shown to have higher rates of recovery.¹ This higher rate can allow for correct diagnosis, treatment and billing of septicemia instead of fever of unknown origin or other lower reimbursing alternatives.

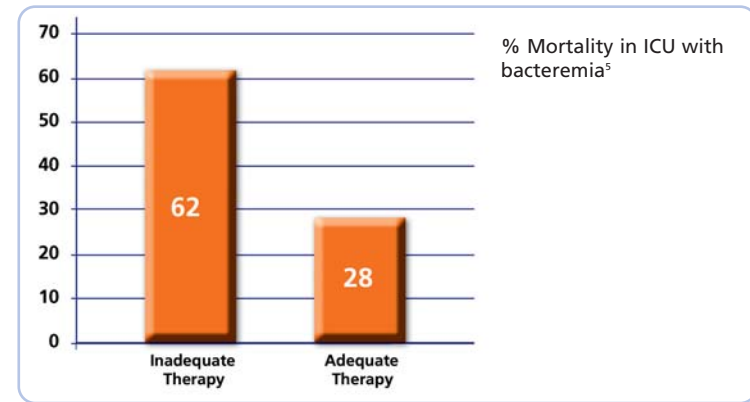
1. Whittier, et al ASM 2003
2. Endimiani et al, Microbiologica 25, 2002

Performance: The Clinical Importance of a High Quality Blood Culture System

“Bloodstream infections cause substantial morbidity and mortality. Increasing rates of antimicrobial resistance, changing patterns of antimicrobial usage and the wide application of new medical technologies may change the epidemiology and outcome of bloodstream infection.”³



“The earliest possible identification of bloodstream infections allows for prompt optimization of antimicrobial therapy and diminished need for additional diagnostic studies, which in turn may serve to decrease both length of stay and cost.”⁴



Bloodstream Infections cause substantial morbidity and mortality

The increase in the number of bloodstream infections is mainly caused by **Nosocomial Infections**

Emerging Resistances put the efficiency of prophylaxis at risk

Inadequate Empirical Treatment causes greater patient morbidity and higher mortality rates and increased healthcare costs

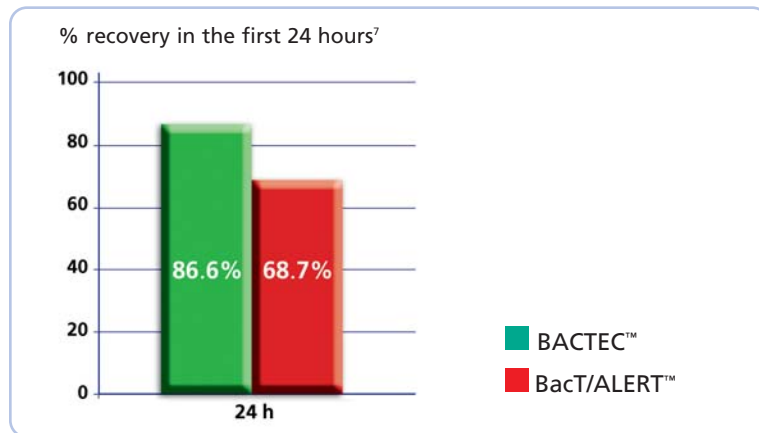
Therefore, every hour of earlier detection of bloodstream infections is crucial!⁶

3. Diekema et al, J. Clin. Microbiol., 41(8), 2003.
 4. Beekmann et al, J. Clin. Microbiol., 41(7), 2003.
 5. Ibrahim et al. Chest 2000, 118(146-155)
 6. Viganò et al, Diagn. Microbiol. Infect. Dis. 44, 2002

BD BACTEC™ 9000: Performance

Time to Detection: Highest Percentage Recovery in the First 24 Hours

Faster diagnosis dramatically reduces the occurrence of **septic shock** and significantly increases survival rates.⁷



“Overall, the MDT for significant bacteremias was 20.2h for BacT/ALERT and 13.8h for BACTEC 9240.”

— Endimiani et al, Microbiologica 25, 2002

Organism Recovery

BACTEC, in combination with patented resin-containing media, has demonstrated the ability to recover more isolates than other systems and media types.

- Optimal antimicrobial neutralization with patented resin technology
- Surface of the resin beads provides an excellent microenvironment to promote microorganism growth
- Medium-specific software algorithms
- Specific software algorithms for bacterial growth phase (including delayed vial entry)

“BACTEC Plus system recovers more pathogens with shorter time to detection than the BacT/ALERT system when beta-lactam antibiotics (ampicillin, cefotaxime) are present at their respective trough concentration corresponding to parenteral therapy.”

— Vígano et al, The New Microbiologica, 27, 2004.

⁷ Endimiani et al, Microbiologica 25, 2002

Safety Solutions: A Commitment to the Safety of Healthcare Workers

Safety During Blood Collection

BD has taken the extra step to design a blood culture bottle that is compatible with standard and readily available safety adapters.

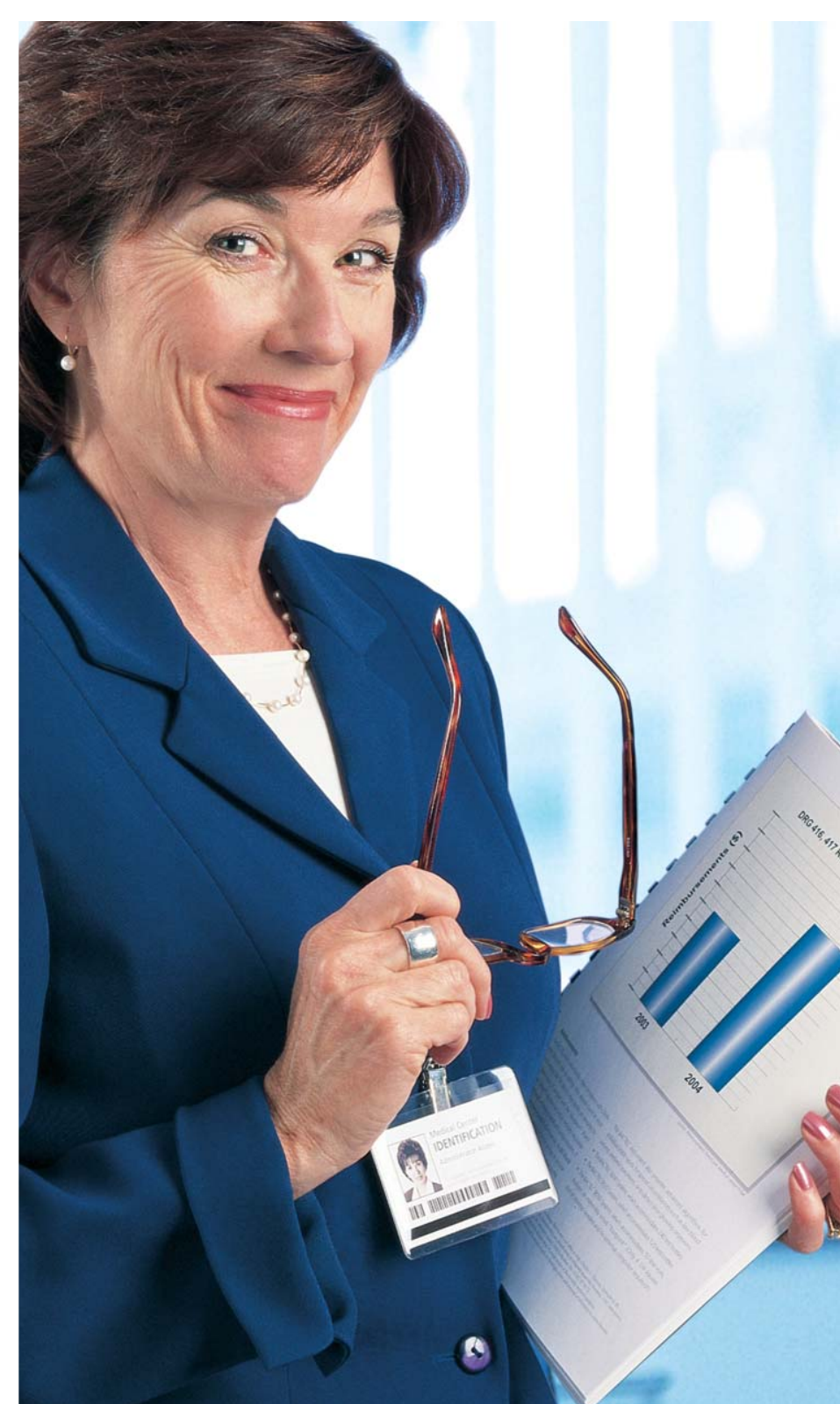
- Integrated safety design eliminates the need to purchase less familiar, more costly specialized adapters
- Improved workflow leads to concentration on correct blood collection practices, thereby improving safety and enabling fewer contaminants
- No additional inserts required for drawing standard BD Vacutainer™ tubes when performing additional laboratory tests



Financial Impact: You Can Afford Better Patient Care

The BD BACTEC™ 9000 series instruments used with patented resin-containing media have shown to have higher rates of organism recovery.⁸ Higher rates of recovery can allow for proper diagnosis, treatment and Diagnostic Related Groups (DRG) coding of septicemia instead of fever of unknown origin or other lower paying alternatives which do not cover the costs of optimal patient care.

A positive blood culture is one of several clinical indicators for sepsis and can help validate a sepsis diagnosis. However, if a patient has sepsis but the clinical case cannot be made due to lack of evidence, the discharge diagnosis may be for a lower paying alternative.



The Base Rate payment for septicemia–DRG 416 is \$7,681.

Table 1 shows the base rate payments for possible alternatives if a sepsis diagnosis cannot be proven due to lack of evidence:

DRG Code	DRG Description	Base Rate Payment	Difference to DRG 416
DRG 420	Fever of Unknown Origin	\$2,947	\$4,700
DRG 90	Simple Pneumonia w/o CC	\$2,966	\$4,700
DRG 321	UTI w/o CC	\$2,743	\$4,900
DRG 208	Cholecystitis w/o CC	\$3,185	\$4,500

Table 1

Table 2 shows the increase in DRG 416 (Septicemia age >17) and DRG 417 (Septicemia age 0-17) charges after switching to the BACTEC™ blood culture system at the Meridian Health Care System.⁸

Hospital	12 Months Prior to BACTEC	Initial 12 Months of BACTEC	Variance
A	\$1,313,365	\$2,154,701	\$841,336
B	\$1,455,775	\$1,930,891	\$475,116
C	\$936,812	\$1,368,698	\$431,886
Total			\$1,748,338

Table 2

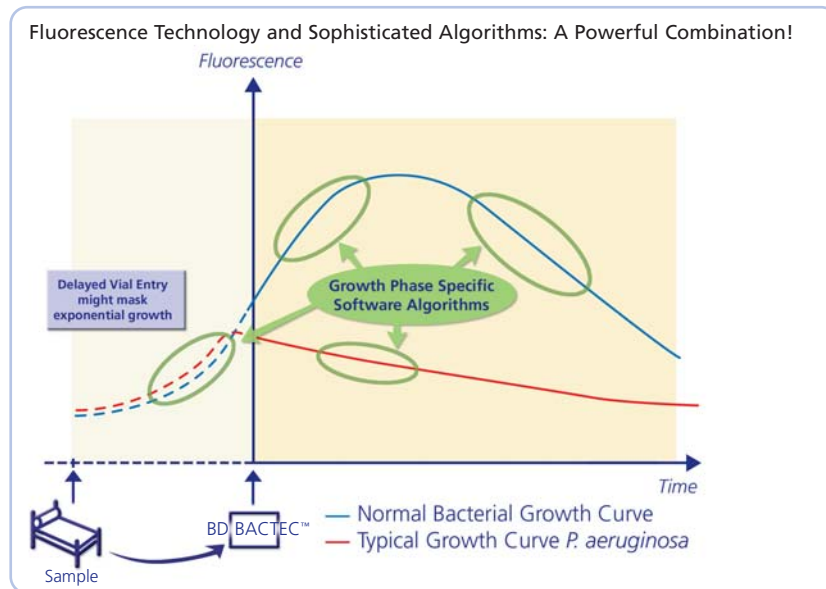
“In conclusion, selection of the BACTEC 9240 together with the Plus/Lytic media combination was associated with increased positivity rates, significantly more septicemia DRG codings and a substantial increase in monies reimbursed to the system.”

— Whittier, et al ASM 2003 poster

BD BACTEC™ Media: The Core of the System

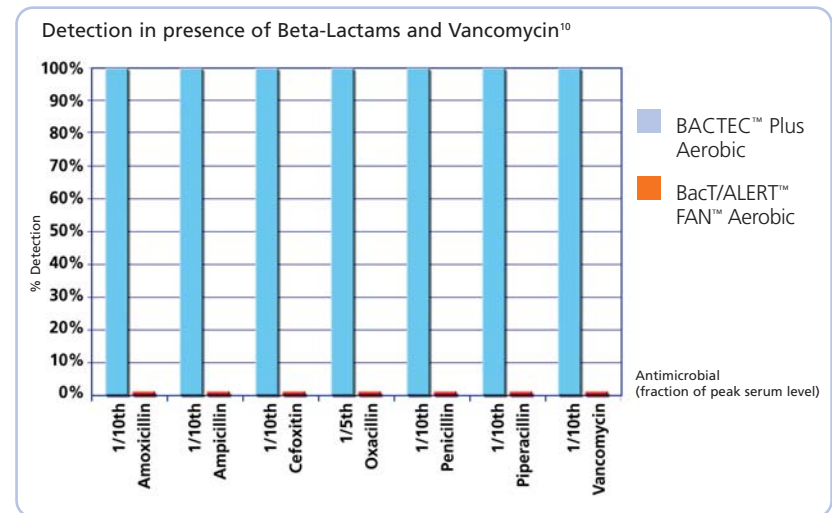
Media, Fluorescence Technology and Algorithms

- Increased flexibility with the widest range of blood culture media
- Medium specific software algorithms optimize performance
- Proprietary software algorithms for different bacterial growth phases increase recovery rate
- Delayed-vial-entry capabilities up to 48 hours at room temperature



BD BACTEC Plus Resin Media

- Unmatched recovery of pathogens from blood
- Proven, effective neutralization of a wide variety of antimicrobials improves recovery and shortens time to detection
- Best neutralization of widely used β -lactam drugs compared to other systems
- No interference with Gram stains⁹
- No increase in contamination rates compared to standard media



BD BACTEC™ Lytic Anaerobic Medium

- Incorporates lysing agent for detection of phagocytized organisms
- Ideal companion for BACTEC™ Aerobic Plus Resin Medium¹¹



BD BACTEC™ Pēds Plus™/F Medium

- Specifically designed for pediatric and other low volume blood culture samples
- Lower SPS concentration may improve recovery of specific pediatric pathogens (*Neisseria*, etc.)



BD BACTEC™ Myco/F Lytic Medium

- Nonselective medium for optimal recovery of fungi and mycobacteria in blood
- Simplified ordering and inventory by providing one medium for the detection of both organism groups
- No supplement addition necessary: improves workflow
- Incorporates lysing agent for detection of phagocytized organisms
- May be specifically beneficial for at-risk patient groups (HIV [AIDS], immunocompromised, etc)



BD BACTEC™ Standard Media

- These general purpose media provide good recovery and time to detection





BD Diagnostics

7 Loveton Circle
Sparks, MD 21152-0999 USA
800.638.8663
www.bd.com/ds

11 rue Aristide Bergès
38800 Le Pont de Claix, France
Tel: 33.4.7668.3636

2771 Bristol Circle
Oakville, Ontario
Canada L6H 6R5
Tel: 800.268.5430

30 Tuas Avenue 2
Singapore 639461
Tel: 65.6861.0633

Monte Pelvoux 111, 9th Floor
Col. Lomas de Chapultepec
11000 México D.F.
Tel: 52.55.59.99.82.00

Rua Alexandre Dumas 1976
04717-004 São Paulo, S.P. Brazil
Tel: 55.11.5185.9833

Akasaka DS Building
5-26 Akasaka 8-chome
Minato-ku
Tokyo, 107 Japan
Tel: 81.24.593.5405

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