BD MAX™ StaphSR

Simplify the standard of care for your presurgical screening

BD MAX™ StaphSR for detection of *Staphylococcus aureus* or methicillin-resistant *S. aureus* (MRSA) can be part of a comprehensive surgical site infection (SSI) prevention strategy.

BD

You may be missing opportunities to prevent SSIs

Surgical site infections (SSIs) affect up to **300,000 patients a year in the United States.**[1] SSIs are considered the most common and costly healthcare-acquired infection (HAI), accounting for **20% of all HAIs with an annual burden of $3.5 to $10 billion** for increased length of stay, visits to the emergency department, and readmissions.[1] In one study, SSIs led to nearly twice the length of stay (10.56 days vs 5.64 days).[2] About 2–5% of patients undergoing inpatient surgery will have an SSI.[1]

It is important to test for both methicillin-resistant *S. aureus* (MRSA) and methicillin-sensitive *S. aureus* (MSSA). In one study, **50% of the *S. aureus*-related SSIs in this hospital population were caused by MSSA, underscoring "the importance of screening pre-operatively for both MRSA and MSSA."**[4] Limited pre-surgical screening protocols that don't cover both MRSA and MSSA could lead to missed opportunities to prevent SSIs.

50%

of *S. aureus*-related SSIs can come from MSSA[4]

SSIs

are the most common and costly healthcare-acquired infection (HAI)[1]

3-6x

higher risk of HAI in asymptomatic *S. aureus* carriers[3]

Pre-surgical screening with culture-only based methods may lead to less-sensitive detection of SSIs, slower results, and inconsistent timing of reports, which can inhibit the workflows of your surgical and antimicrobial stewardship teams.[4]

Rapid PCR screening and decolonization of nasal carriers of *S. aureus* upon admission can reduce the number of SSIs in a hospital.[3]

BD MAX™ StaphSR offers accurate presurgical testing

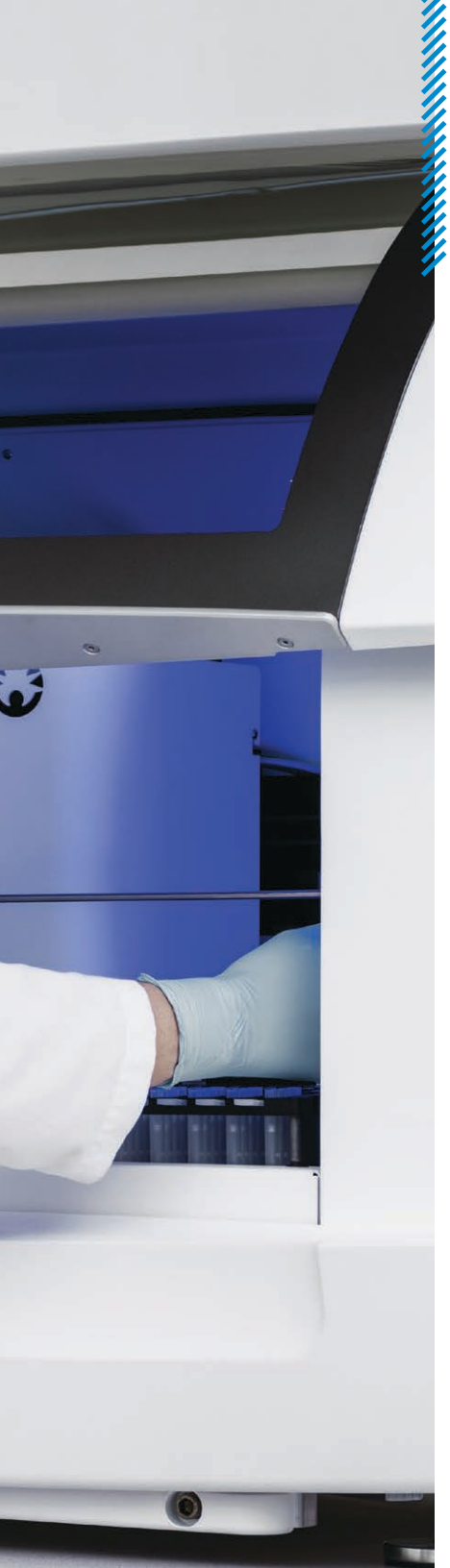
BD MAX™ StaphSR

- Identified more *S. aureus* (MRSA and MSSA) than direct culture.[4]
- Can provide results for 24 samples in just over 2 hours.[5]
- Can improve time-to-report consistency, thus streamlining workflows vs culture-based screening.[4]

Performance of BD MAX™ StaphSR vs direct culture and broth-enriched culture[4]

Variable	Test	Sensitivity, % (n/total)	95% CI, %	Sensitivity, % (n/total)	95% CI, %
S. aureus	BD MAX™ StaphSR	98.2 (271/276)	95.8–99.2	93.1 (783/841)	91.2–94.6
	Direct culture	85.1 (235/276	80.5–88.9	99.4 (836/841)	98.6–99.7
	Enriched culture	95.7 (264/276))	92.6–97.5	99.3 (835/841)	98.5–99.7
MRSA	BD MAX™ StaphSR	96.7 (29/30))	83.3–99.4	98.5 (1071/1087)	97.6–99.1
	Direct culture	76.7 (23/30)	59.1–88.2	99.4 (1080/1087)	98.7–99.7
	Enriched culture	96.7 (29/30))	83.3–99.4	99.4 (1081/1087)	98.8–99.7

Use of BD MAX™ StaphSR resulted in ~5-fold and 10-fold reductions in SSI rates per 100 surgeries vs screening for MRSA-only (direct culture) and no screening, respectively.[4]



Real-world results you can count on

A recent study investigated whether **BD MAX™ StaphSR** could affect the occurrence of SSIs caused by *S. aureus* in orthopedic, cardiac, neurosurgery, or any implantable device surgery patients in a multihospital setting compared to clinician-ordered MRSA-only testing using traditional culture (MRSA-SC) or no screening at all.[4]

*Data involving surgeries, SSIs and presurgical screening between
February 2018 and February 2019 at Rhode Island Hospital.
#Two positive results during prior screening by BD MAX™ StaphSR
consisted of one MSSA positive and one MRSA positive.
†SSI rate per 100 cases of respective surgery type.
‡5 MSSA infections and 1 MRSA infection.
§5 MSSA infections and 3 MRSA infections.
¶10 MSSA infections and 4 MRSA infections.

Incidences of SSIs for patients screened with BD MAX™ StaphSR vs MRSA-only (direct culture) testing using traditional culture (MRSA-CS) vs no testing*[4]

Screening	Data
Surgeries, N	3388
Prior screening, n (%)	
BD MAX™ StaphSR	2050 (59.7)
MRSA-SC	724 (21.1)
No testing	614 (17.9)
SSIs, N	28
Pathogen, n	
S. aureus	14
MRSA	14
Prior screening, n	
BD MAX™ StaphSR	6 (2 positive#; 4 negative)
MRSA-SC	8 (1 positive; 7 negative)
No testing	14
Rate of SSI† % (n/total)	
BD MAX™ StaphSR	0.3 (6‡/2050)
MRSA-SC	1.10 (8§/724)
None	2.28 (14¶/614)

This study shows that 50% of the S. aureus-related SSIs were due to MSSA.[4]

Achieve infection prevention goals with BD MAX™ StaphSR

Minimizing the risk and number of SSIs acquired in the hospital can be achieved with **rapid PCR screening** and decolonization of nasal carriers of *S. aureus* upon admission.[3] **BD MAX™ StaphSR** can be a successful presurgical tool to facilitate patient management of SSI, including infection prevention measures and appropriate preoperative antibiotic prophylaxis.[4]

Provides accurate pre-surgical testing for both MRSA and MSSA

An effective pre-surgical screening protocol should include testing for both MRSA and MSSA, as one study found that **50% of the *S. aureus*-related SSIs were due to MSSA.**[4]

Improves infection control compliance to meet hospital performance goals

The **BD MAX™ StaphSR** assay enables better compliance with hospital-wide pre-operative guidelines for hospital performance measures for surgery, infectious disease and stewardship, and pharmacy departments.[4]

Enables presurgical prophylaxis

"The **BD MAX™ StaphSR** assay provided accurate detection of both *S. aureus* and MRSA nasal colonization in presurgical patients, allowing infection prevention measures, including **presurgical prophylaxis, to be implemented in a timely and consistent manner to avoid SSIs."**[4]

Supports proper use of vancomycin and AMS

BD MAX™ StaphSR facilitates targeted, appropriate use of broad-spectrum vancomycin.[4] Vancomycin should not be administered to MRSA-negative patients as prophylaxis.[1] Reducing the use of inappropriate antibiotics in health care settings can help with antimicrobial stewardship (AMS) goals.[6]

Streamline workflow and results reporting

"For the preoperative center, the benefit over the nasal culture screen was the consistent reporting time of the **BD MAX™ StaphSR** results to the pre-operative nursing service which allowed a streamlined workflow and reporting to the electronic medical record for the anesthesiologists and surgeons."[4]

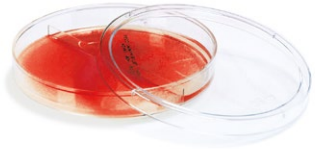
BD MAX™ StaphSR can improve time-to-report consistency, thus streamlining workflows vs culture-based screening.[4]

vs.

BD MAX™ StaphSR orders

Specimens run daily on the BD MAX™ System (Monday-Friday).

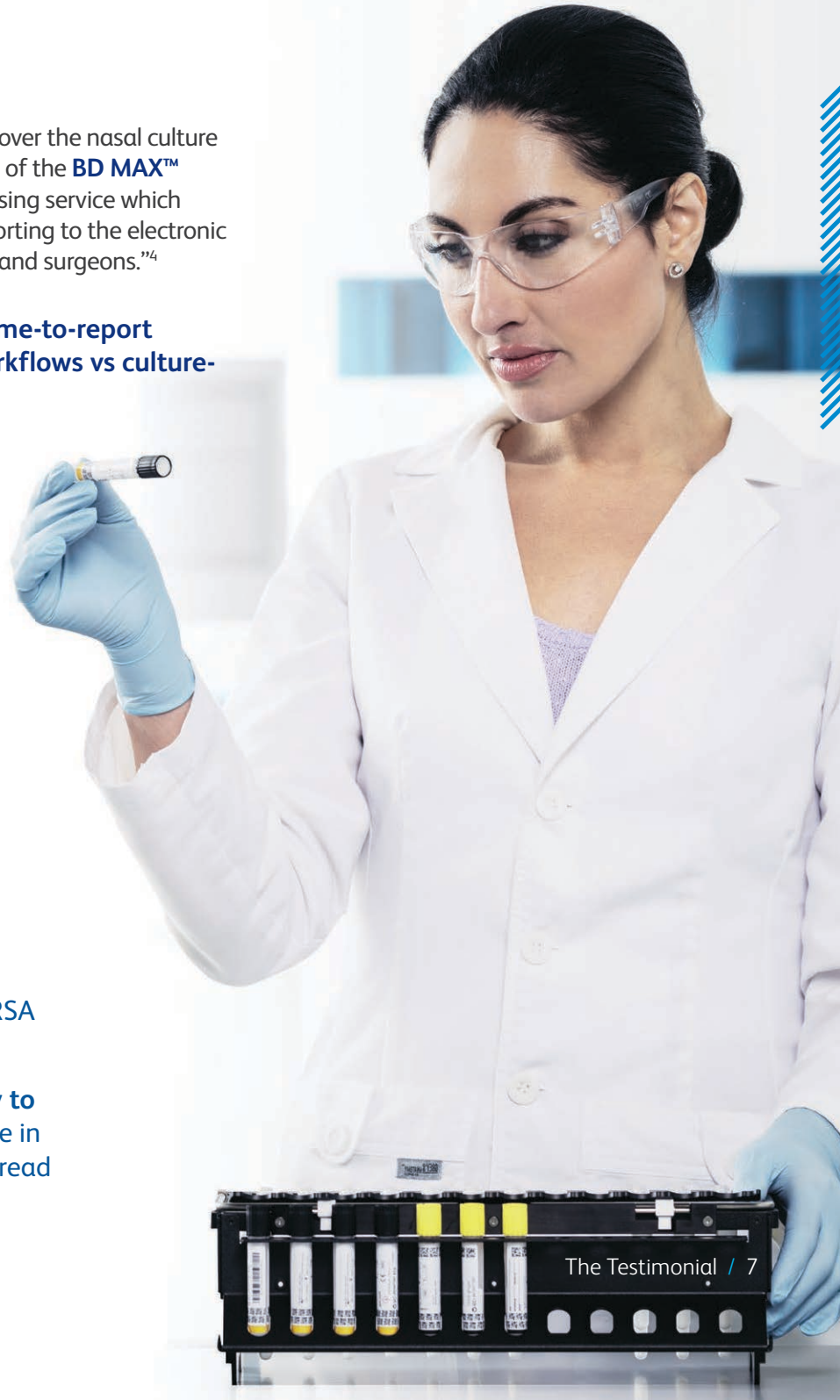
Results reported by morning next day.



Traditional culture orders

Specimens batched with the MRSA medical admissions.

Results reported inconsistently to providers because of arrival time in the microbiology lab and batch read times by two different shifts.



Up to 60% of SSIs are preventable and require a multi-disciplinary approach to solving.[1]

Evidence-based recommendations on SSI:

Molecular testing with **BD MAX™ StaphSR** can help you to correctly identify and prophylactically treat patients colonized with MRSA and MSSA as well as limit the overutilization of vancomycin.[4] Consistent reporting time of the **BD MAX™ StaphSR results can streamline workflow and reporting to anesthesiologists and surgeons.[4]**

American College of Surgeons and Surgical Infection Society's guidelines on MRSA screening include the following recommendations:[1]

Screening protocol	Implementation of global *S. aureus* screening and decolonization protocols should depend on institution's baseline SSI and MRSA rates.
Joint replacement and cardiac procedures	"Clinical practice guidelines from the American Society of Health-System Pharmacists recommend screening and nasal mupirocin decolonization for *S. aureus*-colonized patients before total joint replacement and cardiac procedures."
MRSA bundles	Screening, decolonization, contact precautions, and hand hygiene as part of a MRSA bundle are "highly effective if adhered to, otherwise there is no benefit."
Decolonization protocol	"No standard decolonization protocol supported by literature; consider nasal mupirocin alone vs nasal mupirocin plus chlorhexidine gluconate bathing." "Decolonization protocols should be completed close to date of surgery to be effective."
Prophylaxis	"Vancomycin should not be administered as prophylaxis to MRSA-negative patients." Inappropriate use of vancomycin alone in MRSA-negative patients was associated with increased risk of MSSA SSIs.

The Joint Commission's National Patient Safety Goals (2022):[7]

Improve staff communication	"Get important test results to the right staff person on time."

Streamlined integration into existing workflow with the BD MAX™ System family

- The BD MAX™ System family offers you a fully integrated, automated real-time PCR platform with a broad menu of molecular IVD and open-system tests.[8]
- The automated workflow and analytical performance reduces the need for manual tasks and achieves more rapid results.*[9,10]

*When compared to culture or immunochromatographic antigen (IA).

- The compact and self-contained unitized reagent strips and the new reclosing septum cap simplify waste management and help reduce the risk of contamination.

Snap

Assemble unitized reagent strips with extraction and PCR reagents.

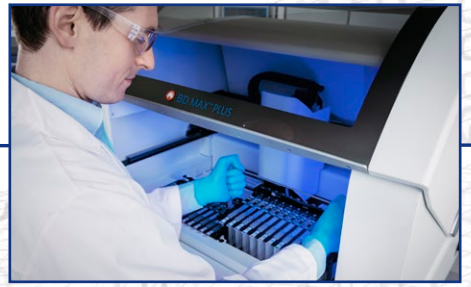
Load

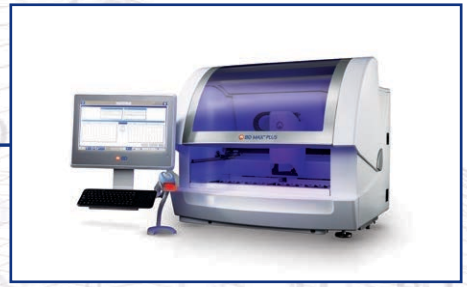
Load the Sample Buffer Tubes, PCR cartridges, and racks.

Go

Come back in just over 2 to 3 hours hours for results.*

*Assay times may vary.





Less than **1.5 minutes** hands-on time per sample[10,11]

24 patient results in **just over 2 to 3 hours**[11]

96 samples per **8 hour shift**[11]

Performance for presurgical screening

BD MAX™ StaphSR assay provides accurate and rapid detection of both *S. aureus* and MRSA nasal colonization in presurgical patients.[4]

Identified more *S. aureus* (MRSA and MSSA) than direct culture[4]

Resulted in ~5-fold reduction in SSI rates per 100 surgeries vs MRSA-only screening using traditional culture[4]

Assay targets	*Staphylococcus aureus* (SA) DNA and methicillin-resistant *Staphylococcus aureus* (MRSA) DNA
mecA	Yes
mecC	Yes
MREJ Types	11 types detected
Patient population	Patients at risk for nasal colonization
Specimen	Nasal swab
IVD part number	443419 (24 tests)

For more information about BD MAX™ Molecular Diagnostic System, please visit: **bd.com**

HAI, healthcare-acquired infection; MRSA, methicillin-resistant *S. aureus*; MSSA, methicillin-sensitive *S. aureus*; MRSA-SC, methicillin-resistant *S.aureus* screening with traditional culture; PCR, polymerase chain reaction; SA, *S.aureus*; SSI, surgical site infection.

References: 1. Ban KA et al. *J Am Coll Surg.* 2017;224(1):59–74. 2. Shepard J et al. *JAMA Surg.* 2013;148(10):907–14. 3. Bode LG et al. *N Engl J Med.* 2010;362(1): 9–17. 4. Tansarli GS et al. *J Mol Diagn.* 2020;22(8):1063–9. 5. BD MAX™ Assay Run Times – Internal Document. 6 Joint Commission on Hospital Accreditation. *Jt Comm Perspect*. 2016;36(7):1–8. 7. The Joint Commission. Hospital: 2022 National Patient Safety Goals. Simplified version. Available at: https://www.jointcommission.org/-/media/tjc/documents standards/national-patient-safety goals/2022/simple_2022-hap npsg-goals-101921.pdf. 8. BD MAX™ System User's Manual. Becton, Dickinson and Company: Sparks, MD. 9. Mortensen JE et al. *BMC Clin Pathol.* 2015;15:9.
10. Hirvonen JJ et al. *Eur J Clin Microbiol Infect Dis.* 2015;34(5):1005–9. 11. Felder RA, et al. *J Lab Autom.* 2014;19(5):468–73.

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