We recently reported the performance of the BD Max StaphSR assay for screening of methicillin-resistant *Staphylococcus aureus* (MRSA), as well as the prevalence in the U.S. of *S. aureus* carrying a staphylococcal cassette chromosome (SCCmec) element lacking *mecA* (so-called dropout mutant) (1). This assay targets the *nuc* and *mecA/C* genes and 11 sequences of the SCCmec-orfX right-extremity junction (MREJ) region. Dropout mutants were defined as those isolates showing positive results for *nuc* (i.e., *S. aureus*) and the MREJ region but negative results for *mecA/C*. This report documented an overall prevalence of dropout mutants of 7.1% among a diverse and contemporary U.S. collection of methicillin-susceptible *S. aureus* (MSSA) isolates that contained fragments of the SCCmec components (1).

These results are of paramount importance, since dropout mutants may generate false-positive MRSA reports with assays screening the MREJ region only (2). Such results can cause inappropriate patient management care, such as unnecessary decolonization treatment, additional precautionary measures, possibly the unjustified use of glycopeptides, and unnecessary expenses of infection control practices (3). Here, we report a comparison analysis of results obtained by both the BD Max StaphSR and BD Max MRSAXT methods and the performance of MRSAXT for the detection of MRSA and dropout mutants.

Subsets of MRSA (*n* = 93) and MSSA (*n* = 102) isolates utilized in the previous study (1) were subjected to the MRSAXT kit. All isolates where false-positive and -negative MRSA results were previously obtained with the BD Max StaphSR kit in comparison with the “gold standard,” as well as all 64 dropout mutant isolates detected by the BD Max StaphSR kit, were included. These isolates were tested for susceptibility and defined as MRSA or MSSA on the basis of oxacillin and/or cefoxitin susceptibility results obtained by the reference broth microdilution and/or disk diffusion methods (4–6). Isolates were subjected to MRSAXT according to the manufacturer’s instructions, with the same slight modifications applied for the BD Max StaphSR samples (1).

All MRSAXT results generated with MRSA and MSSA were in agreement with those obtained previously by BD Max StaphSR, including the presence of three false-negative and eight false-positive MRSA results (1). Sensitivity and specificity values for the MRSAXT kit were 96.8% (90/93) and 92.2% (94/102), respectively. Among the eight false-positive MRSA results, six were, in fact, mecA-positive methicillin-susceptible isolates (a corrected specificity of 97.9% [94/96]; Table 1) (1). In addition, all 64 MSSA isolates initially categorized as dropout mutants by BD Max StaphSR were correctly excluded by the MRSAXT kit.

These results suggest that the MRSAXT and StaphSR assays provide equivalent results for screening of MRSA while also correctly identifying dropout mutants as MSSA (or MRSA negative). Both systems use the same sets of primers and probes targeting the MREJ region, *nuc*, and *mecA/C*. However, while MRSAXT generates a single reportable result (MRSA positive or negative on the basis of MREJ and *mecA/C* status), StaphSR reports results as positive or negative for *S. aureus* and for MRSA according to the results from all of the targets. Another study also reported equivalent MRSA status obtained by MRSAXT and StaphSR from nasal swab samples, with a sensitivity of 94.3% and a specificity of 97.7% for both assays (7). However, it is important to emphasize that the selection of the isolates included here was biased, since all of the isolates that previously generated false-positive and -negative MRSA results by the StaphSR kit were intentionally selected.

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REFERENCES
Performance of BD Max StaphSR for screening of methicillin-resistant
Staphylococcus aureus isolates among a contemporary and diverse collec-
tion from 146 institutions located in nine U.S. Census Regions: prevalence

G. 2011. High proportion of wrongly identified methicillin-resistant
Staphylococcus aureus carriers by use of a rapid commercial PCR assay due
to presence of staphylococcal cassette chromosome element lacking the
.01988-10.

2012. Cost comparison of MRSA screening and management—a decision
-6963-12-438.

mance standards for antimicrobial disk susceptibility tests; approved
standard: twelfth edition. Clinical and Laboratory Standards Institute,
Wayne, PA.

for dilution antimicrobial susceptibility tests for bacteria that grow aerobi-
cally; approved standard: tenth edition. Clinical and Laboratory Standards
Institute, Wayne, PA.

6. Clinical and Laboratory Standards Institute. 2015. M100-S25. Per-
formance standards for antimicrobial susceptibility testing: 25th infor-
mational supplement. Clinical and Laboratory Standards Institute,
Wayne, PA.

of BD Max StaphSR and BD Max MRSA XT assays using ESWab-