

**MRSA VRE Validation – Form C
MRSA and VRE BSI Validation Findings**

Display validation results using 2x2 tables to demonstrate both the accuracy and completeness of CDI surveillance and reporting.

MRSA BSI Example

MRSA positive blood cultures reviewed for validation = 22

		Validation Review ("Gold Standard" or truth)	
		MRSA BSI	Not MRSA BSI
Identified and Reported by Hospital	MRSA BSI 12	12	<u>0</u> Reported in error
	Not MRSA BSI 10	<u>3</u> Missed	7

Positive Predictive Value (PPV) =

$$\frac{12 \text{ True positives}}{12 \text{ True pos.} + 0 \text{ False pos.}} \times 100$$

100%

Sensitivity =

$$\frac{12 \text{ True positives}}{12 \text{ True pos.} + 3 \text{ False neg.}} \times 100$$

80%

Specificity =

$$\frac{7 \text{ True negatives}}{7 \text{ True neg.} + 0 \text{ False pos.}} \times 100$$

100%

Interpretation:

From the 22 MRSA positive blood cultures reviewed, the validation reviewers found **3** disparities compared to the hospital surveillance report.

The hospital had identified and reported 12 MRSA BSI. The validation reviewers determined all 12 should have been reported; all met the surveillance criteria.

The calculated **positive predictive value (PPV)** reveals that what was reported as MRSA BSI meets the LabID criteria 100% of the time.

For the other 10 MRSA positive blood cultures reviewed in which routine hospital surveillance did not report MRSA BSI, the validation reviewers identified **3** additional MRSA BSI.

The calculated **sensitivity** reveals routine hospital surveillance is identifying 80% of the MRSA BSI occurring.

The calculated **specificity** reveals hospital routine surveillance accurately "rules out" MRSA BSI 100% of the time.

VRE BSI Example

VRE positive blood cultures reviewed for validation = 6

		Validation Review ("Gold Standard" or truth)	
		MRSA BSI	Not MRSA BSI
Identified and Reported by Hospital	VRE BSI 0	---	== Reported in error
	Not VRE BSI 6	<u>3</u> Missed	3

Positive Predictive Value (PPV) =

$$\frac{0 \text{ True positives}}{0 \text{ True pos.} + \text{n/a False pos.}} \times 100$$

Could not calculate

Sensitivity =

$$\frac{0 \text{ True positives}}{0 \text{ True pos.} + 3 \text{ False neg.}} \times 100$$

0%

Specificity =

$$\frac{3 \text{ True negatives}}{3 \text{ True neg.} + 0 \text{ False pos.}} \times 100$$

100%

Interpretation:

From the 6 VRE positive blood cultures reviewed, the validation reviewers found **3** disparities compared to the hospital surveillance report.

The hospital had not identified nor reported any VRE BSI. The validation reviewers determined 3 should have been reported (the other 3 were duplicates).

Positive predictive value (PPV) could not be calculated because the hospital had not identified any VRE BSI upon which to assess accuracy in applying surveillance definitions.

For the 6 VRE positive blood cultures reviewed that the hospital did not report as VRE BSI, the validation reviewers identified **3** VRE BSI that met the surveillance criteria.

The calculated **sensitivity** reveals routine hospital surveillance is identifying 0% of the VRE BSI occurring.

The calculated **specificity** reveals that when VRE BSI did not meet criteria, routine surveillance is not reporting them 100% of the time (i.e. hospital not calling something a VRE BSI that is not a VRE BSI).



Data Validation for MRSA Bloodstream Infections

Hospital: _____

Surveillance time period: _____

From MRSA Events Table, Form 3

Number of MRSA+ blood cultures in review = _____

		Validation Review	
		MRSA BSI	No MRSA BSI
Identified and Reported by Hospital	MRSA BSI _____ <i>Form B, M total Q1 = Yes</i>	A	B <i>Reported in Error</i>
	No MRSA BSI _____ <i>Form B, M total Q1 = No</i>	C <i>Missed</i>	D

$$\text{Sensitivity} = \frac{A}{A + C} \times 100 = \underline{\hspace{2cm}}$$

$$\text{Specificity} = \frac{D}{D + B} \times 100 = \underline{\hspace{2cm}}$$

$$\text{Positive Predictive Value} = \frac{A}{A + B} \times 100 = \underline{\hspace{2cm}}$$



Data Validation for VRE Bloodstream Infections

Hospital: _____

Surveillance time period: _____

From VRE Events Table, Form 3

		Validation Review	
		VRE BSI	No VRE BSI
Number of VRE+ blood cultures in review = _____		A	B <i>Reported in Error</i>
Routine Hospital Surveillance	VRE BSI _____ <i>Form B, V total Q1 = Yes</i>	A	B <i>Reported in Error</i>
	No VRE BSI _____ <i>Form B, V total Q1 = No</i>	C <i>Missed</i>	D

Sensitivity = $\frac{A}{A + C} \times 100 =$ _____

Specificity = $\frac{D}{D + B} \times 100 =$ _____

Positive Predictive Value = $\frac{A}{A + B} \times 100 =$ _____