

**Mast® ICT D74C**

**External Evaluation**

**Pre-development External Evaluations**

**Study1, UK:**

D74C was tested against a panel of clinical isolates ( $n= 26$ ) that included Enterobacteriaceae, *Pseudomonas aeruginosa* and *Acinetobacter baumannii*. Some of the isolates had known resistance mechanisms, and the remainder were identified through routine screening for carbapenem susceptibility (imipenem, ertapenem or meropenem). These were a mixture of carbapenem susceptible and carbapenem intermediate/ resistant organisms. Isolates displaying reduced susceptibility were sent to a reference laboratory for confirmation of the resistance mechanism.

**Results**

Resistance Mechanism		Total				
		Positive	Negative	Equivocal	Correctly Identified	Incorrectly Identified
Carbapenemase Producing Organisms ( $n=11$ )	KPC ( $n=3$ )	3	0	0	3	0
	MBL (unspecified, $n=3$ )	3	0	0	3	0
	MBL (NDM, $n=1$ )	1	0	0	1	0
	MBL (IMP, $n=1$ )	1	0	0	1	0
	OXA ( $n=3$ )	3	0	0	3	0
	<b>Total</b>	11	0	0	11	0
Non-Carbapenemase Producing Organisms ( $n=15$ )	ESBL ( $n=1$ )	0	1	0	1	0
	Negative ( $n=12$ )	2	10	0	10	2
	OprD porin loss ( $n=2$ )	0	2	0	2	0
	<b>Total</b>	2	13	0	13	2

Sensitivity = **100%**

Specificity = **87%**

Positive predictive value = **85%**

Negative predictive value = **100%**

**Study 2, UK:**

D74C was tested against a large panel of organisms with a diverse range of resistance mechanisms (carbapenemase producers  $n=39$ , carbapenemase negative  $n= 14$ )

Results

Resistance Mechanism		Total				
		Positive	Negative	Equivocal	Correctly Identified	Incorrectly Identified
Carbapenemase Producing Organisms	KPC (n=6)	6	0	0	6	0
	MBL (VIM, n=6)	6	0	0	6	0
	MBL (IMP, n=5)	5	0	0	5	0
	MBL (NDM, n=5)	5	0	0	5	0
	MBL/ ESBL co-producer (VIM-10 + VEB-1)	1	0	0	1	0
	OXA-48 (n=6)	6	0	0	6	0
	OXA-40 (n=1)	1	0	0	1	0
	OXA-23 (n=1)	1	0	0	1	0
	OXA-23 and OXA-51 (n=1)	0	1	0	0	1
	OXA-like (n=6)	6	0	0	6	0
	OXA-like/ TEM co-producer (n=1)	1	0	0	1	0

**mastdiscs<sup>®</sup>**  
*combi*

## VALIDATION DATA

	<b>Total</b>	38	1	0	38	1
Non-Carbapenemase Producing Organisms	ESBL (n=5)	2 (weak)	3	0	3	2
	AmpC (n=6)	0	6	0	6	0
	AmpC + impermeability (n=1)	0	1	0	1	0
	AmpC + porin loss (n=2)	0	2	0	2	0
	<b>Total</b>	2	12	0	12	2

Sensitivity = **97.4%**

Specificity = **85.7%**

Positive predictive value = **95.2%**

Negative predictive value = **92.3%**