

**Table S1.** Lot numbers of tested panels.

	Lot number	Expiry date	Period used
Gram-positive panels	2019-04-24	24/4/2019	15/04/2019 – 19/04/2019
	2019-12-27	27/12/2019	22/04/2019 – 03/05/2019 16/10/2019 – 6/12/2019
	2020-07-02	2/7/2020	27/01/2020 – 31/01/2020
Gram-negative panels	2019-04-26	26/4/2019	11/03/2019 – 19/04/2019
	2019-11-30	30/11/2019	22/04/2019 – 03/05/2019
	2019-12-17	17/12/2019	16/10/2019 – 29/11/2019
	2020-03-01	01/03/2020	2/12/2019 – 6/12/2019 06/01/2020 – 31/01/2020
MSF ID panels	2019-04-16	16/4/2019	18/03/2019 – 12/04/2019

**Table S2.** Geographical origin of the isolates. These isolates were obtained from ITM travel clinic and surveillance studies.

Species	Total number of isolates tested	Africa	Asia	South America	Europe	
					Clinical isolates	Reference strains
<b>Gram-negative species</b>						
<i>Escherichia coli</i>	28	24	4	-	-	-
<i>Klebsiella pneumoniae</i>	13	10	2	1	-	-
<i>Klebsiella oxytoca</i>	3	2	-	1	-	-
<i>Enterobacter cloacae</i> complex	15	12	-	3	-	-
<i>Citrobacter freundii</i> complex	9	8	1	-	-	-
<i>Kluyvera ascorbata</i>	1	1	-	-	-	-
<i>Salmonella</i> Typhi	10	6	3	1	-	-
<i>Salmonella</i> Paratyphi A	10	4	6	-	-	-
<i>Salmonella</i> Typhimurium	10	8	2	-	-	-
<i>Salmonella</i> Choleraesuis	9	-	8	1	-	-
<i>Shigella</i> species	10	4	-	-	-	6
<i>Morganella morganii</i>	4	4	-	-	-	-
<i>Proteus mirabilis</i>	7	4	3	-	-	-
<i>Providencia rettgerii</i>	1	1	-	-	-	-
<i>Pseudomonas aeruginosa</i>	11	6	3	2	-	-
<i>Acinetobacter baumannii</i>	9	6	-	3	-	-
<i>Achromobacter xylosoxidans</i>	10	9	1	-	-	-
<i>Burkholderia cepacia</i>	15	14	-	1	-	-
<i>Burkholderia thailandensis</i>	6	-	6	-	-	-
<i>Burkholderia ubonensis</i>	1	-	1	-	-	-
<i>Burkholderia oklahomensis</i>	1	-	1	-	-	-
<i>Stenotrophomonas maltophilia</i>	15	14	1	-	-	-
<i>Aeromonas species</i>	3	-	3	-	-	-
<i>Vibrio alginolyticus</i>	2	-	-	-	-	2
<b>Gram-positive species</b>						
Species	Total number of isolates tested	Africa	Asia	South America	Europe	
					Clinical isolates	Reference strains
<i>Staphylococcus aureus</i>	14	10	4	-	-	-
<i>Staphylococcus hominis</i>	3	1	2	-	-	-
<i>Staphylococcus epidermidis</i>	11	9	-	-	-	2
<i>Staphylococcus lugdunensis</i>	3	1	-	-	-	2
<i>Staphylococcus lentus</i>	1	-	1	-	-	-

<i>Staphylococcus haemolyticus</i>	6	6	-	-	-	-
<i>Listeria monocytogenes</i>	2	-	-	-	-	2
<i>Micrococcus</i> species	4	3	1	-	-	-
<i>Enterococcus faecalis</i>	7	7	-	-	-	-
<i>Enterococcus faecium</i>	7	5	1	1	-	-
<i>Enterococcus casseliflavus</i>	1	-	1	-	-	-
<i>Streptococcus agalactiae</i>	13	1	4	-	2	6
<i>Streptococcus anginosus</i>	8	1	2	-	2	3
<i>Streptococcus pneumoniae</i>	12	10	-	-	2	-
<i>Streptococcus gallolyticus</i> *	10	1	6	-	-	3
<i>Streptococcus lutetiensis</i> *	1	-	1	-	-	-
<i>Streptococcus pyogenes</i>	13	5	4	-	1	3
<i>Streptococcus dysgalactiae</i> (group C & G)	6	-	3	-	-	3
<i>Streptococcus mitis/oralis</i>	5	4	1	-	-	-
<i>Streptococcus salivarius</i>	1	-	1	-	-	-
<i>Bacillus</i> species	10	10	-	-	-	-
<i>Corynebacterium</i> species	6	2	1	-	-	3
Yeast species	9	9	-	-	-	-
<i>Streptococcus suis</i>	11	-	11	-	-	-
<b>Total</b>	<b>367</b>	<b>222 (60.5%)</b>	<b>89 (24.3%)</b>	<b>14 (3.8%)</b>	<b>7 (1.9%)</b>	<b>35 (9.5%)</b>

\* Formerly part of *Streptococcus bovis* group

Table S3. Detailed results for incorrect use of panels. Species not listed in the database are marked with an asterisk (\*).

Species	Total number of isolates tested	Identification not possible	Incorrect low probability identifications	Incorrect high probability identifications
<b>Gram-positive isolates on Gram-negative panel</b>				
<i>S. aureus</i>	5	-	3	2
<i>S. hominis</i>	3	1	2	-
<i>S. epidermidis</i>	2	-	2	-
<i>S. lentus</i>	1	-	-	1
<i>S. haemolyticus</i>	1	-	1	-
<i>Micrococcus</i> species	4	-	3	1
<i>Enterococcus</i> species	10	6	1	3
<i>S. agalactiae</i>	6	2	-	4
<i>S. anginosus</i>	1	-	1	-
<i>S. pneumoniae</i>	3	-	2	1
<i>S. pyogenes</i>	4	3	1	-
<i>S. dysgalactiae</i>	4	1	1	2
<i>S. oralis/mitis</i>	4	-	2	2
<i>S. suis</i>	10	1	-	9
<i>Bacillus</i> species *	8	2	3	3
<i>Corynebacterium</i> species *	3	-	1	2
Yeast species *	5	-	5	-
<b>Staphylococcus interpreted with Streptococcus algorithm</b>				
<i>S. aureus</i>	14	8	-	6
<i>S. hominis</i>	3	2	-	1
<i>S. epidermidis</i>	11	9	2	-
<i>S. lugdunensis</i>	3	3	-	-
<i>S. lentus</i>	1	-	-	1
<i>S. haemolyticus</i>	6	6	-	-
<i>Listeria monocytogenes</i>	2	2	-	-

<i>Micrococcus</i> species	4	-		2		2	
<b>Streptococcus interpreted with Staphylococcus algorithm</b>							
<i>Enterococcus</i> species	15	9		1		5	
Species	Total number of isolates tested	Identification not possible		Incorrect low probability identifications		Incorrect high probability identifications	
<i>S. agalactiae</i>	13	3		6		4	
<i>S. anginosus</i>	8	1		3		4	
<i>S. pneumoniae</i>	12	-		1		11	
<i>S. gallolyticus</i>	10	-		-		10	
<i>S. lutetiensis</i>	1	-		1		-	
<i>S. pyogenes</i>	13	9		-		4	
<i>S. dysgalactiae</i>	6	3		-		3	
<i>S. oralis/mitis</i>	5	1		2		2	
<i>S. salivarius</i>	1	-		1		-	
<b>Gram-negative species on Gram-positive panel</b>							
		Identification not possible		Incorrect low probability identifications		Incorrect high probability identifications	
					<i>Streptococcus</i>	<i>Streptococcus</i>	
					Micrococcus interpretation	Micrococcus interpretation	
					n	n	
<i>Escherichia coli</i>	10	4	7	2	-	4	3
<i>Enterobacter cloacae</i> complex	5	5	5	-	-	-	-
<i>Kluyvera ascorbata</i>	1	-	1	-	-	1	-
<i>Citrobacter freundii</i> complex	5	4	5	1	-	-	-
<i>Salmonella</i> Typhi	2	2	2	-	-	-	-
<i>Salmonella</i> Paratyphi A	3	2	3	1	-	-	-
<i>Salmonella</i> Typhimurium	5	-	5	5	-	-	-
<i>Salmonella</i> Choleraesuis	5	5	5	-	-	-	-
<i>Shigella</i> species	5	5	5	-	-	-	-
<i>Pseudomonas aeruginosa</i>	3	3	3	-	-	-	-
<i>Acinetobacter baumannii</i>	4	-	-	-	3	4	1
<i>Achromobacter xylosoxidans</i>	1	1	1	-	-	-	-
<i>Burkholderia cepacia</i>	4	2	1	2	-	-	3
<i>Stenotrophomonas maltophilia</i>	4	1	-	3	1	-	3
<i>Burkholderia thailandensis</i> *	5	2	4	1	-	2	1
<i>Burkholderia oklahomensis</i> *	1	1	1	-	-	-	-
<i>Burkholderia ubonensis</i> *	1	-	-	-	-	1	1

**Table S4.** Agreement between visual and automated (autoSCAN-4) reading: two readings had species agreement if both readings resulted in the same result up to species level. Total biotype agreement indicates the same result was read for each well. A result was considered correct if it was accurate up to species level, disregarding the probability score. For species not represented in the database, correct identification was not possible, so these results were not included.

Species	Number of isolates tested	% species agreement	% biotype agreement	% correct identification	
				Automated	Visual

Enterobacterales	55	98.2%	60%	96.4%	98.2%
Non-fermenters (including <i>Aeromonas/Vibrio</i> species)	41	87.8%	58.5%	85.4%	92.7%
<b>Total Gram-negative tested</b>	<b>96</b>	<b>93.8%</b>	<b>59.4%</b>	<b>91.7%</b>	<b>95.8%</b>
<i>Staphylococcus/ Micrococcus / Listeria</i> isolates	23	91.3%	60.9%	90.5%	91.3%
<i>Streptococcus / Enterococcus</i>	41	87.8%	53.7%	80.5%	78.0%
Gram-positive rods (not represented in database)	9	77.8%	44.4%	-	-
<i>Streptococcus suis</i> (not represented in database)	9	11.1%	0%	-	-
<b>Total Gram-positive; only species represented in database</b>	<b>64</b>	<b>89.1%</b>	<b>56.3%</b>	<b>82.8%</b>	<b>81.3%</b>
Total	178	87.1%	54.5%	-	-
<b>Total including only species represented in database</b>	<b>160</b>	<b>91.9%</b>	<b>58.1%</b>	<b>87.5%</b>	<b>90.6%</b>

**Table S5.** Results for inter-observer agreement between two independent readers who read the panels visually. Two readings had species agreement if both readings resulted in the same result up to species level. Total biotype agreement indicates the same result was read for each well. P-value for difference in accuracy between visual and automated reading was calculated using McNemar test for paired samples. The species tested for repeatability can be found in Supplementary Table 4. The abbreviations for the tests are explained in footnote.

	Number of isolates tested for inter-observer agreement	Number of isolates with categorical agreement (% of total)	Number of isolates with total biotype agreement (% of total)	Total number of wells read	Number of wells differently read by the observers	Disagreement of which wells was seen? *	Which well differences led to categorical disagreement?
<b>Enterobacterales</b>	15	14 (93.3%)	8 (53.3%)	480	13	ARG; K4; RAF; ARA; NIT ; CL4 ; CET; CIT ; <b>VP x 3</b> ; IND ; FD64	CL4
<b>Non-fermenting Gram-negative organisms</b>	8	8 (100%)	7 (87.5%)	256	1	SOR	/
<i>Aeromonas caviae</i>	1	1 (100%)	0	32	1	IND	/
<i>Staphylococcus</i> species	8	8 (100%)	4 (50.0%)	208	5	NOV x 2; <b>VP x 2</b> ; ARG	/
<i>Streptococcus</i> species	18	18 (100%)	14 (77.8%)	468	4	<b>VP</b> ; PHO; PRV; PYR	/
<b>Total</b>	50	49 (98.0%)	33 (66.0%)	1444	24		

\* Abbreviations of tests: ARA = L-arabinose fermentation; ARG = arginine dehydrolase; CET = cetrimide resistance; CIT = citrate; CL4 = colistin resistance; FD64 = nitrofurantoin resistance; IND = indole; K4 = kanamycin resistance; NIT = nitrate reduction; NOV = novobiocin resistance; PHO = phosphatase; PRV = pyruvate utilization ; PYR = Pyrrolidonyl- $\beta$ -naphthylamide; RAF = raffinose fermentation ; SOR = sorbitol fermentation; VP = Voges Proskauer.