

Table 1 Antibiotic resistance profiles for clinically important bacteria in Panama: trends from 2007-2013

Bacteria/Antimicrobial agent	2007				2008				2009				2010				2011				2012				2013				p
	n	R (%)	95%CI		n	R (%)	95%CI		n	R (%)	95%CI		n	R (%)	95%CI		n	R (%)	95%CI		n	R (%)	95%CI		n	R (%)	95%CI		
<i>Escherichia coli</i>																													
Ceftazidime	3191	6	5.2	6.8	2910	8	7	8.9	2910	8	7	8.9	3257	14.1	12.9	15.3	1949	14	12.5	15.4	2112	17	15.4	18.6	3364	24.4	22.9	25.85	0.058
Cefotaxime	3191	NT	NT	NT	2910	8	7	8.9	2910	10	8.9	11.9	3257	8	7.1	8.9	1949	5	4	5.9	2112	14	12.5	15.4	3364	28	26.5	29.5	0.948
Amoxicillin-clavulanic acid	3191	4	3.3	4.68	2910	6	5.1	6.86	2910	6	5.1	6.86	3257	5.4	4.6	6.18	1949	14	12.5	15.54	2112	0	0	0	3364	8	7.1	8.92	0.201
Cefepime	3191	6	3.3	4.68	2910	9	8	10.04	2910	10	4.2	6.24	3257	14.5	12.9	16.06	1949	8	6.8	9.16	2112	14	12.8	15.17	3364	24	22.6	25.4	0.294
Imipenem	3191	1	0.7	1.35	2910	1	0.6	1.36	2910	0.1	0	0.21	3257	0.5	0.3	0.74	1949	1	0.6	1.44	2112	0	0	0	3364	0.3	0.1	0.48	0.525
Meropenem	3191	1	0.7	1.35	2910	1	0.6	1.36	2910	0.2	0	0.36	3257	0.9	0.6	1.22	1949	3	2.2	3.76	2112	0	0	0	3364	0.2	0	0.35	0.789
Nalidixic acid	3191	26	24.5	27.52	2910	26	24.4	27.59	2910	28	26.4	29.63	3257	23	21.6	24.45	1949	42	39.8	44.19	2112	28	26.1	29.91	3364	66	64.4	67.6	0.082
Ciprofloxacin	3191	55	53.3	56.73	2910	55	53.2	56.81	2910	31	29.3	32.68	3257	36.7	35	38.36	1949	45	42.8	47.21	2112	30	28	31.95	3364	53	51.3	54.69	0.310
Trimethoprim-sulfamethoxazole	41	71	69.4	72.57	2910	71	69.4	72.65	2910	65	63.3	66.73	3257	37.9	36.2	39.57	1949	44	41.8	46.2	2112	21	19.3	22.74	3364	55	53.3	56.68	0.085
Nitrofurantoin	3191	NT	NT	NT	2910	NT	NT	NT	2910	2	1.5	2.51	3257	1.7	1.3	2.14	1949	1	0.6	1.44	2112	0	0	0	3364	5	4.3	5.74	0.689
Gentamicin	3191	NT	NT	NT	2910	NT	NT	NT	2910	NT	NT	NT	3257	15.5	14.3	16.74	1949	21	19.2	22.81	2112	11	9.7	12.3	3364	22	20.6	23.4	0.299
Amikacin	3191	NT	NT	NT	2910	NT	NT	NT	2910	NT	NT	NT	3257	0.3	0.1	0.49	1949	11	9.6	12.39	2112	0	0	0	3364	0.7	0.4	0.98	0.166
<i>Klebsiella pneumoniae</i>																													
Amoxicillin-Clavulanic acid	1591	7.6	6.3	8.9	1721	9	7.6	10.4	1721	10	8.6	11.4	2260	3.8	3	4.6	1782	39	36.7	41.3	1865	0	0	0	2244	23	21.3	24.7	0.294
Cefotaxime	1591	NT	NT	NT	1721	24	22	26	1721	25	23	27	2260	13.5	12.1	14.9	1782	9	7.7	10.3	1865	17	15.3	18.7	2244	39	37	41	0.482
Ceftazidime	1591	35.8	33.4	38.2	1721	38	35.7	40.3	1721	39	36.7	41.3	2260	25.5	23.7	27.3	1782	42	39.7	44.3	1865	35	32.8	37.2	2244	40	38	42	0.255
Cefepime	1591	16.7	14.9	18.5	1721	20	18.1	21.9	1721	21	19.1	22.9	2260	26.5	24.7	28.3	1782	21	19.1	22.9	1865	29	26.9	31.1	2244	40	38	42	0.077
Imipenem	1591	1.3	0.7	1.9	1721	0.2	0	0.4	1721	0.1	0	0.2	2260	0.4	0.1	0.7	1782	11	9.5	12.5	1865	8	6.8	9.2	2244	6	5	7	0.080
Meropenem	1591	0.9	0.4	1.4	1721	0.1	0	0.2	1721	0.1	0	0.2	2260	1.4	0.9	1.9	1782	12	10.5	13.5	1865	5	4	6	2244	5.8	4.8	6.8	0.031
Ciprofloxacin	1591	33	30.7	35.3	1721	30	27.8	32.2	1721	30	27.8	32.2	2260	22	20.3	23.7	1782	36	33.8	38.2	1865	27	25	29	2244	35	33	37	0.402
Trimethoprim-sulfamethoxazole	1591	50	47.5	52.5	1721	43	40.7	45.3	1721	45	42.6	47.4	2260	19.7	18.1	21.3	1782	37	34.8	39.2	1865	15	13.4	16.6	2244	39	37	41	0.096
Gentamicin	1591	NT	NT	NT	1721	NT	NT	NT	1721	NT	NT	NT	2260	17.5	15.9	19.1	1782	20	18.1	21.9	1865	17	15.3	18.7	2244	26	24.2	27.8	0.299
Amikacin	1591	NT	NT	NT	1721	NT	NT	NT	1721	NT	NT	NT	2260	0.3	0.1	0.5	1782	5	4	6	1865	2	1.4	2.6	2244	1	0.6	1.4	0.166
<i>Enterobacter spp</i>																													
Piperacillin-tazobactam	Not significant data collected this year				917	20	17.4	22.6	922	22	19.3	24.7	927	NT	NT	NT	607	11	8.5	13.5	810	13	10.7	15.3	866	18	15.4	20.6	0.110
Cefotaxime					917	25	22.2	27.8	922	25	22.2	27.8	927	19.7	17.1	22.3	607	13	10.3	15.7	810	9	7	11	866	25	22.1	27.9	0.248
Ceftazidime					917	25	22.2	27.8	922	26	23.2	28.8	927	20.6	18	23.2	607	16	13.1	18.9	810	18	15.4	20.6	866	24	21.2	26.8	0.085
Cefepime					917	9	7.1	10.9	922	10	8.1	11.9	927	8.6	6.8	10.4	607	5	3.3	6.7	810	3	1.8	4.2	866	5.6	4.1	7.1	0.085
Imipenem					917	0.2	-0.1	0.5	922	0.4	0	0.8	927	1.7	0.9	2.5	607	2	0.9	3.1	810	1	0.3	1.7	866	1.3	0.5	2.1	0.064
Meropenem					917	0.3	-0.1	0.7	922	0.3	-0.1	0.7	927	3.7	2.5	4.9	607	5	3.3	6.7	810	0	0	0	866	0.6	0.1	1.1	0.243
Nalidixic acid					917	NT	NT	NT	922	1.1	0.4	1.8	927	11.5	9.4	13.6	607	14	11.2	16.8	810	8	6.1	9.9	866	15	12.6	17.4	0.110
Ciprofloxacin					917	24	21.2	26.8	922	25	22.2	27.8	927	15.7	13.4	18	607	12	9.4	14.6	810	8	6.1	9.9	866	11	8.9	13.1	0.110
Trimethoprim-sulfamethoxazole					917	29	26.1	31.9	922	30	27	33	927	21.5	18.9	24.1	607	22	18.7	25.3	810	7	5.2	8.8	866	18	15.4	20.6	0.225
Nitrofurantoin					917	23	20.3	25.7	922	25	22.2	27.8	927	17	14.6	19.4	607	7	5	9	810	0	0	0	866	20	17.3	22.7	0.142
Gentamicin					917	NT	NT	NT	922	NT	NT	NT	927	8.3	6.5	10.1	607	7	5	9	810	4	2.7	5.3	866	7	5.3	8.7	0.584
<i>Staphylococcus aureus</i>																													
Erythromycin	2784	29	27.3	30.7	2619	30	28.2	31.8	2619	30	28.2	31.8	2314	25	23.2	26.8	1737	28	25.9	30.1	2359	19	17.4	20.6	2056	26	24.1	27.9	0.085
Clindamycin	2784	26	24.4	27.6	2619	28	26.3	29.7	2619	28	26.3	29.7	2314	23	21.3	24.7	1737	27	24.9	29.1	2359	17	15.5	18.5	2056	22	20.2	23.8	0.310
Vancomycin	2784	0	0	0	2619	0	0	0	2619	0	0	0	2314	0	0	0	1737	0	0	0	2359	0	0	0	2056	0	0	0	-
Tetracycline	2784	11	9.8	12.2	2619	10	8.9	11.1	2619	10	8.9	11.1	2314	8	6.9	9.1	1737	15	13.3	16.7	2359	10	8.8	11.2	2056	17	15.4	18.6	0.318
Ciprofloxacin	2784	20	18.5	21.5	2619	21	19.4	22.6	2619	21	19.4	22.6	2314	23	21.3	24.7	1737	7	5.8	8.2	2359	17	15.5	18.5	2056	22	20.2	23.8	0.627
Trimethoprim-sulfamethoxazole	2784	6.1	5.2	7	2619	5	4.2	5.8	2619	5	4.2	5.8	2314	2	1.4	2.6	1737	3	2.2	3.8	2359	1	0.6	1.4	2056	1.3	0.8	1.8	0.070
Gentamicin	2784	9.9	8.8	11	2619	9	7.9	10.1	2619	9	7.9	10.1	2314	2	1.4	2.6	1737	3	2.2	3.8	2359	2	1.4	2.6	2056	2.3	1.7	2.9	0.109
Rifampicin	2784	2.8	2.2	3.4	2619	3	2.3	3.7	2619	3	2.3	3.7	2314	1	0.6	1.4	1737	0	0	0	2359	1	0.6	1.4	2056	2	1.4	2.6	0.061
Oxacillin	2784	30	28.3	31.7	2619	32	30.2	33.8	2619	32	30.2	33.8	2314	55	53	57	1737	29	26.9	31.1	2359	25	23.3	26.7	2056	35	32.9	37.1	0.757
Cefoxitin	2784	NT	NT	NT	2619	25	23.3	26.7	2619	25	23.3	26.7	2314	35	33.1	36.9	1737	29	26.9	31.1	2359	23	21.3	24.7	2056	34	32	36	0.517
Penicillin	2784	89	87.8	90.2	2619	91	89.9																						

Cefepime	1901	80.1	78.3	81.9	2018	79	77.2	80.8	2018	79	77.2	80.8	3020	70.6	69	72.2	2196	77	75.2	78.8	2851	80	78.5	81.5	2598	77	75.4	78.6	0.154
Imipenem	1901	76.4	74.5	78.3	2018	75	73.1	76.9	2018	75	73.1	76.9	3020	67.15	65.5	68.8	2196	76	74.2	77.8	2851	79	77.5	80.5	2598	78	76.4	79.6	0.453
Meropenem	1901	65.4	63.3	67.5	2018	74	72.1	75.9	2018	74	72.1	75.9	3020	64.1	62.4	65.8	2196	71	69.1	72.9	2851	74	72.4	75.6	2598	50	48.1	51.9	0.525
Gentamicin	1901	70.4	68.3	72.5	2018	72	70	74	2018	72	70	74	3020	56	54.2	57.8	2196	62	60	64	2851	54	52.2	55.8	2598	53	51.1	54.9	0.102
Ciprofloxacin	1901	83.3	81.6	85	2018	82	80.3	83.7	2018	82	80.3	83.7	3020	72.2	70.6	73.8	2196	30	28.1	31.9	2851	86	84.7	87.3	2598	83	81.6	84.4	0.453
Trimethoprim-sulfamethoxazole	1901	86	84.4	87.6	2018	84	82.4	85.6	2018	84	82.4	85.6	3020	50	48.2	51.8	2196	79	77.3	80.7	2851	89	87.9	90.1	2598	85	83.6	86.4	0.627
Amikacin	1901	34	31.9	36.1	2018	40	37.9	42.1	2018	40	37.9	42.1	3020	19	17.6	20.4	2196	15	13.5	16.5	2851	NT	NT	NT	2598	14	12.7	15.3	0.092
<i>Pseudomonas aeruginosa</i>																													
Piperacillin	1874	NT	NT	NT	1716	31	28.8	33.2	1716	31	28.8	33.2	2179	2.6	1.9	3.3	2138	8	6.9	9.1	2549	NT	NT	NT	2156	25	23.2	26.8	0.182
Ceftazidime	1874	29.5	27.4	31.6	1716	32	29.8	34.2	1716	32	29.8	34.2	2179	22	20.3	23.7	2138	27	25.1	28.9	2549	47	45.1	48.9	2156	28	26.1	29.9	0.402
Cefepime	1874	34	31.9	36.1	1716	33	30.8	35.2	1716	23	21	25	2179	25.7	23.9	27.5	2138	28	26.1	29.9	2549	51	49.1	52.9	2156	38	36	40	0.726
Meropenem	1874	22.5	20.6	24.4	1716	21	19.1	22.9	1716	21	19.1	22.9	2179	25.1	23.3	26.9	2138	27	25.1	28.9	2549	46	44.1	47.9	2156	32	30	34	0.070
Aztreonam	1874	NT	NT	NT	1716	NT	NT	NT	1716	NT	NT	NT	2179	4	3.2	4.8	2138	NT	NT	NT	2549	30	28.2	31.8	2156	44	41.9	46.1	0.157
Gentamicin	1874	23.3	21.4	25.2	1716	25	23	27	1716	25	23	27	2179	15.7	14.2	17.2	2138	24	22.2	25.8	2549	24	22.3	25.7	2156	19	17.3	20.7	0.563
Amikacin	1874	20.4	18.6	22.2	1716	21	19.1	22.9	1716	21	19.1	22.9	2179	13	11.6	14.4	2138	24	22.2	25.8	2549	32	30.2	33.8	2156	18	16.4	19.6	0.566
Ciprofloxacin	1874	39.9	37.7	42.1	1716	39	36.7	41.3	1716	39	36.7	41.3	2179	29	27.1	30.9	2138	27	25.1	28.9	2549	43	41.1	44.9	2156	33	31	35	0.171
Piperacillin-tazobactam	1874	9.4	8.1	10.7	1716	15	13.3	16.7	1716	15	13.3	16.7	2179	NT	NT	NT	2138	4	3.2	4.8	2549	NT	NT	NT	2156	27	25.1	28.9	0.918

NT: Not data collected.