Web annex

DANMAP

2016

DANMAP 2016 - Use of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from food animals, food and humans in Denmark

Statens Serum Institut
National Veterinary Institute, Technical University of Denmark
National Food Institute, Technical University of Denmark

Web annex tables 2016

Table A4.1. Consumption of antimicrobial agents for systemic use in pigs given as defined animal daily doses (DADDs), Denmark

DANMAP 2016

Therapeutic group	Aminoglycosides	Aminoglycosides GI	Amphenicols	Cephalosporins	Colistin GI	Fluoroquinolones	Lincosamider/ Spectinomycin	Macrolides	Penicillin/ Streptomycin	Penicillin's, b-lactamase sensitive	Penicillin's, others(a)	Pleuromutilins	Sulfonamide/ trimethoprim(b)	Tetracyclines	Total
Year	breeding animals/piglets (1000's DADD for 200 kg)														
2004	5	210	18	114	36	3	580	772	671	2302	1111	903	1277	1205	9207
2005	5	162	20	132	35	4	571	769	662	2399	1082	741	1378	1267	9227
2006	6	146	18	149	36	7	538	825	646	2380	1078	825	1434	1217	9306
2007	6	144	22	244	47	6	612	1357	664	2598	1269	1138	1572	1657	11338
2008	7	28	20	300	58	0	556	1272	633	2654	1220	1688	1637	1580	11650
2009	10	36	52	219	86	0	530	1383	685	2864	1432	1559	2036	1664	12556
2010	13	40	73	114	102	0	444	1325	693	2792	1491	1141	2100	1488	11817
2011	11	40	101	3	85	7	317	1032	605	2403	1248	517	1760	1055	9183
2012	12	55	89	1	86	9	287	1187	601	2409	1197	495	1771	1132	9330
2013	17	65	142	5	89	15	296	1397	569	2602	1177	666	1814	1257	10111
2014	19	57	134	4	130	6	311	1427	570	2580	1151	433	1697	1239	9758
2015	2	64	166	0	147	0	287	1371	565	2496	1174	584	1583	1137	9576
2016	9	67	171	0	153	0	281	1439	503	2441	1130	718	1463	1002	9377
Year	Weaner pigs (1000's DADD for 19 kg)														
2004	1	16814	223	209	3615	6	16840	41083	2433	3290	11079	18166	4409	35090	153259
2005	1	15504	151	211	3182	4	14480	39092	2831	3368	9622	19625	4897	38808	151776
2006	2	15320	76	230	3351	9	12562	37860	2770	3180	7930	18591	3708	45391	150981
2007	1	8404	106	320	4212	0	12818	45094	2714	3533	7861	16412	3322	59020	163819
2008	2	2245	221	316	5326	0	13132	43283	2728	3278	7718	23052	3614	62154	167068
2009	1	2326	138	284	5444	0	14125	49534	2984	3642	9433	29454	3688	71885	192939
2010	0	1702	146	143	6395	0	13108	47147	3156	3749	8907	30550	3074	66451	184529
2011	1	1785	138	4	5166	0	10742	36920	2900	3565	7582	21658	2391	56286	149139
2012	0	1665	135	19	5621	5	12605	42454	2950	3527	7995	22299	2883	64875	167034
2013	0	2273	166	27	5391	0	12432	42426	2951	3789	9119	25363	4915	66107	174959
2014	0	2147	212	32	8738	0	11399	38800	3191	3966	9773	24049	4688	60332	167327
2015	0	1570	457	10	10643	0	11198	38214	3487	4243	10132	23540	3968	56692	164155
2016	0	1303	638	3	11154	0	11333	39298	3232	3736	11687	21908	3713	55305	163309
Year	Finisher pigs (1000's DADD for 70 kg)														
2004	0	114	62	46	16	3	3238	8912	284	4948	2073	6963	176	10600	37437
2005	0	182	50	46	54	1	3055	8785	298	5542	1950	8080	179	11072	39294
2006	0	160	47	38	23	1	2593	7637	214	5677	1667	7202	117	12179	37554
2007	0	79	28	40	15	0	2308	7869	164	5720	1770	5767	124	13298	37182
2008	0	4	24	38	31	0	1911	7704	113	5411	1121	8817	110	12575	37858
2009	0	9	22	28	22	0	1956	9100	95	5895	1196	10334	89	13226	41972
2010	0	29	16	16	22	0	1954	9145	157	6469	1232	11204	86	12843	43173
2011	0	5	60	2	11	0	1762	6667	166	5796	883	8509	100	10712	34673
2012	0	3	8	1	13	0	1694	7236	195	5508	990	8401	132	11167	35349
2013	0	4	14	1	7	0	1541	6477	143	5678	1012	10019	240	11942	37077
2014	0	2	13	1	43	0	1423	6264	106	5698	828	9111	172	10656	34315
2015	0	0	27	2	67	0	1324	5457	87	5898	724	8287	120	9035	31029
2016	0	0	14	1	36	0	1136	5482	64	5271	673	8121	152	8033	28983
Year	Age group not given (1000's DADD for 50 kg)														
2004	1	97	12	7	15	3	318	915	42	395	221	647	103	769	3545
2005	1	61	6	7	20	0	237	624	39	334	199	497	114	641	2778
2006	0	83	3	6	23	0	174	520	28	293	192	445	106	725	2599
2007	0	36	1	11	25	0	157	302	21	203	92	329	70	556	1802
2008	0	7	1	9	34	0	78	216	8	126	89	248	55	366	1239
2009	0	2	0	10	22	0	66	207	9	104	76	184	43	220	941
2010	0	3	0	3	7	0	31	121	11	35	29	78	15	82	415
2011	0	0	0	0	0	0	1	10	0	1	2	3	3	7	27
2012	0	0	0	0	0	0	2	2	0	1	0	1	0	3	10
2013	0	0	0	0	0	0	0	0	0	3	3	0	1	3	10
2014	0	0	0	0	2	0	0	0	0	1	2	0	0	2	7
2015	0	0	0	0	0	0	2	1	0	1	3	0	0	1	9
2016	0	0	0	0	0	0	0	2	0	0	1	0	0	0	2

Note: DADD for pigs is defined as the standard dose necessary for treating a pig of average weight in the age group (breeding animals = 200 kg, weaners = 19kg and finishers = 70 kg). Where the age group was not specified a weight of 50 kg was assumed.

a) Data includes sales from pharmacies, feed mills and veterinary practice. Local intrauterine, intramammary and topical treatment is not included
b) Includes a small proportion of combinations with aminopenicillin and clavulanic acid
c) 3rd and 4th generation cephalosporins.

Table A5.1. Consumption of antimicrobial agents for systemic use in humans (kg active substance), Denmark

DANMAP 2016

ATC group[a]	Therapeutic group	Year									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
J01AA	Tetracyclines	1855	1884	2039	2161	2193	2217	2253	2024	1791	1731
J01CA	Penicillins with extended spectrum	6188	6061	6076	6317	6205	6010	6001	6068	6200	5413
J01CE	Beta-lactamase sensitive penicillins	24003	22466	21744	22301	22671	20318	20223	19272	19008	17693
J01CF	Beta-lactamase resistant penicillins	5037	5183	5250	5418	5290	5687	6126	6444	6513	6776
J01CR	Comb. of penicillins, including beta-lactamase inhibitors	1012	1348	1836	2597	3274	5410	6322	7352	8259	8552
J01D	Cephalosporins and related substances[b]	2285	2530	2740	2696	2374	1983	2328	2060	1853	1702
J01EA	Trimethoprim and derivatives	402	402	399	417	416	435	442	466	467	472
J01EB	Short-acting sulfonamides	2565	2273	2200	2158	1998	1861	1838	1737	1479	1319
J01EE	Comb. of sulfonamides and trimethoprim, including derivatives	148	183	193	252	326	362	357	383	402	409
J01FA	Macrolides	3434	3164	2966	3038	2942	2129	2446	2329	2287	2275
J01FF	Lincosamides[b]	78	94	113	124	138	145	239	236	244	252
J01G	Aminoglycosides	27	25	23	24	24	31	30	23	23	20
J01MA	Fluoroquinolones[b]	1162	1351	1371	1457	1458	1414	1238	1197	1170	1054
J01XA	Glycopeptides	61	64	86	89	102	108	111	97	88	89
J01XC	Steroid antibacterials (fusidic acid)	67	64	62	65	56	48	41	38	31	27
J01XD	Imidazoles	202	241	255	258	261	269	270	287	265	282
J01XE	Nitrofuran derivatives (nitrofurantoin)	190	192	201	208	209	205	202	200	189	181
J01XX05	Methenamine[b]	1060	1087	1047	1078	1057	1040	993	1009	1009	1009
J01XX08+09	Linezolid, daptomycin	12	14	14	13	18	19	20	22	23	20
P01AB01	Nitroimidazole derivatives	1135	1200	1343	1387	1396	1393	1383	1374	1345	1311
A07AA09	Intestinal antiinfectives (vancomycin)	220	238	259	256	256	291	243	221	42	42
J01	Antibacterial agents for systemic use (total)[c]	51143	50064	50217	52314	52664	51375	53106	52819	52691	49605

Note: Includes data from both primary health care and hospital care and has been recalculated from original data expressed as DDDs. For monitoring in human primary health care and hospital care, the recommended way of expressing consumption is DDDs per 1000 inhabitant-days and DDDs per 100 occupied bed-days / DDDs per 100 admissions

a) From the 2016 edition of the ATC classification system

b) Since 2005, the kg active substance was estimated taking into account the DDD for each route of administration, e.g. cefuroxime parenteral DDD=3 g and cefuroxime oral DDD=0.5 g.

c) Does not include polymyxins

Figure A5.1. Distribution of DIDs between primary health care and hospital care, Denmark

DANMAP 2016

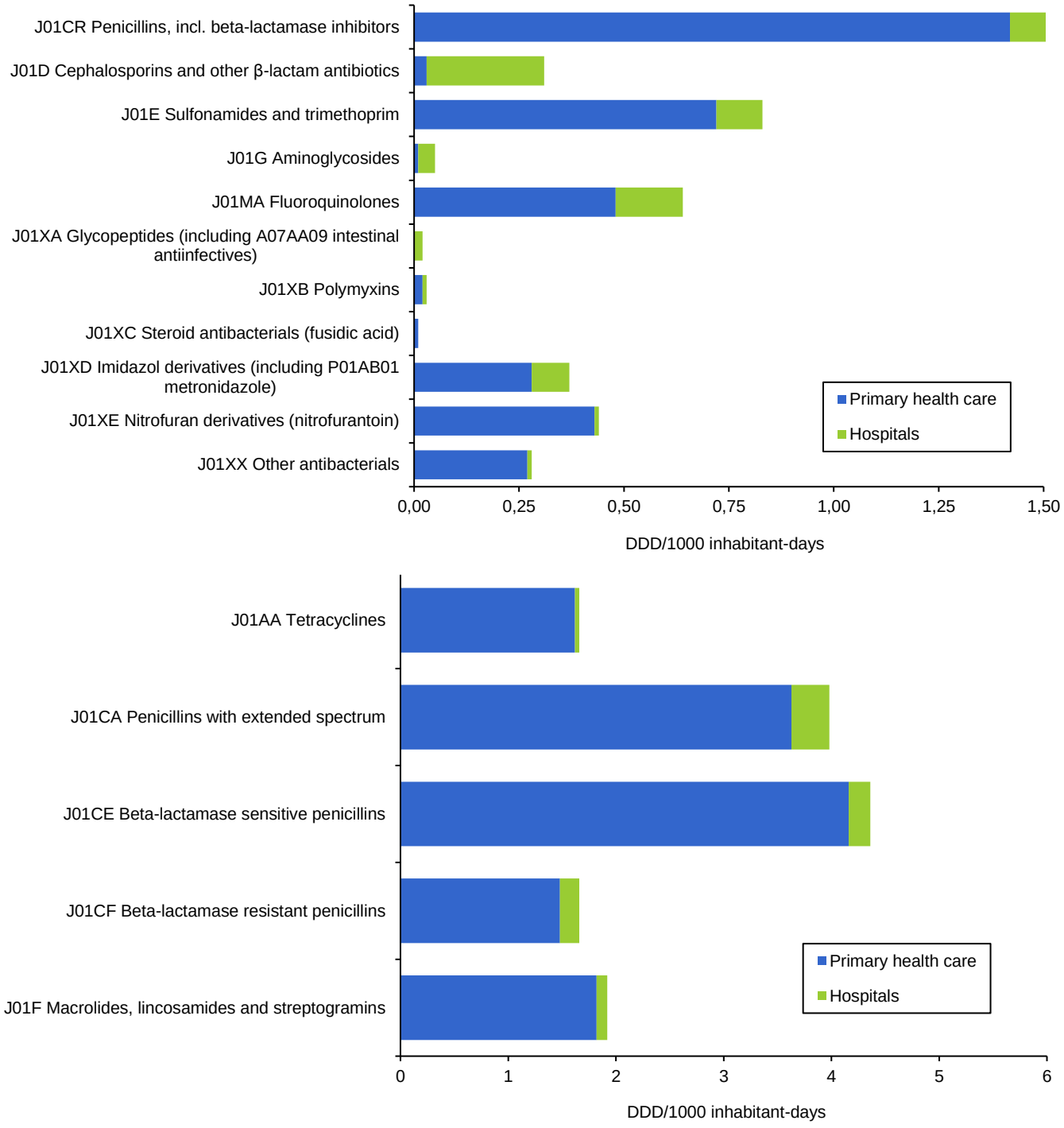


Figure A5.2. Number of bed-days and admissions in somatic hospitals, Denmark

DANMAP 2016

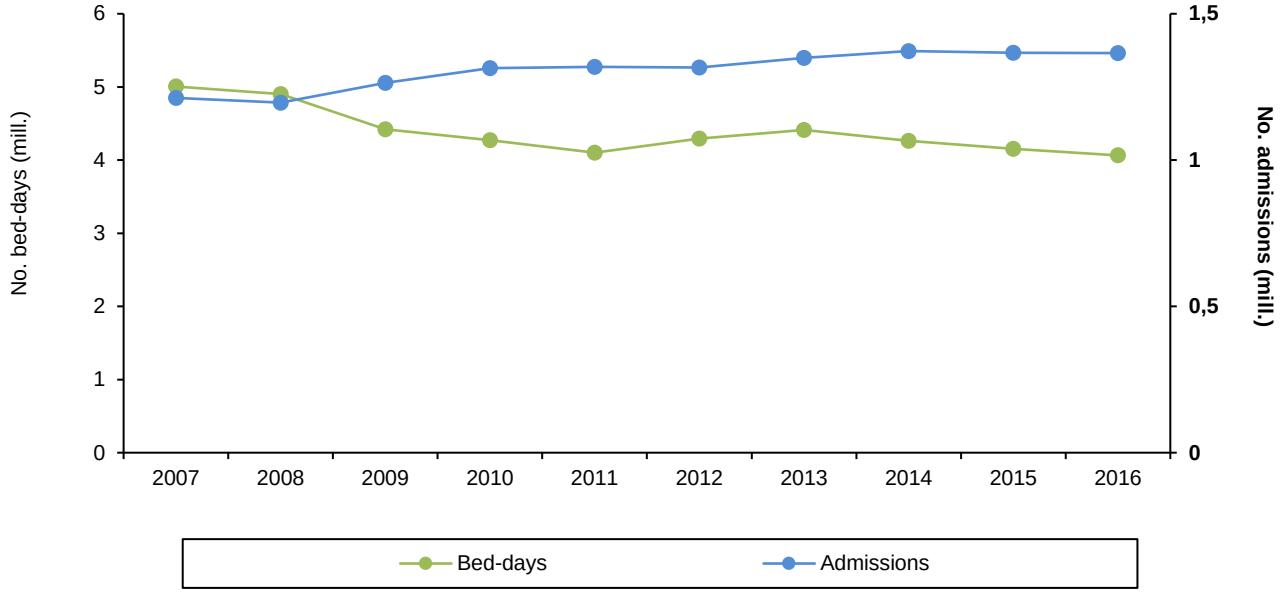


Table A5.2.Consumption of antimicrobial agents for systemic use in primary health care (No. treated patients/1000 inhabitants/year), Denmark

DANMAP 2016

ATC group[a]	Therapeutic group	Year									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
J01AA	Tetracyclines	12.5	12.7	13.0	13.4	13.7	13.5	13.9	12.2	11.3	11.0
J01CA	Penicillins with extended spectrum	82.1	81.3	81.1	85.1	84.2	77.3	76.11	75.3	74.9	74.1
J01CE	Beta-lactamase sensitive penicillins	177.1	164.4	158.8	162.9	164.4	145.5	142.2	134.8	130.6	125.7
J01CF	Beta-lactamase resistant penicillins	29.7	29.9	29.9	30.0	30.4	28.5	29.1	29.2	28.9	29.7
J01CR	Combinations of penicillins, including beta-lactamase inhibitors	3.6	5.0	8.0	11.7	15.0	17.3	19.7	20.5	22.0	22.2
J01D	Cephalosporins and related substances	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
J01EA	Trimethoprim and derivatives	5.9	5.9	5.8	6.0	6.2	6.6	6.9	7.4	7.4	7.4
J01EB	Short-acting sulfonamides	29.7	26.3	25.4	25.0	23.2	21.6	21.1	19.1	16.8	15.4
J01EE	Combinations of sulfonamides and trimethoprim, including derivatives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
J01FA	Macrolides	71.4	66.9	64.5	72.7	78.8	64.7	56.2	51.4	51.8	53.2
J01FF	Lincosamides	0.6	0.8	1.0	1.3	1.4	1.4	1.5	1.6	1.8	1.8
J01GB	Aminoglycosides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
J01MA	Fluoroquinolones	15.2	17.1	16.9	18.5	18.1	17.3	16.1	15.3	15.1	14.4
J01XA	Glycopeptides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
J01XB	Polymyxins	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
J01XC	Steroid antibacterials (fusidic acid)	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1
J01XE	Nitrofuran derivatives (nitrofurantoin)	6.5	6.8	7.0	6.9	7.1	7.0	7.0	6.7	6.9	7.0
J01XX05	Methenamine	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4
J01XX08	Linezolid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
A07AA09	Vancomycin	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
P01AB01	Nitroimidazole derivatives	14.4	15.3	16.3	16.7	16.9	16.9	16.5	16.3	16.5	16.0
J01[b]	Antibacterial agents for systemic use (total)	323.5	311.4	306.4	318.7	324.9	296.3	289.5	278.6	273.5	269.7

a) From the 2016 edition of the Anatomical Therapeutic Chemical (ATC) classification system

b) This includes J01 and P01AB01. The total no. of patients treated with an antibiotic is lower than the sum of all antibiotic classes. This is because the Danish Health Data Authority only counts the first treatment for each patient, each year

Table A5.3. Number of DDDs and packages per treated patient among leading groups of antimicrobial agents in primary health care, Denmark

DANMAP 2016

ATC group[(a)]	Therapeutic group	Indicator	Year									
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
J01AA	Tetracyclines	DDDs / patient	43.0	44.4	45.2	45.9	44.0	47.6	51.6	49.9	51.7	53.0
		Packages / patient	2.0	2.0	2.0	2.0	1.9	2.1	2.1	2.1	1.9	1.8
		DDDs / package	22.0	22.7	22.7	22.7	22.6	23.1	25.5	23.8	27.8	29.4
J01CA	Penicillins with extended spectrum	DDDs / patient	14.4	14.7	14.8	14.9	14.8	16.1	16.7	17.2	17.6	17.2
		Packages / patient	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7
		DDDs / package	9.0	9.2	9.2	9.0	9.2	9.7	10.0	10.0	10.3	10.2
J01CE	Beta-lactamase sensitive penicillins	DDDs / patient	11.7	11.8	11.8	11.8	11.8	11.8	12.0	11.9	12.1	11.6
		Packages / patient	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3
		DDDs / package	8.2	8.2	8.4	8.4	8.4	8.4	8.5	8.5	8.8	8.8
J01CF	Beta-lactamase resistant penicillins	DDDs / patient	13.4	13.7	13.9	14.2	13.8	15.5	16.4	17.1	17.4	17.7
		Packages / patient	1.5	1.5	1.5	1.5	1.4	1.6	1.7	1.8	1.8	1.7
		DDDs / package	8.7	9.0	9.1	9.3	9.6	9.7	9.4	9.7	9.5	10.3
J01CR	Combinations of penicillins, incl. beta-lactamase inhibitors	DDDs / patient	19.1	19.9	20.4	21.1	21.9	22.3	22.6	23.2	23.6	22.5
		Packages / patient	1.6	1.6	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.5
		DDDs / package	11.7	12.4	13.3	13.7	14.1	14.3	14.3	14.3	15.1	15.0
J01FA	Macrolides	DDDs / patient	12.4	12.5	12.5	12.2	11.5	12.4	12.6	12.8	12.5	12.1
		Packages / patient	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6
		DDDs / package	8.1	8.1	8.1	8.1	7.9	8.0	8.0	7.9	7.7	7.8
J01MA	Fluoroquinolones	DDDs / patient	10.6	11.0	11.2	11.2	11.5	11.7	11.8	11.9	12.0	12.0
		Packages / patient	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
		DDDs / package	7.0	7.5	7.6	7.6	7.7	7.8	7.8	7.9	7.9	7.9
J01	Antibacterial agents for systemic use (total)	DDDs / patient	17.3	18.9	19.2	19.6	19.4	20.6	21.3	21.5	21.8	21.5
		Packages / patient	1.9	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1
		DDDs / package	8.9	9.1	9.3	9.3	9.3	9.7	9.9	9.9	10.2	10.5

a) From the 2016 edition of the Anatomical Therapeutic Chemical (ATC) classification system

Table A5.4. Consumption of antimicrobial agents for systemic use in hospital care (DDD/1000 inhabitant-days), Denmark

DANMAP 2016

ATC group[a]	Therapeutic group	Year									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
J01AA	Tetracyclines	0.02	0.02	0.03	0.03	0.02	0.04	0.03	0.04	0.04	0.04
J01CA	Penicillins with extended spectrum	0.35	0.35	0.35	0.32	0.29	0.33	0.32	0.34	0.35	0.35
J01CE	Beta-lactamase sensitive penicillins	0.28	0.25	0.23	0.21	0.19	0.22	0.22	0.22	0.20	0.20
J01CF	Beta-lactamase resistant penicillins	0.18	0.17	0.17	0.17	0.15	0.19	0.20	0.20	0.20	0.18
J01CR	Combinations of penicillins, incl. beta-lactamase inhibitors	0.08	0.10	0.13	0.15	0.17	0.25	0.29	0.33	0.36	0.36
J01DB	First-generation cephalosporins	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J01DC	Second-generation cephalosporins	0.31	0.33	0.37	0.35	0.33	0.30	0.27	0.24	0.21	0.18
J01DD	Third-generation cephalosporins	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02
J01DF	Monobactams	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J01DH	Carbapenems	0.05	0.07	0.07	0.08	0.09	0.08	0.09	0.09	0.08	0.08
J01EA	Trimethoprim and derivatives	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
J01EB	Short-acting sulfonamides	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
J01EE	Combinations of sulfonamides and trimethoprim, incl. derivatives	0.04	0.05	0.05	0.06	0.08	0.07	0.09	0.10	0.10	0.10
J01FA	Macrolides	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.09	0.10
J01FF	Lincosamides	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
J01GB	Aminoglycosides	0.05	0.04	0.04	0.04	0.04	0.05	0.05	0.03	0.03	0.04
J01MA	Fluoroquinolones	0.21	0.24	0.24	0.22	0.19	0.21	0.21	0.21	0.19	0.16
J01XA	Glycopeptides	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02
J01XB	Polymyxins	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
J01XC	Steroid antibacterials (fusidic acid)	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00
J01XD	Imidazol derivatives	0.07	0.06	0.05	0.08	0.08	0.09	0.09	0.09	0.09	0.09
J01XE	Nitrofuran derivatives (nitrofurantoin)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
J01XX	Other antibacterials	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
P01AB01	Nitroimidazole derivatives (metronidazole)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.04	0.04
A07AA09	Intestinal antiinfectives (vancomycin)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.01	0.01
J01	Antibacterial agents for systemic use (total)	1.92	2.01	2.07	2.04	1.97	2.13	2.15	2.18	2.04	1.99

a) From the 2016 edition of the Anatomical Therapeutic Chemical (ATC) classification system

Table A6.1. Distribution of MICs and resistance (%) in Salmonella Typhimurium from pigs (n=56), Denmark

DANMAP 2016

Antimicrobial agent	% Resistant	95% Confidence interval	Distribution (%) of MICs																	
			0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	64.3	[51.7-76.8]								32.1	3.6			12.5	51.8					
Tigecycline	0	[0-11.3]					89.3	7.1	3.6											
Chloramphenicol	14.3	[5.1-23.5]										82.1	3.6	1.8		12.5				
Ampicillin	67.9	[55.6-80.1]							16.1	14.3	1.8				67.9					
Cefotaxime	0	[0-11.3]					100													
Ceftazidime	0	[0-11.3]						100												
Meropenem	0	[0-11.3]		92.9	7.1															
Trimethoprim	8.9	[1.5-16.4]					87.5	3.6						8.9						
Sulfonamide	60.7	[47.9-73.5]										32.1	7.1						60.7	
Azithromycin	0	[0-11.3]									67.9	28.6	3.6							
Gentamicin	0	[0-11.3]						94.6	5.4											
Ciprofloxacin	0	[0-11.3]	26.8	69.6	3.6															
Nalidixic acid	0	[0-11.3]									91.1	5.4	3.6							
Colistin	0	[0-11.3]							98.2	1.8										

Includes isolates verified as monophasic variants of S. Typhimurium with antigenic formulas S. 4,[5],12:i:-.

Vertical solid lines indicate EUCAST epidemiological cut-off values. For Salmonella, EUCAST ECOFF are not available for all compounds and complementary cutoff's er set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 256). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A6.2. Distribution of MICs and resistance (%) in Salmonella Typhimurium from pork (n=51), Denmark

DANMAP 2016

Antimicrobial agent	% Resistant	95% Confidence interval	Distribution (%) of MICs																	
			0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	68.6	[55.9-81.4]								25.5	5.9			2.0	66.7					
Tigecycline	0	[0-12.3]					13.7	82.4	3.9											
Chloramphenicol	5.9	[0-12.3]										90.2	3.9			5.9				
Ampicillin	72.5	[60.3-84.8]							2.0	23.5	2.0				72.5					
Cefotaxime	0	[0-12.3]					96	3.9												
Ceftazidime	0	[0-12.3]						90.2	9.8											
Meropenem	0	[0-12.3]		25.5	74.5															
Trimethoprim	5.9	[0-12.3]					82.4	7.8	2.0	2.0				5.9						
Sulfonamide	76.5	[64.8-88.1]										2.0	3.9	13.7	3.9				76.5	
Azithromycin	5.9	[0-12.3]									5.9	78.4	9.8	2.0	3.9					
Gentamicin	2.0	[0-5.8]						84.3	11.8	2.0				2.0						
Ciprofloxacin	0	[0-12.3]	7.8	84.3	7.8															
Nalidixic acid	0	[0-12.3]									58.8	41.2								
Colistin	0	[0-12.3]							96.1	3.9										

Includes isolates verified as monophasic variants of S. Typhimurium with antigenic formulas S. 4,[5],12:i:-.

Vertical solid lines indicate EUCAST epidemiological cut-off values. For Salmonella, EUCAST ECOFF are not available for all compounds and complementary cutoff's er set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 256). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A6.3. Distribution of MICs and resistance (%) in Salmonella Derby from pigs (n=63), Denmark

DANMAP 2016

Antimicrobial agent	% Resistant	95% Confidence interval	Distribution (%) of MICs																	
			0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	30.2	[18.8-41.5]								69.8				1.6	28.6					
Tigecycline	0	[0-10]					88.9	11.1												
Chloramphenicol	3.2	[0-7.5]										96.8			3.2					
Ampicillin	12.7	[4.5-20.9]							71.4	15.9					12.7					
Cefotaxime	0	[0-10]					98	1.6												
Ceftazidime	0	[0-10]						98	1.6											
Meropenem	0	[0-10]		98.4	1.6															
Trimethoprim	9.5	[2.3-16.8]					90.5							9.5						
Sulfonamide	14.3	[5.6-22.9]										73.0	9.5	3.2					14.3	
Azithromycin	0	[0-10]									31.7	63.5	4.8							
Gentamicin	2	[0-4.7]						92.1	6.3			1.6								
Ciprofloxacin	0	[0-10]	77.8	22.2																
Nalidixic acid	0	[0-10]									96.8	3.2								
Colistin	0	[0-10]							98.4	1.6										

Vertical solid lines indicate EUCAST epidemiological cut-off values. For Salmonella, EUCAST ECOFF are not available for all compounds and complementary cutoff's er set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 256). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A6.4. Distribution of MICs and resistance (%) in Salmonella Derby from pork (n=34), Denmark

DANMAP 2016

Antimicrobial agent	% Resistant	95% Confidence interval	Distribution (%) of MICs																
			0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	20.6	[7-34.2]								73.5	5.9				20.6					
Tigecycline	0	[0-18.4]					29.4	64.7	5.9											
Chloramphenicol	0.0	[0-18.4]										88.2	11.8							
Ampicillin	5.9	[0-13.8]							35.3	58.8					5.9					
Cefotaxime	0	[0-18.4]					100													
Ceftazidime	0	[0-18.4]						85.3	14.7											
Meropenem	0	[0-18.4]		58.8	41.2															
Trimethoprim	11.8	[0.9-22.6]					61.8	26.5						11.8						
Sulfonamide	11.8	[0.9-22.6]										5.9		61.8	20.6				11.8	
Azithromycin	0.0	[0-18.4]									2.9	91.2	5.9							
Gentamicin	0.0	[0-18.4]						91.2	8.8											
Ciprofloxacin	0	[0-18.4]	32.4	64.7	2.9															
Nalidixic acid	0	[0-18.4]									91.2	8.8								
Colistin	0	[0-18.4]							85.3	14.7										

Vertical solid lines indicate EUCAST epidemiological cut-off values. For Salmonella, EUCAST ECOFF are not available for all compounds and complementary cutoff's er set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 256). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A6.5. Distribution of MICs and resistance (%) in Salmonella Typhimurium from human cases reported as domestically acquired (n=167), associated with travel abroad (n=78) and of unknown origin (n=52), Denmark

DANMAP 2016

Antimicrobial agent	Human cases	% Resistant	95% Confidence interval	Distribution (%) of MICs																
				0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	Domestically acquired	68.3	[61.2-75.3]								30.5	0.6	0.6		1.2	67.1					
	Travel abroad reported	67.9	[57.6-78.3]								30.8		1.3			67.9					
	Unknown origin	67.3	[54.6-80.1]								30.8		1.9			67.3					
Tigecycline	Domestically acquired	0.6	[0-1.8]					69.5		29.9		0.6									
	Travel abroad reported	0	[0-8.1]					62.8		37.2											
	Unknown origin	1.9	[0-5.7]					71.2		26.9			1.9								
Chloramphenicol	Domestically acquired	10.2	[5.6-14.8]										86.8	3.0		0.6	9.6				
	Travel abroad reported	17.9	[9.4-26.5]										79.5	2.6	1.3	1.3	15.4				
	Unknown origin	7.7	[0.4-14.9]										90.4	1.9			7.7				
Ampicillin	Domestically acquired	70.7	[63.8-77.6]							18.6	10.8			0.6		70.1					
	Travel abroad reported	65.4	[54.8-75.9]							25.6	9.0					65.4					
	Unknown origin	76.9	[65.5-88.4]							21.2	1.9			1.9		75.0					
Cefotaxime	Domestically acquired	3.0	[0.4-5.6]					97.0		2.4		0.6									
	Travel abroad reported	5.1	[0.2-10]					94.9		1.3		3.8									
	Unknown origin	5.8	[0-12.1]					94.2		3.8		1.9									
Ceftazidime	Domestically acquired	0.6	[0-1.8]							98.8	0.6		0.6								
	Travel abroad reported	3.8	[0-8.1]							94.9	1.3		3.8								
	Unknown origin	1.9	[0-5.7]							98.1			1.9								
Meropenem	Domestically acquired	0	[0-3.8]		83.8	15.6	0.6														
	Travel abroad reported	0	[0-8.1]		83.3	15.4	1.3														
	Unknown origin	0	[0-12.1]		80.8	19.2															
Trimethoprim	Domestically acquired	9.0	[4.6-13.3]					83.2		7.8					9.0						
	Travel abroad reported	15.4	[7.4-23.4]					73.1		11.5		1.3			14.1						
	Unknown origin	7.7	[0.4-14.9]					84.6		7.7					7.7						
Sulfonamide	Domestically acquired	68.3	[61.2-75.3]										1.8		10.8	17.4	1.8			68.3	
	Travel abroad reported	69.2	[59-79.5]										1.3	1.3	12.8	14.1	1.3			69.2	
	Unknown origin	73.1	[61-85.1]										1.9	1.9	13.5	7.7	1.9			73.1	
Azithromycin	Domestically acquired	0	[0-3.8]								0.6	52.1	43.1	4.2							
	Travel abroad reported	1.3	[0-3.8]									55.1	38.5	5.1	1.3						
	Unknown origin	1.9	[0-5.7]									57.7	36.5	3.8		1.9					
Gentamicin	Domestically acquired	0.6	[0-1.8]							98.8	0.6				0.6						
	Travel abroad reported	3.8	[0-8.1]							96.2					3.8						
	Unknown origin	0	[0-12.1]							100											
Ciprofloxacin	Domestically acquired	0.6	[0-1.8]	26.9	66.5	6.0				0.6											
	Travel abroad reported	17.9	[9.4-26.5]	23.1	57.7	1.3	3.8	1.3		11.5		1.3									
	Unknown origin	7.7	[0.4-14.9]	34.6	57.7					7.7											
Nalidixic acid	Domestically acquired	0	[0-3.8]									87.4	11.4	1.2							
	Travel abroad reported	6.4	[01-11.8]									78.2	10.3	5.1	2.6		3.8				
	Unknown origin	3.8	[0-9.1]									84.6	7.7	3.8			3.8				
Colistin	Domestically acquired	0.6	[0-1.8]							95.2	4.2			0.6							
	Travel abroad reported	5.1	[0.2-10]							94.9		3.8	1.3								
	Unknown origin	1.9	[0-5.7]							94.2	3.8	1.9									

Vertical solid lines indicate EUCAST epidemiological cut-off values. For Salmonella, EUCAST ECOFF are not available for all compounds and complementary cutoff's er set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 256). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A6.6. Distribution of MICs and resistance (%) in Campylobacter jejuni from broilers (n=160) and cattle (n=80), Denmark

DANMAP 2016

Antimicrobial age	Animal spec	% Resistant	95% Confidence interval	Distribution (%) of MICs											
				0.125	0.25	0.5	1	2	4	8	16	32	64	128	>128
Tetracycline	Broilers	13.1	[7.9-18.4]			85.6	1.3	0.6			0.6	3.1	8.8		
	Cattle	12.5	[5.3-19.7]			86.3	1.3				1.3	1.3	10.0		
Erythromycin	Broilers	0.6	[0-1.8]				96.9	1.9	0.6					0.6	
	Cattle	0	[0-7.9]				98.8	1.3							
Streptomycin	Broilers	3.8	[0.8-6.7]			1.9	18.1	65.0	11.3		3.8				
	Cattle	6.3	[0.9-11.6]				11.3	71.3	11.3		6.3				
Gentamicin	Broilers	0	[0-4]		2.5	50.6	46.3	0.6							
	Cattle	0	[0-7.9]			52.5	47.5								
Ciprofloxacin	Broilers	22.5	[16-29]	71.9	4.4	1.3				8.1	14.4				
	Cattle	25.0	[15.5-34.5]	72.5		2.5				7.5	17.5				
Nalidixic acid	Broilers	20.6	[14.4-26.9]				0.6	4.4	63.8	10.0	0.6		20.6		
	Cattle	25.0	[15.5-34.5]					2.5	52.5	20.0			25.0		

Vertical solid lines indicate EUCAST epidemiological cut-off values. EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range

Table A6.7. Distribution of MICs and resistance (%) in Campylobacter jejuni from broiler meat (Danish: n=18, Imported: n=49), Denmark

DANMAP 2016

Antimicrobial agent	Food type	% Resistant	95% Confidence interval	Distribution (%) of MICs											
				0.125	0.25	0.5	1	2	4	8	16	32	64	128	>128
Tetracycline	Danish	11.1	[0-25.6]			88.9							11.1		
	Import	63.3	[49.8-76.8]			32.7	4.1			2.0		2.0	59.2		
Erythromycin	Danish	0	[0-33.9]				100								
	Import	0	[0-12.8]				95.9	4.1							
Streptomycin	Danish	5.6	[0-16.1]				5.6	77.8	11.1		5.6				
	Import	8.2	[0.5-15.8]		2.0		32.7	49.0	8.2		8.2				
Gentamicin	Danish	0	[0-33.9]			66.7	33.3								
	Import	0	[0-12.8]	2.0		75.5	22.4								
Ciprofloxacin	Danish	22.2	[3-41.4]	77.8						11.1	11.1				
	Import	71.4	[58.8-84.1]	20.4	6.1	2.0	2.0		2.0	20.4	46.9				
Nalidixic acid	Danish	22.2	[3-41.4]						72.2	5.6			22.2		
	Import	69.4	[56.5-82.3]				2.0	2.0	16.3	8.2	2.0		69.4		

Vertical solid lines indicate EUCAST epidemiological cut-off values. EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range

Table A6.8. Distribution of MICs and resistance (%) in Campylobacter jejuni from human cases reported as domestically acquired (n=241), associated with travel abroad (n=39) and infections of unknown origin (n=86), Denmark

DANMAP 2016

Antimicrobial agent	Animal species	% Resistant	95% Confidence interval	Distribution (%) of MICs											
				0.125	0.25	0.5	1	2	4	8	16	32	64	128	>128
Tetracycline	Domestically acquired	16.6	[11.9-21.3]				83.4			0.4	0.8	2.5	12.9		
	Travel abroad reported	59.0	[43.5-74.4]				41.0	2.6					56.4		
	Unknown origin	17.4	[9.4-25.5]				82.6		1.2		1.2	2.3	12.8		
Erythromycin	Domestically acquired	1.2	[0-2.6]				69.3	27.4	2.1	0.4		0.4		0.4	
	Travel abroad reported	5.1	[0-12.1]				56.4	35.9	2.6	2.6				2.6	
	Unknown origin	0	[0-7.4]				72.1	26.7	1.2						
Streptomycin	Domestically acquired	2.9	[0.8-5]				93.4	3.7		0.4	2.5				
	Travel abroad reported	12.8	[2.3-23.3]		2.6		79.5	5.1			12.8				
	Unknown origin	2.3	[0-5.5]		1.2		95.3	1.2			2.3				
Gentamicin	Domestically acquired	0.8	[0-2]	33.6	53.9		11.6		0.4	0.4					
	Travel abroad reported	10.3	[0.7-19.8]	23.1	59.0		7.7		5.1		5.1				
	Unknown origin	1.2	[0-3.4]	29.1	62.8		7.0				1.2				
Ciprofloxacin	Domestically acquired	32.8	[26.9-38.7]	55.6	11.6		0.4	0.8		8.7	22.8				
	Travel abroad reported	79.5	[66.8-92.2]	17.9	2.6		2.6		2.6	20.5	53.8				
	Unknown origin	43.0	[32.6-53.5]	46.5	10.5		2.3			17.4	23.3				
Nalidixic acid	Domestically acquired	32.8	[26.9-38.7]					10.0	50.6	6.6		0.4	32.4		
	Travel abroad reported	79.5	[66.8-92.2]					5.1	15.4				79.5		
	Unknown origin	40.7	[30.3-51.1]					10.5	39.5	7.0	2.3	1.2	39.5		

Vertical solid lines indicate EUCAST epidemiological cut-off values. EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A7.1. Distribution of MICs and resistance (%) in Enterococcus faecalis from broilers (n=119), Denmark

DANMAP 2016

Antimicrobial agent	% Resistant	95% Confidence interval	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	52.9	[44-61.9]						45.4	0.8	0.8	0.8	0.8	19.3	16.8	15.1				
Tigecycline	0	[0-5.3]		6.7	86.6	6.7													
Chloramphenicol	1.7	[0-4]								25.2	72.3	0.8		1.7					
Ampicillin	0	[0-5.3]					16.8	77.3	5.9										
Erythromycin	37.0	[28.3-45.6]						40.3	21.0	1.7	2.5	4.2	0.8	0.8	28.6				
Gentamicin	0	[0-5.3]									50.4	49.6							
Ciprofloxacin	2.5	[0-5.3]				1.7	20.2	67.2	8.4			2.5							
Vancomycin	0	[0-5.3]						46.2	50.4	3.4									
Teicoplanin	0	[0-5.3]					98.3	1.7											
Linezolid	0	[0-5.3]					0.8	45.4	52.9	0.8									
Daptomycin	0	[0-5.3]					1.7	41.2	53.8	3.4									

Vertical solid lines indicate EUCAST epidemiological cut-off values. EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A7.2. Distribution of MICs and resistance (%) in indicator Escherichia coli from broilers (n=186), cattle (n=121) and pigs (n=145), Denmark

DANMAP 2016

Antimicrobial agent	Animal species	% Resistant	95% Confidence interval	Distribution (%) of MICs																
				0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	Broilers	15.6	[10.4-20.8]								82.8	1.6			2.2	13.4					
	Cattle	5.8	[1.6-9.9]								94.2			0.8	0.8	4.1					
	Pigs	33.8	[26.1-41.5]								66.2				3.4	30.3					
Tigecycline	Broilers	0	[0-3.4]					98.9	1.1												
	Cattle	0	[0-5.2]					100													
	Pigs	0	[0-4.4]					99.3	0.7												
Chloramphenicol	Broilers	2.2	[0.1-4.2]										97.3	0.5		2.2					
	Cattle	2.5	[0-5.2]										97.5			0.8	1.7				
	Pigs	4.8	[1.3-8.3]										95.2		2.1	0.7	2.1				
Ampicillin	Broilers	27.4	[21-33.8]							2.2	43.5	25.8	1.1			27.4					
	Cattle	5.0	[1.1-8.8]							6.6	36.4	52.1				5.0					
	Pigs	31.7	[24.1-39.3]							4.8	30.3	31.7	1.4	0.7		31.0					
Cefotaxime	Broilers	1.1	[0-2.6]					98.9			0.5	0.5									
	Cattle	0	[0-5.2]					100													
	Pigs	0.7	[0-2]					99.3			0.7										
Ceftazidime	Broilers	1.1	[0-2.6]						98.9	0.5	0.5										
	Cattle	0	[0-5.2]						100												
	Pigs	0.7	[0-2]						99.3			0.7									
Meropenem	Broilers	0	[0-3.4]		100																
	Cattle	0	[0-5.2]		100																
	Pigs	0	[0-4.4]		100																
Trimethoprim	Broilers	21.0	[15.1-26.8]					76.3	2.2	0.5					21.0						
	Cattle	0	[0-5.2]					99.2	0.8												
	Pigs	29.7	[22.2-37.1]					69.0	1.4						29.7						
Sulfonamide	Broilers	26.9	[20.5-33.3]										72.0	1.1						26.9	
	Cattle	5.0	[1.1-8.8]										95.0							5.0	
	Pigs	42.1	[34-50.1]										57.9							42.1	
Azithromycin	Broilers	0	[0-3.4]								6.5	61.3	30.1	2.2							
	Cattle	0	[0-5.2]								9.9	71.1	19.0								
	Pigs	2.1	[0-4.4]								13.1	64.8	19.3	0.7	0.7	1.4					
Gentamicin	Broilers	1.1	[0-2.6]						76.3	21.5	1.1		0.5	0.5							
	Cattle	0	[0-5.2]						79.3	19.0	1.7										
	Pigs	2.1	[0-4.4]						70.3	25.5	2.1		0.7		1.4						
Ciprofloxacin	Broilers	12.9	[8.1-17.7]	74.2	12.9		3.8	8.6	0.5												
	Cattle	0	[0-5.2]	91.7	8.3																
	Pigs	1.4	[0-3.3]	88.3	10.3			1.4													
Nalidixic acid	Broilers	13.4	[8.5-18.3]									86.6				4.3	9.1				
	Cattle	0	[0-5.2]									99.2	0.8								
	Pigs	1.4	[0-3.3]									98.6					1.4				
Colistin	Broilers	0	[0-3.4]							100											
	Cattle	0	[0-5.2]							100											
	Pigs	0	[0-4.4]							100											

Vertical solid lines indicate EUCAST epidemiological cut-off values. For Salmonella, EUCAST ECOFF are not available for all compounds and complementary cutoff's er set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 64). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A7.3. Distribution of MICs and resistance (%) in ESBL and AmpC producing Escherichia coli from broilers (n=48), Denmark

DANMAP 2016

Antimicrobial agen	% Resistant	95% Confidence interval	Distribution (%) of MICs																	
			0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	56.3	[42.2-70.3]						2.1		41.7				4.2	52.1					
Tigecycline	0	[0-13.1]					91.7	8.3												
Chloramphenicol	10.4	[1.8-19.1]										89.6		8.3	2.1					
Ampicillin	100	[100-100]													100					
Cefoxitin	62.5	[48.8-76.2]								2.1	22.9	12.5	2.1	27.1	33.3					
Cefotaxime	100	[100-100]							18.8	12.5	10.4	31.3	8.3	10.4	8.3					
Ceftazidime	100	[93.9-100]							8.3	33.3	10.4	37.5	10.4							
Cefepime	66.7	[53.3-80]			8	25	27	6	8.3	4.2	6.3	6.3	6.3	2.1						
Meropenem	0	[0-13.1]		97.9	2.1															
Ertapenem	0	[83.8-99.5]	43.8	47.9	8.3															
Imipenem	0	[0-13.1]				27.1	70.8	2.1												
Trimethoprim	22.9	[11-34.8]					77.1							22.9						
Sulfonamide	41.7	[27.7-55.6]										54.2	4.2					2.1	39.6	
Azithromycin	2.1	[0-6.1]								8.3	70.8	18.8		2.1						
Gentamicin	8.3	[0.5-16.2]						75.0	14.6	2.1			2.1	6.3						
Ciprofloxacin	39.6	[25.7-53.4]	54.2	6.3		22.9	12.5	4.2												
Nalidixic acid	33.3	[20-46.7]									62.5	4.2			18.8	14.6				
Colistin	0	[0-13.1]							100											

Vertical solid lines indicate EUCAST epidemiological cut-off values. For E. coli, EUCAST ECOFF are not available for all compounds and complementary cutoff's are set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 64). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Table A7.4. Distribution of MICs and resistance (%) in ESBL and AmpC producing Escherichia coli from broiler meat (Danish: n=52, Import: n=37), Denmark

DANMAP 2016

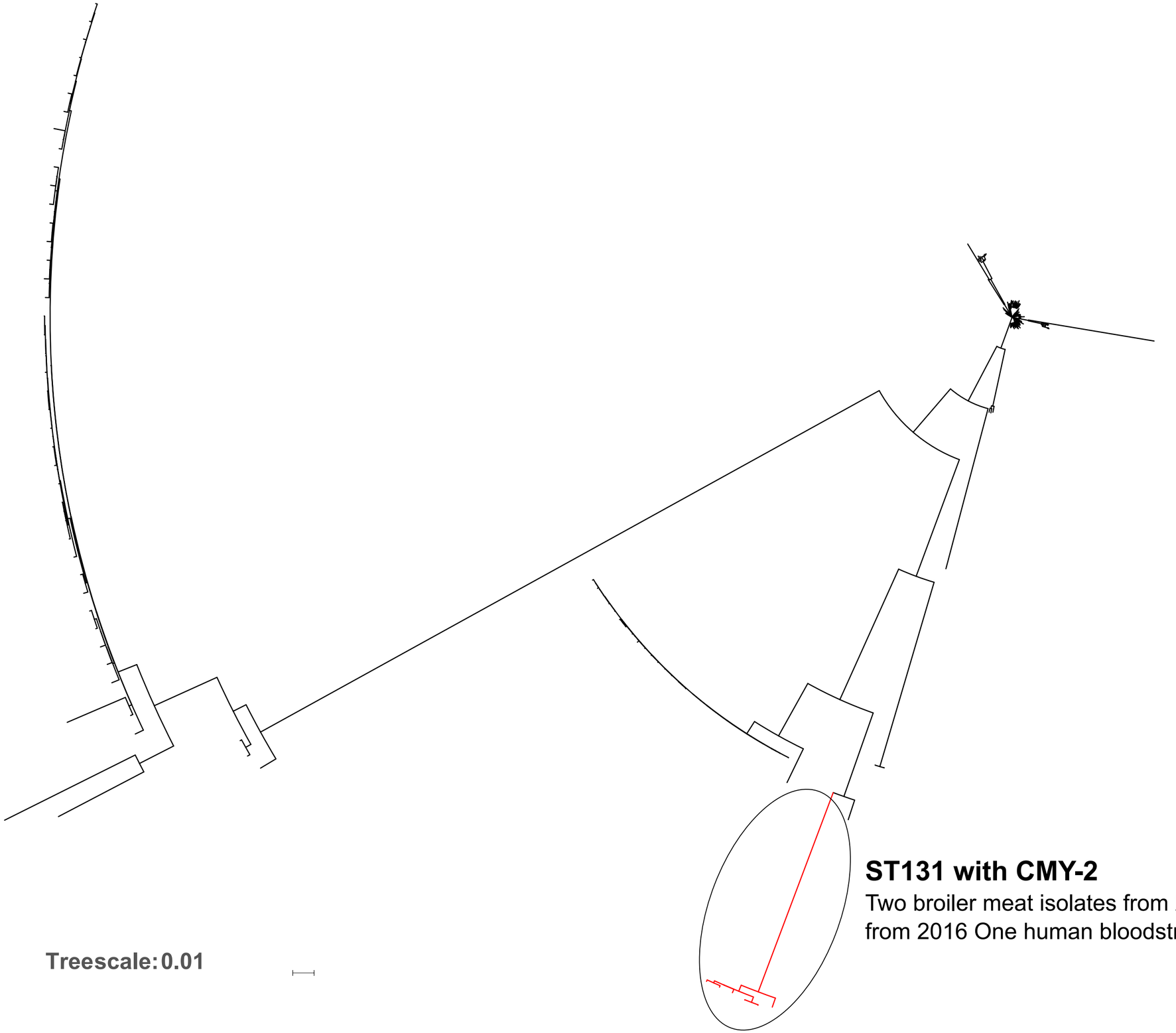
Antimicrobial agent	Food Type	% Resistant	95% Confidence interval	Distribution (%) of MICs																
				0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	>1024
Tetracycline	Danish	44.2	[30.7-57.7]								55.8				5.8	38.5					
	Import	64.9	[49.5-80.2]								35.1				5.4	59.5					
Tigecycline	Danish	0	[0-12.1]					98.1	1.9												
	Import	0	[0-16.9]					94.6	5.4												
Chloramphenicol	Danish	9.6	[1.6-17.6]										90.4		7.7		1.9				
	Import	8.1	[0-16.9]										91.9			5.4	2.7				
Ampicillin	Danish	100	[100-100]													100					
	Import	100	[100-100]													100					
Cefoxitin	Danish	34.6	[21.7-47.5]								1.9	44.2	19.2		13.5	21.2					
	Import	27.0	[12.7-41.3]								8.1	45.9	18.9	2.7	5.4	18.9					
Cefotaxime	Danish	100	[100-100]								3.8	23.1	25.0	3.8	23.1	21.2					
	Import	100	[100-100]								10.8	5.4	16.2	27.0	24.3	16.2					
Ceftazidime	Danish	100	[100-100]							13.5	15.4	26.9	28.8	15.4							
	Import	97.3	[92.1-100]						3	35.1	16.2	16.2	10.8	18.9							
Cefepime	Danish	90.4	[82.4-98.4]				10	23	10	9.6	3.8	1.9	3.8	21.2	17.3						
	Import	97.3	[92.1-100]				3	16	14	5.4		21.6	27.0	5.4	8.1						
Meropenem	Danish	0	[0-12.1]		100																
	Import	0	[0-16.9]		100																
Ertapenem	Danish	0	[82.4-98.4]	55.8	34.6	9.6															
	Import	0	[71.9-95.7]	62.2	16.2	16.2	5.4														
Imipenem	Danish	0	[0-12.1]				40.4	59.6													
	Import	0	[0-16.9]				27.0	70.3	2.7												
Trimethoprim	Danish	38.5	[25.2-51.7]					59.6	1.9						38.5						
	Import	29.7	[15-44.5]					67.6	2.7						29.7						
Sulfonamide	Danish	73.1	[61-85.1]										25.0	1.9						73.1	
	Import	73.0	[58.7-87.3]										27.0							73.0	
Azithromycin	Danish	0	[0-12.1]								13.5	75.0	11.5								
	Import	0	[0-16.9]								13.5	59.5	24.3	2.7							
Gentamicin	Danish	13.5	[4.2-22.7]						67.3	19.2				7.7	5.8						
	Import	13.5	[2.5-24.5]						40.5	45.9				5.4	8.1						
Ciprofloxacin	Danish	15.4	[5.6-25.2]	80.8	3.8			11.5	1.9				1.9								
	Import	40.5	[24.7-56.4]	51.4	8.1			13.5	16.2	2.7	2.7		5.4								
Nalidixic acid	Danish	15.4	[5.6-25.2]									84.6				1.9	13.5				
	Import	37.8	[22.2-53.5]									59.5	2.7				37.8				
Colistin	Danish	0	[0-12.1]							98	1.9										
	Import	0	[0-16.9]							100											

Vertical solid lines indicate EUCAST epidemiological cut-off values. For E. coli, EUCAST ECOFF are not available for all compounds and complementary cutoff's er set for Azithromycin (MIC > 16) and Sulfamethoxazole (MIC > 64). EUCAST clinical breakpoints are indicated as vertical dotted lines if different from the corresponding epidemiological cut-off values.

Confidence intervals are calculated as 95% binomial proportions presenting Wilson intervals.

White fields represent the range of dilutions tested. MIC values equal to or lower than the lowest concentration tested are presented as the lowest concentration. MIC values greater than the highest concentration in the range are presented as one dilution step above the range.

Figure A7.1. SNP Phylogeny of ST131 *Escherichia coli* from DANMAP 2015-2016: 310 human bloodstream isolates and five broiler meat isolates, Denmark



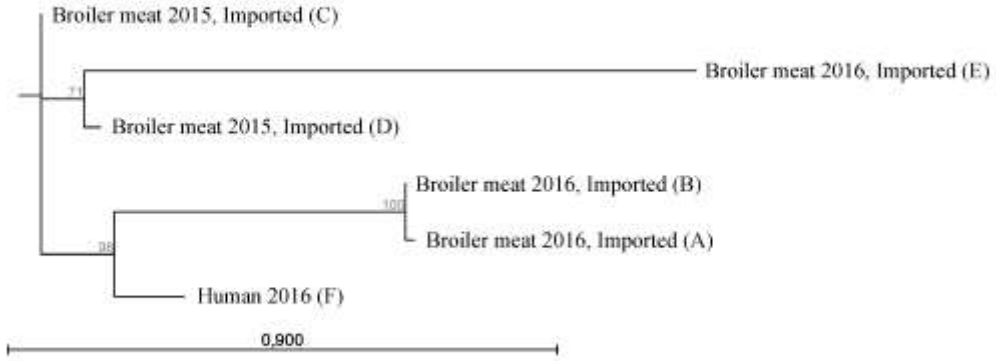
ST131 with CMY-2

Two broiler meat isolates from 2015, three broiler meat isolates from 2016 One human bloodstream isolate from 2016

Figure A7.2. SNP comparisons for ST131 with CMY-2, and ST12 CTX-M-14, Denmark

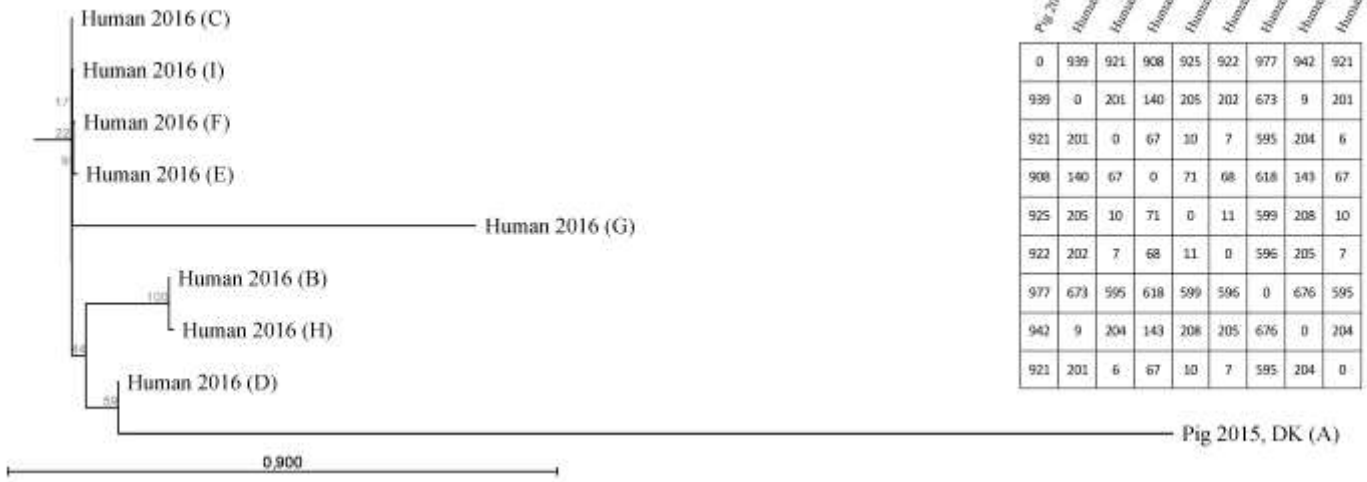
DANMAP 2016

ST131 with CMY-2 enzyme



Broiler meat 2016, Imported (A)	Broiler meat 2016, Imported (B)	Broiler meat 2015, Imported (C)	Broiler meat 2015, Imported (D)	Broiler meat 2016, Imported (E)	Human 2016 (F)	
0	5	126	136	237	142	Broiler meat 2016, Imported (A)
5	0	125	135	236	141	Broiler meat 2016, Imported (B)
126	125	0	38	188	78	Broiler meat 2015, Imported (C)
136	135	38	0	192	98	Broiler meat 2015, Imported (D)
237	236	188	192	0	206	Broiler meat 2016, Imported (E)
142	141	78	98	206	0	Human 2016 (F)

ST12 with CTX-M-14 enzyme



Pig 2015, DK (A)	Human 2016 (B)	Human 2016 (C)	Human 2016 (D)	Human 2016 (E)	Human 2016 (F)	Human 2016 (G)	Human 2016 (H)	Human 2016 (I)	
0	939	921	908	925	922	977	942	921	Pig 2015, DK (A)
939	0	201	140	205	202	673	9	201	Human 2016 (B)
921	201	0	67	10	7	595	204	6	Human 2016 (C)
908	140	67	0	71	68	618	143	67	Human 2016 (D)
925	205	10	71	0	11	599	208	10	Human 2016 (E)
922	202	7	68	11	0	596	205	7	Human 2016 (F)
977	673	595	618	599	596	0	676	595	Human 2016 (G)
942	9	204	143	208	205	676	0	204	Human 2016 (H)
921	201	6	67	10	7	595	204	0	Human 2016 (I)