

Annex B – Antimicrobial resistance in *Salmonella* spp.

Annex to:

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B.1. Antimicrobial resistance in *Salmonella* spp. from humans

Table 1: Antimicrobial resistance in *Salmonella* spp. (all non-typhoidal serovars) from humans per country in 2019

| Country | Gentamicin | | Chloramphenicol | | Ampicillin | | Cefotaxime | | Ceftazidime | | Meropenem | | Tigecycline | | Nalidixic acid | |
|-------------------------------|---------------|------------|-----------------|------------|---------------|-------------|---------------|------------|---------------|------------|---------------|----------|--------------|------------|----------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 1,884 | 1.2 | 1,884 | 2.4 | 1,884 | 11.4 | 1,884 | 0.5 | 1,884 | 0.5 | 1,884 | 0 | 1,884 | 0 | 1,884 | 36.9 |
| Belgium | 984 | 2.9 | 986 | 11.9 | 986 | 46.6 | 986 | 1.2 | 986 | 0.9 | 986 | 0 | 981 | 4.9 | - | - |
| Cyprus | 96 | 17.7 | - | - | 96 | 33.3 | 32 | 0 | 96 | 0.0 | 96 | 0 | - | - | - | - |
| Denmark | 197 | 2.5 | 197 | 5.6 | 197 | 42.6 | 197 | 1.0 | 197 | 1.0 | 197 | 0 | 197 | 2.0 | 197 | 5.1 |
| Estonia | 153 | 0.7 | 153 | 5.2 | 153 | 28.1 | 153 | 0 | 153 | 0 | 153 | 0 | 153 | 0 | 153 | 27.5 |
| Finland | 107 | 0.9 | 107 | 2.8 | 107 | 27.1 | 107 | 0 | - | - | 107 | 0 | - | - | 107 | 8.4 |
| France | 843 | 4.7 | 843 | 4.3 | 843 | 21.8 | 843 | 1.1 | 843 | 0.7 | 843 | 0 | 843 | 0.2 | 843 | 14.7 |
| Germany ^(a,d) | 4,692 | 2.1 | 4,678 | 5.9 | 4,693 | 27.0 | 4,694 | 3.2 | 4,689 | 1.7 | 4,689 | 0 | - | - | 4,684 | 12.1 |
| Greece | 50 | 4.0 | 50 | 0 | 50 | 6.0 | 50 | 0.0 | 50 | 0 | 50 | 0 | - | - | 50 | 14.0 |
| Ireland ^(e) | 181 | 2.2 | 181 | 7.2 | 181 | 21 | 181 | 0 | - | - | 181 | 0 | - | - | - | - |
| Italy | 569 | 2.3 | 569 | 7.6 | 569 | 43.2 | 569 | 1.6 | 569 | 1.2 | 569 | 0 | 255 | 0.4 | 569 | 15.3 |
| Latvia ^(a) | 52 | 1.9 | 40 | 0 | 81 | 19.8 | 53 | 0 | 7 | NA | 50 | 0 | - | - | - | - |
| Lithuania ^(a) | 376 | 1.1 | 363 | 2.8 | 712 | 17.0 | 601 | 0 | 417 | 0 | 351 | 0 | - | - | - | - |
| Luxembourg | 131 | 0.0 | 130 | 3.1 | 131 | 29.0 | 131 | 0 | 131 | 0 | 131 | 0 | - | - | - | - |
| Malta ^(d) | 113 | 7.1 | - | - | 113 | 33.6 | 113 | 2.7 | 113 | 2.7 | 112 | 0 | - | - | - | - |
| Netherlands | 727 | 2.3 | 727 | 5.1 | 727 | 27.1 | 727 | 1.2 | 727 | 0.7 | 727 | 0 | 727 | 0.7 | 727 | 14.6 |
| Poland ^(a) | 177 | 18.6 | 42 | 28.6 | 1,011 | 23.7 | 722 | 2.8 | - | - | - | - | - | - | 32 | 34.4 |
| Portugal | 463 | 0.6 | 463 | 4.5 | 463 | 29.2 | 463 | 1.7 | 463 | 1.5 | 463 | 0 | 463 | 0.2 | 463 | 6.0 |
| Romania | 147 | 1.4 | 147 | 1.4 | 147 | 25.9 | 147 | 2 | 147 | 2 | 147 | 0 | - | - | 147 | 16.3 |
| Slovakia ^(a) | - | - | 2 | NA | 652 | 13.2 | 108 | 3.7 | 26 | 0 | 29 | 0 | - | - | - | - |
| Slovenia | 357 | 0.6 | 357 | 2.8 | 357 | 35 | 358 | 0 | 358 | 0 | 358 | 0 | - | - | - | - |
| Spain | 1,404 | 1.3 | 1,403 | 7.4 | 1,409 | 42.2 | 1,399 | 0.8 | 1,399 | 0.3 | 1,402 | 0.1 | - | - | 1,400 | 11.1 |
| Sweden ^(e) | - | - | - | - | 605 | 28.9 | 605 | 0.2 | - | - | 605 | 0 | - | - | - | - |
| United Kingdom ^(a) | 538 | 1.3 | 2,021 | 5.2 | 3,115 | 18.5 | 1,291 | 3.3 | 1,101 | 3.2 | 733 | 0 | - | - | 654 | 18.2 |
| Total (MSs 24) | 14,241 | 2.3 | 15,343 | 5.6 | 19,282 | 25.8 | 16,414 | 1.8 | 14,356 | 1.2 | 14,863 | 0 | 5,503 | 1.1 | 11,910 | 16.7 |
| Iceland ^(a) | - | - | - | - | 26 | 42.3 | 6 | NA | - | - | - | - | - | - | - | - |
| Norway | - | - | 216 | 2.8 | 216 | 18.1 | 216 | 0.9 | 216 | 0.9 | 216 | 0 | - | - | - | - |

Table 1: Continued

| Country | Ciprofloxacin ^(b) | | Azithromycin | | Colistin | | Sulfamethoxazole ^(c) | | Trimethoprim | | Co-trimoxazole | | Tetracycline | |
|-------------------------------|------------------------------|-------------|--------------|------------|--------------|-------------|---------------------------------|-------------|---------------|------------|----------------|------------|---------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 1,884 | 37.9 | 1,884 | 0.3 | - | - | 1,884 | 11.3 | 1,884 | 2.4 | - | - | 1,884 | 12.9 |
| Belgium | 986 | 26.2 | 982 | 2.1 | - | - | 984 | 41.6 | 985 | 17.7 | - | - | 986 | 41.1 |
| Cyprus | 96 | 13.5 | - | - | 65 | 0 | - | - | - | - | 95 | 24.2 | - | - |
| Denmark | 197 | 8.1 | 197 | 0.5 | 197 | 10.7 | 197 | 41.1 | 197 | 8.1 | - | - | 197 | 41.6 |
| Estonia | 153 | 28.8 | - | - | 153 | 6.5 | 153 | 34.0 | 153 | 2.6 | - | - | 153 | 28.1 |
| Finland | 107 | 9.3 | - | - | - | - | - | - | 107 | 2.8 | - | - | 107 | 26.2 |
| France | 843 | 16.4 | 843 | 0.4 | 843 | 8.1 | 843 | 23.8 | 843 | 5.1 | - | - | 843 | 26.0 |
| Germany ^(a,d) | 4,678 | 2.1 | - | - | - | - | - | - | - | - | 4,676 | 8.0 | 4,681 | 21.8 |
| Greece | 50 | 18.0 | - | - | - | - | 50 | 38.0 | 49 | 12.2 | - | - | 50 | 6.0 |
| Ireland ^(e) | 181 | 10.5 | 181 | 0 | 181 | 0 | 181 | 21.5 | 181 | 4.4 | - | - | 181 | 24.9 |
| Italy | 569 | 15.8 | 255 | 0.8 | 343 | 14.3 | 569 | 50.6 | 569 | 8.3 | - | - | 569 | 48.7 |
| Latvia ^(a) | 74 | 9.5 | - | - | - | - | - | - | 18 | 0 | 70 | 0.0 | - | - |
| Lithuania ^(a) | 589 | 11.4 | - | - | - | - | - | - | 521 | 13.1 | 707 | 3.8 | 7 | NA |
| Luxembourg | 131 | 3.8 | - | - | - | - | 130 | 33.1 | - | - | 131 | 4.6 | 130 | 34.6 |
| Malta ^(d) | 113 | 8.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Netherlands | 727 | 17.1 | 727 | 0.7 | 727 | 28.6 | 727 | 23.5 | 727 | 7.6 | - | - | 727 | 25.2 |
| Poland ^(a) | 523 | 22.8 | - | - | - | - | 88 | 17.0 | - | - | 1,011 | 4.7 | 47 | 21.3 |
| Portugal | 463 | 6.3 | 463 | 1.5 | - | - | 463 | 33.5 | 463 | 3.9 | - | - | 463 | 28.3 |
| Romania | 147 | 19.0 | - | - | - | - | 147 | 13.6 | 147 | 8.2 | 147 | 6.8 | 147 | 20.4 |
| Slovakia ^(a) | 317 | 23.0 | - | - | - | - | - | - | - | - | 209 | 6.7 | 472 | 12.9 |
| Slovenia | 358 | 10.9 | - | - | - | - | 358 | 36.3 | 358 | 4.7 | 358 | 3.1 | 358 | 36.3 |
| Spain | 1,404 | 12.3 | - | - | - | - | 1,392 | 43.2 | 1,403 | 7.4 | - | - | 1,403 | 35.9 |
| Sweden ^(e) | 605 | 11.7 | - | - | - | - | - | - | - | - | - | - | 605 | 26.4 |
| United Kingdom ^(a) | 3,202 | 10.1 | - | - | - | - | 556 | 16.7 | 1,465 | 5.6 | 1,391 | 8.9 | 618 | 19.7 |
| Total (MSs 24) | 18,397 | 13.5 | 5,532 | 0.8 | 2,509 | 14.2 | 8,722 | 29.0 | 10,070 | 7.0 | 8,795 | 7.2 | 14,628 | 25.6 |
| Iceland ^(a) | 27 | 7.4 | - | - | - | - | - | - | 1 | NA | 26 | 0.0 | - | - |
| Norway | 216 | 19 | - | - | - | - | - | - | - | - | - | - | 216 | 21.3 |

N: number of isolates tested; % Res: percentage of microbiologically resistant isolates (either interpreted as non-wild type by ECOFFs or I/R according to CBPs); -: no data reported; NA: not applicable – if fewer than 10 isolates were tested, the percentage of resistance was not calculated; MSs: Member States.

(a): Data interpreted with clinical breakpoints

(b): In most countries doing disk diffusion, pefloxacin is used for screening for fluoroquinolone resistance, as recommended by EUCAST.

(c): Combined data on the class of sulfonamides and the substance sulfamethoxazole within this group.

(d): Ciprofloxacin CBP for *Enterobacteriales* used which is two dilutions higher than the CBP for *Salmonella*

(e): Microbiological resistance predicted from whole genome sequencing

Table 2: Antimicrobial resistance in *Salmonella* Enteritidis from humans per country in 2019

| Country | Gentamicin | | Chloramphenicol | | Ampicillin | | Cefotaxime | | Ceftazidime | | Meropenem | | Tigecycline | | Nalidixic acid | |
|-------------------------------|--------------|------------|-----------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|----------|--------------|------------|----------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 1,131 | 0 | 1,131 | 0.3 | 1,131 | 4.4 | 1,131 | 0.1 | 1,131 | 0.1 | 1,131 | 0 | 1,131 | 0 | 1,131 | 50.9 |
| Belgium | 224 | 0.4 | 224 | 3.6 | 224 | 17.4 | 224 | 0.4 | 224 | 0.4 | 224 | 0 | 224 | 4.0 | - | - |
| Cyprus | 22 | 9.1 | - | - | 22 | 13.6 | 7 | NA | 22 | 0 | 22 | 0 | - | - | - | - |
| Denmark | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA |
| Estonia | 62 | 0 | 62 | 0 | 62 | 4.8 | 62 | 0 | 62 | 0 | 62 | 0 | 62 | 0 | 62 | 35.5 |
| Finland | 40 | 0 | 40 | 0 | 40 | 5.0 | 40 | 0 | - | - | 40 | 0 | - | - | 40 | 17.5 |
| France | 97 | 0 | 97 | 1 | 97 | 2.1 | 97 | 0 | 97 | 0 | 97 | 0 | 97 | 0 | 97 | 18.6 |
| Germany ^(a,d) | 1,103 | 0 | 1,101 | 0.6 | 1,103 | 8.6 | 1,104 | 0.1 | 1,103 | 0.1 | 1,104 | 0 | - | - | 1,103 | 15.7 |
| Greece | 37 | 5.4 | 37 | 0 | 37 | 2.7 | 37 | 0 | 37 | 0 | 37 | 0 | - | - | 37 | 16.2 |
| Ireland ^(e) | 36 | 0 | 36 | 0 | 36 | 2.8 | 36 | 0 | - | - | 36 | 0 | - | - | - | - |
| Italy | 75 | 1.3 | 75 | 4.0 | 75 | 10.7 | 75 | 0 | 75 | 0 | 75 | 0 | 49 | 0 | 75 | 49.3 |
| Latvia ^(a) | 17 | 5.9 | 13 | 0 | 29 | 0 | 16 | 0 | - | - | 15 | 0 | - | - | - | - |
| Lithuania ^(a) | 217 | 0.5 | 212 | 0.0 | 484 | 4.8 | 415 | 0 | 252 | 0 | 207 | 0 | - | - | - | - |
| Luxembourg | 30 | 0 | 30 | 0 | 30 | 10 | 30 | 0 | 30 | 0 | 30 | 0 | - | - | - | - |
| Malta ^(d) | 14 | 0 | - | - | 14 | 0.0 | 14 | 0 | 14 | 0 | 14 | 0 | - | - | - | - |
| Netherlands | 247 | 0 | 247 | 0.8 | 247 | 11.7 | 247 | 0 | 247 | 0 | 247 | 0 | 247 | 0 | 247 | 18.6 |
| Poland ^(a) | 152 | 14.5 | 28 | 17.9 | 741 | 16.2 | 532 | 1.9 | - | - | - | - | - | - | 20 | 25.0 |
| Portugal | 115 | 0 | 115 | 0 | 115 | 0.9 | 115 | 0.9 | 115 | 0.9 | 115 | 0 | 115 | 0 | 115 | 10.4 |
| Romania | 68 | 0 | 68 | 0 | 68 | 1.5 | 68 | 0 | 68 | 0 | 68 | 0 | - | - | 68 | 13.2 |
| Slovakia ^(a) | - | - | 1 | NA | 534 | 6.9 | 85 | 4.7 | 19 | 0 | 21 | 0 | - | - | - | - |
| Slovenia | 88 | 0 | 88 | 0 | 88 | 4.5 | 88 | 0 | 88 | 0 | 88 | 0 | - | - | - | - |
| Spain | 401 | 0 | 400 | 0.3 | 400 | 6.8 | 399 | 0 | 399 | 0 | 400 | 0 | - | - | 399 | 9.8 |
| Sweden ^(e) | - | - | - | - | 119 | 2.5 | 119 | 0 | - | - | 119 | 0 | - | - | - | - |
| United Kingdom ^(a) | 201 | 0.0 | 582 | 0.7 | 885 | 9.3 | 400 | 1 | 344 | 1.2 | 186 | 0 | - | - | 225 | 30.2 |
| Total (MSs 24) | 4,381 | 0.7 | 4,591 | 0.7 | 6,585 | 8.1 | 5,345 | 0.4 | 4,331 | 0.2 | 4,342 | 0 | 1,929 | 0.5 | 3,623 | 28.1 |
| Iceland ^(a) | - | - | - | - | 5 | NA | 1 | NA | - | - | - | - | - | - | - | - |
| Norway | - | - | 121 | 0.8 | 121 | 4.1 | 121 | 0 | 121 | 0 | 121 | 0 | - | - | - | - |

Table 2: Continued

| Country | Ciprofloxacin ^(b) | | Azithromycin | | Colistin | | Sulfamethoxazole ^(c) | | Trimethoprim | | Co-trimoxazole | | Tetracycline | |
|-------------------------------|------------------------------|-------------|--------------|------------|------------|-------------|---------------------------------|------------|--------------|------------|----------------|------------|--------------|------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 1,131 | 51.1 | 1,131 | 0.1 | - | - | 1,131 | 0.3 | 1,131 | 0.1 | - | - | 1,131 | 3.8 |
| Belgium | 224 | 34.4 | 224 | 1.3 | - | - | 224 | 12.9 | 224 | 7.1 | - | - | 224 | 12.1 |
| Cyprus | 22 | 0 | - | - | 16 | 0 | - | - | - | - | 21 | 14.3 | - | - |
| Denmark | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA | - | - | 4 | NA |
| Estonia | 62 | 33.9 | - | - | 62 | 14.5 | 62 | 0.0 | 62 | 1.6 | - | - | 62 | 4.8 |
| Finland | 40 | 17.5 | - | - | - | - | - | - | 40 | 0 | - | - | 40 | 5.0 |
| France | 97 | 18.6 | 97 | 0 | 97 | 22.7 | 97 | 3.1 | 97 | 1 | - | - | 97 | 3.1 |
| Germany ^(a,d) | 1,101 | 0.2 | - | - | - | - | - | - | - | - | 1,097 | 0.2 | 1,102 | 6.4 |
| Greece | 37 | 21.6 | - | - | - | - | 37 | 43.2 | 37 | 16.2 | - | - | 37 | 2.7 |
| Ireland ^(e) | 36 | 22.2 | 36 | 0 | 36 | 0 | 36 | 11.1 | 36 | 8.3 | - | - | 36 | 11.1 |
| Italy | 75 | 49.3 | 49 | 0 | 55 | 60.0 | 75 | 17.3 | 75 | 4.0 | - | - | 75 | 9.3 |
| Latvia ^(a) | 23 | 17.4 | - | - | - | - | - | - | 6 | NA | 26 | 0 | - | - |
| Lithuania ^(a) | 383 | 12.8 | - | - | - | - | - | - | 335 | 3.0 | 480 | 1.9 | 6 | NA |
| Luxembourg | 30 | 3.3 | - | - | - | - | 30 | 10 | - | - | 30 | 0 | 30 | 13.3 |
| Malta ^(d) | 14 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Netherlands | 247 | 19.0 | 247 | 0.4 | 247 | 73.7 | 247 | 5.3 | 247 | 0.4 | - | - | 247 | 8.1 |
| Poland ^(a) | 402 | 20.9 | - | - | - | - | 61 | 11.5 | - | - | 756 | 3.3 | 33 | 12.1 |
| Portugal | 115 | 9.6 | 115 | 0 | - | - | 115 | 5.2 | 115 | 0 | - | - | 115 | 1.7 |
| Romania | 68 | 13.2 | - | - | - | - | 68 | 0 | 68 | 0 | 68 | 0 | 68 | 0 |
| Slovakia ^(a) | 254 | 18.1 | - | - | - | - | - | - | - | - | 169 | 4.1 | 372 | 6.5 |
| Slovenia | 88 | 19.3 | - | - | - | - | 88 | 2.3 | 88 | 1.1 | 88 | 0 | 88 | 5.7 |
| Spain | 400 | 9.5 | - | - | - | - | 400 | 5.0 | 399 | 0.8 | - | - | 400 | 0.5 |
| Sweden ^(e) | 119 | 46.2 | - | - | - | - | - | - | - | - | - | - | 119 | 0.8 |
| United Kingdom ^(a) | 907 | 12.1 | - | - | - | - | 205 | 2.0 | 433 | 0.9 | 346 | 2.9 | 222 | 8.1 |
| Total (MSs 24) | 5,879 | 20.9 | 1,903 | 0.3 | 517 | 48.2 | 2,880 | 4.3 | 3,397 | 1.5 | 3,081 | 1.8 | 4,508 | 5.3 |
| Iceland ^(a) | 5 | NA | - | - | - | - | - | - | - | - | 5 | 0.0 | - | - |
| Norway | 121 | 24.8 | - | - | - | - | - | - | - | - | - | - | 121 | 5.0 |

N: number of isolates tested; % Res: percentage of microbiologically resistant isolates (either interpreted as non-wild type by ECOFFs or I/R according to CBPs); -: no data reported; NA: not applicable – if fewer than 10 isolates were tested, the percentage of resistance was not calculated; MSs: Member States.

(a): Data interpreted with clinical breakpoints

(b): In most countries doing disk diffusion, pefloxacin is used for screening for fluoroquinolone resistance, as recommended by EUCAST.

(c): Combined data on the class of sulfonamides and the substance sulfamethoxazole within this group.

(d): Ciprofloxacin CBP for *Enterobacteriales* used which is two dilutions higher than the CBP for *Salmonella*

(e): Microbiological resistance predicted from whole genome sequencing

Table 3: Antimicrobial resistance in *Salmonella* Typhimurium from humans per country in 2019

| Country | Gentamicin | | Chloramphenicol | | Ampicillin | | Cefotaxime | | Ceftazidime | | Meropenem | | Tigecycline | | Nalidixic acid | |
|-------------------------------|--------------|------------|-----------------|-------------|--------------|-------------|--------------|------------|--------------|------------|--------------|----------|-------------|------------|----------------|------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 113 | 0.9 | 113 | 14.2 | 113 | 23.9 | 113 | 0.9 | 113 | 0.9 | 113 | 0 | 113 | 0 | 113 | 5.3 |
| Belgium | 190 | 2.1 | 192 | 24 | 192 | 72.9 | 192 | 2.6 | 192 | 1.6 | 192 | 0 | 192 | 2.1 | - | - |
| Cyprus | 38 | 0.0 | - | - | 38 | 28.9 | 13 | 0 | 38 | 0 | 38 | 0 | - | - | - | - |
| Denmark | 26 | 7.7 | 26 | 26.9 | 26 | 46.2 | 26 | 0 | 26 | 0 | 26 | 0 | 26 | 11.5 | 26 | 11.5 |
| Estonia | 25 | 0 | 25 | 20 | 25 | 36.0 | 25 | 0 | 25 | 0 | 25 | 0 | 25 | 0 | 25 | 28.0 |
| Finland | 39 | 2.6 | 39 | 5.1 | 39 | 10.3 | 39 | 0 | - | - | 39 | 0 | - | - | 39 | 0 |
| France | 95 | 2.1 | 95 | 21.1 | 95 | 43.2 | 95 | 1 | 95 | 0 | 95 | 0 | 95 | 1.1 | 95 | 7.4 |
| Germany ^(a,d) | 1,194 | 1.0 | 1,190 | 11.2 | 1,194 | 68.3 | 1,194 | 7.2 | 1,192 | 2.3 | 1,193 | 0 | - | - | 1,191 | 4.4 |
| Greece | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | - | - | 3 | NA |
| Ireland ^(e) | 31 | 0 | 31 | 25.8 | 31 | 35.5 | 31 | 0 | - | - | 31 | 0 | - | - | - | - |
| Italy | 48 | 2.1 | 48 | 25.0 | 48 | 39.6 | 48 | 2.1 | 48 | 2.1 | 48 | 0 | 19 | 5.3 | 48 | 10 |
| Latvia ^(a) | 16 | 0.0 | 14 | 0.0 | 29 | 51.7 | 16 | 0.0 | - | - | 16 | 0.0 | - | - | - | - |
| Lithuania ^(a) | 68 | 1.5 | 66 | 12.1 | 99 | 70.7 | 69 | 0 | 79 | 0 | 63 | 0 | - | - | - | - |
| Luxembourg | 21 | 0 | 21 | 14.3 | 21 | 38.1 | 21 | 0 | 21 | 0 | 21 | 0 | - | - | - | - |
| Malta ^(d) | 1 | NA | - | - | 1 | NA | 1 | NA | 1 | NA | - | - | - | - | - | - |
| Netherlands | 98 | 4.1 | 98 | 12.2 | 98 | 45.9 | 98 | 3.1 | 98 | 0 | 98 | 0 | 98 | 3.1 | 98 | 9.2 |
| Poland ^(a) | 1 | NA | 1 | NA | 28 | 75.0 | 25 | 4.0 | - | - | - | - | - | - | 1 | NA |
| Portugal | 79 | 0 | 79 | 12.7 | 79 | 17.7 | 79 | 0.0 | 79 | 0 | 79 | 0 | 79 | 0 | 79 | 5.1 |
| Romania | 45 | 2.2 | 45 | 2.2 | 45 | 73.3 | 45 | 0 | 45 | 0 | 45 | 0 | - | - | 45 | 2.2 |
| Slovakia ^(a) | - | - | - | - | 26 | 30.8 | 4 | 0.0 | - | - | - | - | - | - | - | - |
| Slovenia | 28 | 3.6 | 28 | 10.7 | 27 | 18.5 | 28 | 0.0 | 28 | 0 | 28 | 0 | - | - | - | - |
| Spain | 33 | 0.0 | 33 | 48.5 | 33 | 72.7 | 33 | 9.1 | 33 | 0 | 33 | 0 | - | - | 32 | 28.1 |
| Sweden ^(e) | - | - | - | - | 50 | 14.0 | 50 | 0.0 | - | - | 50 | 0 | - | - | - | - |
| United Kingdom ^(a) | 109 | 2.8 | 329 | 13.1 | 496 | 40.3 | 222 | 3.6 | 197 | 3.6 | 113 | 0 | - | - | 135 | 7.4 |
| Total (MSs 24) | 2,301 | 1.4 | 2,476 | 13.9 | 2,836 | 54.3 | 2,470 | 4.4 | 2,313 | 1.7 | 2,349 | 0 | 647 | 1.9 | 1,930 | 5.9 |
| Iceland ^(a) | - | - | - | - | 11 | 90.9 | 1 | 0.0 | - | - | - | - | - | - | - | - |
| Norway | - | - | 58 | 6.9 | 58 | 15.5 | 58 | 0 | 58 | 0 | 58 | 0 | - | - | - | - |

Table 3: Continued

| Country | Ciprofloxacin ^(b) | | Azithromycin | | Colistin | | Sulfamethoxazole ^(c) | | Trimethoprim | | Co-trimoxazole | | Tetracycline | |
|-------------------------------|------------------------------|------------|--------------|------------|------------|------------|---------------------------------|-------------|--------------|-------------|----------------|-------------|--------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 113 | 6.2 | 113 | 0 | - | - | 113 | 23 | 113 | 6.2 | - | - | 113 | 24.8 |
| Belgium | 192 | 13 | 192 | 1.0 | - | - | 192 | 44.3 | 192 | 28.6 | - | - | 192 | 46.9 |
| Cyprus | 38 | 0 | - | - | 25 | 0 | - | - | - | - | 38 | 2.6 | - | - |
| Denmark | 26 | 15.4 | 26 | 0 | 26 | 7.7 | 26 | 57.7 | 26 | 34.6 | - | - | 26 | 42.3 |
| Estonia | 25 | 28.0 | - | - | 25 | 0 | 25 | 60 | 25 | 0 | - | - | 25 | 56.0 |
| Finland | 39 | 2.6 | - | - | - | - | - | - | 39 | 5.1 | - | - | 39 | 12.8 |
| France | 95 | 9.5 | 95 | 0 | 95 | 1.1 | 95 | 35.8 | 95 | 8.4 | - | - | 95 | 31.6 |
| Germany ^(a,d) | 1,191 | 0.6 | - | - | - | - | - | - | - | - | 1,190 | 14.5 | 1,190 | 53 |
| Greece | 3 | NA | - | - | - | - | 3 | NA | 3 | NA | - | - | 3 | NA |
| Ireland ^(e) | 31 | 0.0 | 31 | 0 | 31 | 0 | 31 | 25.8 | 31 | 3.2 | - | - | 31 | 38.7 |
| Italy | 48 | 12.5 | 19 | 5.3 | 23 | 4.3 | 48 | 41.7 | 48 | 16.7 | - | - | 48 | 47.9 |
| Latvia ^(a) | 30 | 6.7 | - | - | - | - | - | - | 8 | 0.0 | 25 | 0.0 | - | - |
| Lithuania ^(a) | 93 | 9.7 | - | - | - | - | - | - | 81 | 45.7 | 98 | 7.1 | 1 | NA |
| Luxembourg | 21 | 4.8 | - | - | - | - | 21 | 28.6 | - | - | 21 | 4.8 | 21 | 42.9 |
| Malta ^(d) | 1 | NA | - | - | - | - | - | - | - | - | - | - | - | - |
| Netherlands | 98 | 13.3 | 98 | 0 | 98 | 2 | 98 | 24.5 | 98 | 12.2 | - | - | 98 | 32.7 |
| Poland ^(a) | 13 | 0 | - | - | - | - | 1 | NA | - | - | 29 | 10.3 | 1 | NA |
| Portugal | 79 | 6.3 | 79 | 0 | - | - | 79 | 27.8 | 79 | 2.5 | - | - | 79 | 16.5 |
| Romania | 45 | 4.4 | - | - | - | - | 45 | 28.9 | 45 | 8.9 | 45 | 8.9 | 45 | 33.3 |
| Slovakia ^(a) | 10 | 10.0 | - | - | - | - | - | - | - | - | 8 | 12.5 | 21 | 23.8 |
| Slovenia | 28 | 7.1 | - | - | - | - | 28 | 25 | 28 | 7.1 | 28 | 0 | 28 | 21.4 |
| Spain | 33 | 30.3 | - | - | - | - | 33 | 75.8 | 33 | 21.2 | - | - | 33 | 66.7 |
| Sweden ^(e) | 50 | 2.0 | - | - | - | - | - | - | - | - | - | - | 50 | 18 |
| United Kingdom ^(a) | 501 | 6.0 | - | - | - | - | 110 | 47.3 | 265 | 9.1 | 206 | 10.2 | 123 | 43.9 |
| Total (MSs 24) | 2,803 | 5.1 | 653 | 0.5 | 323 | 1.9 | 948 | 37.2 | 1,209 | 14.7 | 1,688 | 12.5 | 2,262 | 44.7 |
| Iceland ^(a) | 11 | 0 | - | - | - | - | - | - | - | - | 11 | 0 | - | - |
| Norway | 58 | 13.8 | - | - | - | - | - | - | - | - | - | - | 58 | 19.0 |

N: number of isolates tested; % Res: percentage of microbiologically resistant isolates (either interpreted as non-wild type by ECOFFs or I/R according to CBPs); –: no data reported; NA: not applicable – if fewer than 10 isolates were tested, the percentage of resistance was not calculated; MSs: Member States.

(a): Data interpreted with clinical breakpoints

(b): In most countries doing disk diffusion, pefloxacin is used for screening for fluoroquinolone resistance, as recommended by EUCAST.

(c): Combined data on the class of sulfonamides and the substance sulfamethoxazole within this group.

(d): Ciprofloxacin CBP for *Enterobacteriales* used which is two dilutions higher than the CBP for *Salmonella*

(e): Microbiological resistance predicted from whole genome sequencing

Table 4: Antimicrobial resistance in monophasic *Salmonella* Typhimurium 1,4,[5],12:i:- from humans per country in 2019

| Country | Gentamicin | | Chloramphenicol | | Ampicillin | | Cefotaxime | | Ceftazidime | | Meropenem | | Tigecycline | | Nalidixic acid | |
|-------------------------------|--------------|------------|-----------------|------------|--------------|-------------|--------------|------------|--------------|------------|--------------|----------|-------------|------------|----------------|------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 105 | 2.9 | 105 | 1.9 | 105 | 73.3 | 105 | 1.0 | 105 | 1.0 | 105 | 0 | 105 | 0 | 105 | 6.7 |
| Belgium | 232 | 2.2 | 232 | 14.2 | 232 | 89.2 | 232 | 1.3 | 232 | 1.3 | 232 | 0 | 229 | 7.0 | - | - |
| Denmark | 70 | 1.4 | 70 | 1.4 | 70 | 88.6 | 70 | 0 | 70 | 0 | 70 | 0 | 70 | 1.4 | 70 | 1.4 |
| Estonia | 29 | 3.4 | 29 | 3.4 | 29 | 93.1 | 29 | 0 | 29 | 0 | 29 | 0 | 29 | 0 | 29 | 17.2 |
| France | 79 | 1.3 | 79 | 2.5 | 79 | 81.0 | 79 | 0 | 79 | 0 | 79 | 0 | 79 | 0 | 79 | 0 |
| Greece | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | - | - | 1 | NA |
| Ireland ^(e) | 24 | 8.3 | 24 | 4.2 | 24 | 91.7 | 24 | 0 | - | - | 24 | 0 | - | - | - | - |
| Italy | 200 | 2.0 | 200 | 8.5 | 200 | 88.0 | 200 | 0.5 | 200 | 0.5 | 200 | 0 | 78 | 0 | 200 | 7.5 |
| Luxembourg | 34 | 0 | 34 | 2.9 | 34 | 79.4 | 34 | 0 | 34 | 0 | 34 | 0 | - | - | - | - |
| Malta ^(d) | 14 | 0 | - | - | 14 | 64.3 | 14 | 0 | 14 | 0 | 14 | 0 | - | - | - | - |
| Netherlands | 110 | 1.8 | 110 | 8.2 | 110 | 85.5 | 110 | 0.9 | 110 | 0.9 | 110 | 0 | 110 | 0 | 110 | 5.5 |
| Portugal | 115 | 0 | 115 | 2.6 | 115 | 86.1 | 115 | 4.3 | 115 | 3.5 | 115 | 0 | 115 | 0 | 115 | 2.6 |
| Slovenia | 112 | 0 | 113 | 4.4 | 113 | 95.6 | 113 | 0 | 113 | 0 | 113 | 0 | - | - | - | - |
| Spain | 487 | 2.1 | 487 | 6.8 | 490 | 91.4 | 487 | 0.6 | 486 | 0.4 | 487 | 0 | - | - | 486 | 3.7 |
| Sweden ^(e) | - | - | - | - | 165 | 89.1 | 165 | 0 | - | - | 165 | 0 | - | - | - | - |
| United Kingdom ^(a) | - | - | 71 | 4.2 | 125 | 74.4 | 41 | 0 | 19 | 0 | 28 | 0 | - | - | 8 | NA |
| Total (MSs 16) | 1,612 | 1.8 | 1,670 | 6.6 | 1,906 | 87.1 | 1,819 | 0.8 | 1,607 | 0.7 | 1,806 | 0 | 815 | 2.1 | 1,203 | 4.7 |
| Norway | - | - | 27 | 3.7 | 27 | 88.9 | 27 | 3.7 | 27 | 3.7 | 27 | 0 | - | - | - | - |

Table 4: Continued

| Country | Ciprofloxacin ^(b) | | Azithromycin | | Colistin | | Sulfamethoxazole ^(c) | | Trimethoprim | | Co-trimoxazole | | Tetracycline | |
|-------------------------------|------------------------------|------------|--------------|------------|------------|------------|---------------------------------|-------------|--------------|------------|----------------|------------|--------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 105 | 10.5 | 105 | 1.9 | - | - | 105 | 73.3 | 105 | 5.7 | - | - | 105 | 70.5 |
| Belgium | 232 | 10.8 | 230 | 0.9 | - | - | 232 | 82.8 | 231 | 21.2 | - | - | 232 | 78.4 |
| Denmark | 70 | 1.4 | 70 | 1.4 | 70 | 2.9 | 70 | 80.0 | 70 | 2.9 | - | - | 70 | 87.1 |
| Estonia | 29 | 31.0 | - | - | 29 | 0 | 29 | 93.1 | 29 | 0 | - | - | 29 | 58.6 |
| France | 79 | 0 | 79 | 0 | 79 | 0 | 79 | 74.7 | 79 | 6.3 | - | - | 79 | 77.2 |
| Greece | 1 | NA | - | - | - | - | 1 | NA | - | - | - | - | 1 | NA |
| Ireland ^(e) | 24 | 4.2 | 24 | 0 | 24 | 0 | 24 | 87.5 | 24 | 0 | - | - | 24 | 83.3 |
| Italy | 200 | 6.5 | 78 | 0 | 119 | 6.7 | 200 | 86.5 | 200 | 5.0 | - | - | 200 | 91.0 |
| Luxembourg | 34 | 0 | - | - | - | - | 34 | 79.4 | - | - | 34 | 8.8 | 34 | 79.4 |
| Malta ^(d) | 14 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Netherlands | 110 | 8.2 | 110 | 0 | 110 | 2.7 | 110 | 85.5 | 110 | 8.2 | - | - | 110 | 81.8 |
| Portugal | 115 | 2.6 | 115 | 0 | - | - | 115 | 79.1 | 115 | 3.5 | - | - | 115 | 83.5 |
| Slovenia | 113 | 1.8 | - | - | - | - | 113 | 93.8 | 113 | 3.5 | 113 | 3.5 | 113 | 93.8 |
| Spain | 487 | 4.3 | - | - | - | - | 485 | 85.8 | 487 | 5.5 | - | - | 487 | 76.4 |
| Sweden ^(e) | 165 | 3.0 | - | - | - | - | - | - | - | - | - | - | 165 | 80.0 |
| United Kingdom ^(a) | 141 | 5.0 | - | - | - | - | - | - | 37 | 5.4 | 65 | 13.8 | 3 | NA |
| Total (MSs 16) | 1,919 | 5.6 | 811 | 0.6 | 431 | 3.0 | 1,597 | 83.9 | 1,600 | 7.4 | 212 | 7.5 | 1,767 | 80.5 |
| Norway | 27 | 3.7 | - | - | - | - | - | - | - | - | - | - | 27 | 96.3 |

N: number of isolates tested; % Res: percentage of microbiologically resistant isolates (either interpreted as non-wild type by ECOFFs or I/R according to CBPs); -: no data reported; NA: not applicable – if fewer than 10 isolates were tested, the percentage of resistance was not calculated; MSs: Member States.

(a): Data interpreted with clinical breakpoints

(b): In most countries doing disk diffusion, pefloxacin is used for screening for fluoroquinolone resistance, as recommended by EUCAST.

(c): Combined data on the class of sulfonamides and the substance sulfamethoxazole within this group.

(d): Ciprofloxacin CBP for *Enterobacteriales* used which is two dilutions higher than the CBP for *Salmonella*

(e): Microbiological resistance predicted from whole genome sequencing

Table 5: Antimicrobial resistance in *Salmonella* Infantis from humans per country in 2019

| Country | Gentamicin | | Chloramphenicol | | Ampicillin | | Cefotaxime | | Ceftazidime | | Meropenem | | Tigecycline | | Nalidixic acid | |
|-------------------------------|------------|------------|-----------------|------------|------------|-------------|------------|------------|-------------|------------|------------|----------|-------------|------------|----------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 79 | 5.1 | 79 | 6.3 | 79 | 17.7 | 79 | 3.8 | 79 | 3.8 | 79 | 0 | 79 | 0 | 79 | 55.7 |
| Belgium | 60 | 1.7 | 60 | 8.3 | 60 | 23.3 | 60 | 1.7 | 60 | 1.7 | 60 | 0 | 59 | 10.2 | - | - |
| Cyprus | 3 | NA | - | - | 3 | NA | 2 | NA | 3 | NA | 3 | NA | - | - | - | - |
| Denmark | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA |
| Estonia | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA |
| France | 128 | 0 | 128 | 0.8 | 128 | 6.3 | 128 | 1.6 | 128 | 1.6 | 128 | 0 | 128 | 0 | 128 | 10.2 |
| Germany ^(a,d) | 316 | 2.5 | 316 | 11.4 | 316 | 20.3 | 316 | 5.7 | 316 | 3.5 | 316 | 0 | - | - | 315 | 18.7 |
| Greece | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | - | - | 1 | NA |
| Ireland ^(e) | 4 | NA | 4 | NA | 4 | NA | 4 | NA | - | - | 4 | NA | - | - | - | - |
| Italy | 19 | 5.3 | 19 | 10.5 | 19 | 42.1 | 19 | 31.6 | 19 | 26.3 | 19 | 0 | 11 | 0 | 19 | 63.2 |
| Latvia ^(a) | 6 | NA | - | - | 8 | NA | 8 | NA | - | - | 8 | NA | - | - | - | - |
| Lithuania ^(a) | 26 | 0 | 26 | 0.0 | 30 | 33.3 | 25 | 0 | 26 | 0 | 26 | 0 | - | - | - | - |
| Luxembourg | 3 | NA | 2 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | - | - | - | - |
| Malta ^(d) | 23 | 0 | - | - | 23 | 4.3 | 23 | 4.3 | 23 | 4.3 | 23 | 0 | - | - | - | - |
| Netherlands | 25 | 12.0 | 25 | 12.0 | 25 | 24.0 | 25 | 12 | 25 | 12.0 | 25 | 0 | 25 | 4.0 | 25 | 28.0 |
| Poland ^(a) | 2 | NA | - | - | 9 | NA | 11 | 0 | - | - | - | - | - | - | - | - |
| Portugal | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA |
| Romania | 5 | NA | 5 | NA | 5 | NA | 5 | NA | 5 | NA | 5 | NA | - | - | 5 | NA |
| Slovakia ^(a) | - | - | - | - | 19 | 63.2 | 6 | NA | 2 | NA | 2 | NA | - | - | - | - |
| Slovenia | 9 | NA | 9 | NA | 9 | NA | 9 | NA | 9 | NA | 9 | NA | - | - | - | - |
| Spain | 35 | 0 | 35 | 2.9 | 35 | 5.7 | 35 | 2.9 | 35 | 0 | 35 | 0 | - | - | 35 | 40.0 |
| Sweden ^(e) | - | - | - | - | 1 | NA | 1 | NA | - | - | 1 | NA | - | - | - | - |
| United Kingdom ^(a) | 14 | 0 | 53 | 15.1 | 73 | 19.2 | 34 | 23.5 | 26 | 30.8 | 15 | 0 | - | - | 16 | 37.5 |
| Total (MSs 23) | 772 | 2.3 | 776 | 8.2 | 864 | 18.3 | 808 | 5.6 | 774 | 4.7 | 776 | 0 | 316 | 2.2 | 637 | 24.8 |
| Norway | - | - | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | - | - | - | - |

Table 5: Continued

| Country | Ciprofloxacin ^(b) | | Azithromycin | | Colistin | | Sulfamethoxazole ^(c) | | Trimethoprim | | Co-trimoxazole | | Tetracycline | |
|-------------------------------|------------------------------|-------------|--------------|------------|------------|------------|---------------------------------|-------------|--------------|-------------|----------------|-------------|--------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 79 | 55.7 | 79 | 0 | - | - | 79 | 72.2 | 79 | 15.2 | - | - | 79 | 53.2 |
| Belgium | 60 | 48.3 | 59 | 8.5 | - | - | 60 | 51.7 | 60 | 28.3 | - | - | 60 | 41.7 |
| Cyprus | 3 | NA | - | - | 1 | NA | - | - | - | - | 3 | NA | - | - |
| Denmark | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | - | - | 8 | NA |
| Estonia | 3 | NA | - | - | 3 | NA | 3 | NA | 3 | NA | - | - | 3 | NA |
| France | 128 | 10.2 | 128 | 0 | 128 | 0 | 128 | 10.9 | 128 | 4.7 | - | - | 128 | 11.7 |
| Germany ^(a,d) | 314 | 0.3 | - | - | - | - | - | - | - | - | 316 | 13.6 | 314 | 19.7 |
| Greece | 1 | NA | - | - | - | - | 1 | NA | 1 | NA | - | - | 1 | NA |
| Ireland ^(e) | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA | - | - | 4 | NA |
| Italy | 19 | 63.2 | 11 | 0 | 13 | 7.7 | 19 | 57.9 | 19 | 47.4 | - | - | 19 | 52.6 |
| Latvia ^(a) | 7 | NA | - | - | - | - | - | - | 1 | NA | 7 | NA | - | - |
| Lithuania ^(a) | 30 | 13.3 | - | - | - | - | - | - | 30 | 36.7 | 30 | 20.0 | - | - |
| Luxembourg | 3 | NA | - | - | - | - | 3 | NA | - | - | 3 | NA | 3 | NA |
| Malta ^(d) | 23 | 0.0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Netherlands | 25 | 28.0 | 25 | 0 | 25 | 0 | 25 | 32.0 | 25 | 24.0 | - | - | 25 | 28 |
| Poland ^(a) | 9 | NA | - | - | - | - | - | - | - | - | 12 | 0.0 | 1 | NA |
| Portugal | 3 | NA | 3 | NA | - | - | 3 | NA | 3 | NA | - | - | 3 | NA |
| Romania | 5 | NA | - | - | - | - | 5 | NA | 5 | NA | 5 | NA | 5 | 20.0 |
| Slovakia ^(a) | 19 | 73.7 | - | - | - | - | - | - | - | - | 8 | NA | 19 | 73.7 |
| Slovenia | 9 | NA | - | - | - | - | 9 | NA | 9 | NA | 9 | NA | 9 | NA |
| Spain | 35 | 40.0 | - | - | - | - | 35 | 45.7 | 35 | 22.9 | - | - | 35 | 40.0 |
| Sweden ^(e) | 1 | NA | - | - | - | - | - | - | - | - | - | - | 1 | NA |
| United Kingdom ^(a) | 72 | 20.8 | - | - | - | - | 14 | 50.0 | 26 | 23.1 | 30 | 20.0 | 14 | 42.9 |
| Total (MSs 23) | 860 | 19.8 | 317 | 1.6 | 182 | 1.1 | 396 | 39.9 | 436 | 18.6 | 423 | 14.9 | 731 | 28.6 |
| Norway | 1 | NA | - | - | - | - | - | - | - | - | - | - | 1 | NA |

N: number of isolates tested; % Res: percentage of microbiologically resistant isolates (either interpreted as non-wild type by ECOFFs or I/R according to CBPs); –: no data reported; NA: not applicable – if fewer than 10 isolates were tested, the percentage of resistance was not calculated; MSs: Member States.

(a): Data interpreted with clinical breakpoints

(b): In most countries doing disk diffusion, pefloxacin is used for screening for fluoroquinolone resistance, as recommended by EUCAST.

(c): Combined data on the class of sulfonamides and the substance sulfamethoxazole within this group.

(d): Ciprofloxacin CBP for *Enterobacteriales* used which is two dilutions higher than the CBP for *Salmonella*

(e): Microbiological resistance predicted from whole genome sequencing

Table 6: Antimicrobial resistance in *Salmonella* Derby from humans per country in 2019

| Country | Gentamicin | | Chloramphenicol | | Ampicillin | | Cefotaxime | | Ceftazidime | | Meropenem | | Tigecycline | | Nalidixic acid | |
|-------------------------------|------------|------------|-----------------|------------|------------|-------------|------------|------------|-------------|------------|------------|----------|-------------|------------|----------------|------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 6 | NA | 6 | NA | 6 | NA | 6 | NA | 6 | NA | 6 | NA | 6 | NA | 6 | NA |
| Belgium | 37 | 2.7 | 37 | 0 | 37 | 16.2 | 37 | 0 | 37 | 0 | 37 | 0 | 37 | 2.7 | - | - |
| Denmark | 10 | 0 | 10 | 0 | 10 | 0 | 10 | 0 | 10 | 0 | 10 | 0 | 10 | 0 | 10 | 0 |
| Estonia | 7 | NA | 7 | NA | 7 | NA | 7 | NA | 7 | NA | 7 | NA | 7 | NA | 7 | NA |
| France | 61 | 0 | 61 | 1.6 | 61 | 9.8 | 61 | 0 | 61 | 0 | 61 | 0 | 61 | 0 | 61 | 0 |
| Germany ^(a,d) | 126 | 1.6 | 126 | 3.2 | 126 | 11.9 | 126 | 3.2 | 126 | 2.4 | 126 | 0 | - | - | 126 | 4.0 |
| Italy | 25 | 4.0 | 25 | 0 | 25 | 12 | 25 | 0 | 25 | 0 | 25 | 0 | 11 | 0 | 25 | 4.0 |
| Latvia ^(a) | 3 | NA | 3 | NA | 3 | NA | 3 | NA | - | - | 1 | NA | - | - | - | - |
| Lithuania ^(a) | 23 | 0 | 22 | 0 | 25 | 24.0 | 25 | 0 | 23 | 0 | 22 | 0 | - | - | - | - |
| Luxembourg | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | - | - | - | - |
| Malta ^(d) | 1 | NA | - | - | 1 | NA | 1 | NA | 1 | NA | 1 | NA | - | - | - | - |
| Netherlands | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA |
| Poland ^(a) | 1 | NA | - | - | 3 | NA | 2 | NA | - | - | - | - | - | - | - | - |
| Portugal | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA |
| Romania | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA | 4 | NA | - | - | 4 | NA |
| Slovakia ^(a) | - | - | - | - | 3 | NA | - | - | - | - | - | - | - | - | - | - |
| Slovenia | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | 3 | NA | - | - | - | - |
| Spain | 15 | 6.7 | 15 | 6.7 | 15 | 20.0 | 15 | 6.7 | 15 | 6.7 | 15 | 0 | - | - | 15 | 6.7 |
| Sweden ^(e) | - | - | - | - | 3 | NA | 3 | NA | - | - | 3 | NA | - | - | - | - |
| United Kingdom ^(a) | 1 | NA | 4 | NA | 11 | 0 | 6 | NA | 4 | NA | 5 | NA | - | - | 1 | NA |
| Total (MSs 20) | 335 | 1.5 | 335 | 2.4 | 355 | 13.8 | 346 | 2.3 | 334 | 2.1 | 338 | 0 | 142 | 0.7 | 265 | 3.8 |

Table 6: Continued

| Country | Ciprofloxacin ^(b) | | Azithromycin | | Colistin | | Sulfamethoxazole ^(c) | | Trimethoprim | | Co-trimoxazole | | Tetracycline | |
|-------------------------------|------------------------------|------------|--------------|------------|------------|----------|---------------------------------|-------------|--------------|------------|----------------|------------|--------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 6 | NA | 6 | NA | - | - | 6 | NA | 6 | NA | - | - | 6 | NA |
| Belgium | 37 | 2.7 | 37 | 2.7 | - | - | 37 | 18.9 | 37 | 5.4 | - | - | 37 | 16.2 |
| Denmark | 10 | 0 | 10 | 0 | 10 | 10.0 | 10 | 0 | 10 | 0 | - | - | 10 | 0 |
| Estonia | 7 | NA | - | - | 7 | NA | 7 | NA | 7 | NA | - | - | 7 | NA |
| France | 61 | 3.3 | 61 | 0 | 61 | 1.6 | 61 | 44.3 | 61 | 4.9 | - | - | 61 | 47.5 |
| Germany ^(a,d) | 126 | 0.8 | - | - | - | - | - | - | - | - | 126 | 7.1 | 126 | 7.9 |
| Italy | 25 | 4.0 | 11 | 9.1 | 15 | 6.7 | 25 | 44.0 | 25 | 0 | - | - | 25 | 32.0 |
| Latvia ^(a) | 3 | NA | - | - | - | - | - | - | 1 | NA | 2 | NA | - | - |
| Lithuania ^(a) | 24 | 4.2 | - | - | - | - | - | - | 23 | 17.4 | 25 | 12.0 | - | - |
| Luxembourg | 2 | NA | - | - | - | - | 2 | NA | - | - | 2 | NA | 2 | NA |
| Malta ^(d) | 1 | NA | - | - | - | - | - | - | - | - | - | - | - | - |
| Netherlands | 8 | NA | 8 | NA | 8 | NA | 8 | NA | 8 | NA | - | - | 8 | NA |
| Poland ^(a) | 4 | NA | - | - | - | - | - | - | - | - | 2 | NA | - | - |
| Portugal | 2 | NA | 2 | NA | - | - | 2 | NA | 2 | NA | - | - | 2 | NA |
| Romania | 4 | NA | - | - | - | - | 4 | NA | 4 | NA | 4 | NA | 4 | NA |
| Slovakia ^(a) | - | - | - | - | - | - | - | - | - | - | 1 | NA | 3 | NA |
| Slovenia | 3 | NA | - | - | - | - | 3 | NA | 3 | NA | 3 | NA | 3 | NA |
| Spain | 15 | 13.3 | - | - | - | - | 13 | 23.1 | 15 | 6.7 | - | - | 15 | 40.0 |
| Sweden ^(e) | 3 | NA | - | - | - | - | - | - | - | - | - | - | 3 | NA |
| United Kingdom ^(a) | 15 | 0 | - | - | - | - | 1 | NA | 6 | NA | 8 | NA | 1 | NA |
| Total (MSs 20) | 356 | 3.7 | 135 | 1.5 | 101 | 3 | 179 | 31.8 | 208 | 8.2 | 173 | 9.8 | 313 | 21.7 |

N: number of isolates tested; % Res: percentage of microbiologically resistant isolates (either interpreted as non-wild type by ECOFFs or I/R according to CBPs); –: no data reported; NA: not applicable – if fewer than 10 isolates were tested, the percentage of resistance was not calculated; MSs: Member States.

(a): Data interpreted with clinical breakpoints

(b): In most countries doing disk diffusion, pefloxacin is used for screening for fluoroquinolone resistance, as recommended by EUCAST.

(c): Combined data on the class of sulfonamides and the substance sulfamethoxazole within this group.

(d): Ciprofloxacin CBP for *Enterobacteriales* used which is two dilutions higher than the CBP for *Salmonella*

(e): Microbiological resistance predicted from whole genome sequencing

Table 7: Antimicrobial resistance in *Salmonella* Kentucky from humans per country in 2019

| Country | Gentamicin | | Chloramphenicol | | Ampicillin | | Cefotaxime | | Ceftazidime | | Meropenem | | Tigecycline | | Nalidixic acid | |
|-------------------------------|------------|-------------|-----------------|-------------|------------|-------------|------------|------------|-------------|------------|------------|----------|-------------|------------|----------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 17 | 58.8 | 17 | 5.9 | 17 | 70.6 | 17 | 0 | 17 | 0 | 17 | 0 | 17 | 0 | 17 | 88.2 |
| Belgium | 22 | 68.2 | 22 | 13.6 | 22 | 77.3 | 22 | 0 | 22 | 0 | 22 | 0 | 22 | 22.7 | - | - |
| Estonia | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA |
| France | 71 | 47.9 | 71 | 7 | 71 | 64.8 | 71 | 1.4 | 71 | 0 | 71 | 0 | 71 | 1.4 | 71 | 77.5 |
| Germany ^(a,d) | 68 | 51.5 | 68 | 20.6 | 68 | 82.4 | 68 | 13.2 | 68 | 13.2 | 67 | 0 | - | - | 68 | 91.2 |
| Ireland ^(e) | 2 | NA | 2 | NA | 2 | NA | 2 | NA | - | - | 2 | NA | - | - | - | - |
| Lithuania ^(a) | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | - | - | - | - |
| Malta ^(d) | 9 | NA | - | - | 9 | NA | 9 | NA | 9 | NA | 9 | NA | - | - | - | - |
| Netherlands | 10 | 50 | 10 | 30 | 10 | 70 | 10 | 20 | 10 | 10 | 10 | 0 | 10 | 10 | 10 | 80 |
| Poland ^(a) | - | - | 1 | NA | 4 | NA | 3 | NA | - | - | - | - | - | - | - | - |
| Portugal | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA |
| Romania | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | 1 | NA | - | - | 1 | NA |
| Slovakia ^(a) | - | - | - | - | 2 | NA | - | - | - | - | - | - | - | - | - | - |
| Slovenia | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | - | - | - | - |
| Spain | 5 | NA | 5 | NA | 5 | NA | 5 | NA | 5 | NA | 5 | NA | - | - | 5 | NA |
| Sweden ^(e) | - | - | - | - | 3 | NA | 3 | NA | - | - | 3 | NA | - | - | - | - |
| United Kingdom ^(a) | 8 | NA | 25 | 0 | 29 | 69 | 16 | 12.5 | 13 | 15.4 | 8 | NA | - | - | 9 | NA |
| Total (MSs 17) | 219 | 51.6 | 228 | 12.3 | 249 | 71.1 | 233 | 6.9 | 222 | 6.3 | 221 | 0 | 123 | 6.5 | 184 | 82.6 |

Table 7: Continued

| Country | Ciprofloxacin ^(b) | | Azithromycin | | Colistin | | Sulfamethoxazole ^(c) | | Trimethoprim | | Co-trimoxazole | | Tetracycline | |
|-------------------------------|------------------------------|-------------|--------------|------------|-----------|------------|---------------------------------|-------------|--------------|-------------|----------------|-------------|--------------|-------------|
| | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res | N | % Res |
| Austria | 17 | 88.2 | 17 | 0 | - | - | 17 | 76.5 | 17 | 5.9 | - | - | 17 | 76.5 |
| Belgium | 22 | 95.5 | 22 | 4.5 | - | - | 22 | 86.4 | 22 | 27.3 | - | - | 22 | 86.4 |
| Estonia | 1 | NA | - | - | 1 | NA | 1 | NA | 1 | NA | - | - | 1 | NA |
| France | 71 | 77.5 | 71 | 1.4 | 71 | 1.4 | 71 | 69 | 71 | 14.1 | - | - | 71 | 70.4 |
| Germany ^(a,d) | 68 | 88.2 | - | - | - | - | - | - | - | - | 68 | 23.5 | 67 | 64.2 |
| Ireland ^(e) | 2 | NA | 2 | NA | 2 | NA | 2 | NA | 2 | NA | - | - | 2 | NA |
| Lithuania ^(a) | 1 | NA | - | - | - | - | - | - | 1 | NA | 1 | NA | - | - |
| Malta ^(d) | 9 | NA | - | - | - | - | - | - | - | - | - | - | - | - |
| Netherlands | 10 | 80 | 10 | 10 | 10 | 0 | 10 | 70 | 10 | 20 | - | - | 10 | 80.0 |
| Poland ^(a) | 1 | NA | - | - | - | - | - | - | - | - | 4 | NA | - | - |
| Portugal | 2 | NA | 2 | NA | - | - | 2 | NA | 2 | NA | - | - | 2 | NA |
| Romania | 1 | NA | - | - | - | - | 1 | NA | 1 | NA | 1 | NA | 1 | NA |
| Slovakia ^(a) | - | - | - | - | - | - | - | - | - | - | 1 | NA | 1 | NA |
| Slovenia | 2 | NA | - | - | - | - | 2 | NA | 2 | NA | 2 | NA | 2 | NA |
| Spain | 5 | NA | - | - | - | - | 5 | NA | 5 | NA | - | - | 5 | NA |
| Sweden ^(e) | 3 | NA | - | - | - | - | - | - | - | - | - | - | 3 | NA |
| United Kingdom ^(a) | 37 | 70.3 | - | - | - | - | 8 | NA | 23 | 4.3 | 15 | 20 | 8 | NA |
| Total (MSs 17) | 252 | 82.1 | 124 | 3.2 | 84 | 1.2 | 141 | 70.9 | 157 | 14.6 | 92 | 21.7 | 212 | 70.3 |

N: number of isolates tested; % Res: percentage of microbiologically resistant isolates (either interpreted as non-wild type by ECOFFs or I/R according to CBPs); -: no data reported; NA: not applicable – if fewer than 10 isolates were tested, the percentage of resistance was not calculated; MSs: Member States.

(a): Data interpreted with clinical breakpoints

(b): In most countries doing disk diffusion, pefloxacin is used for screening for fluoroquinolone resistance, as recommended by EUCAST.

(c): Combined data on the class of sulfonamides and the substance sulfamethoxazole within this group.

(d): Ciprofloxacin CBP for *Enterobacterales* used which is two dilutions higher than the CBP for *Salmonella*

(e): Microbiological resistance predicted from whole genome sequencing

Table 8: Combined 'microbiological' and 'clinical' resistance to ciprofloxacin and cefotaxime among *Salmonella* spp. isolates from human cases in 2019

| Country | N | Microbiologically resistant to CIP and CTX (%) | Clinically resistant to CIP and CTX (%) |
|-----------------------|---------------|--|---|
| Austria | 1,884 | 0.4 | 0.3 |
| Belgium | 986 | 0.9 | 0.8 |
| Cyprus | 32 | 0 | 0 |
| Denmark | 197 | 0.5 | 0.5 |
| Estonia | 153 | 0 | 0 |
| Finland | 107 | 0 | 0 |
| France | 843 | 0.7 | 0.5 |
| Germany | 4678 | 0 | 0 |
| Greece | 50 | 0 | 0 |
| Ireland | 181 | 0 | ND |
| Italy | 569 | 1.2 | 1.2 |
| Latvia | 44 | 0 | 0 |
| Lithuania | 479 | 0 | 0 |
| Luxembourg | 131 | 0 | 0 |
| Malta | 113 | 1.8 | 1.8 |
| Netherlands | 727 | 1.1 | 1.0 |
| Poland | 362 | 0.8 | 0.3 |
| Portugal | 463 | 0.6 | 0.6 |
| Romania | 147 | 2.0 | 2.0 |
| Slovakia | 84 | 0 | 0 |
| Slovenia | 358 | 0 | 0 |
| Spain | 1,399 | 0.6 | 0.6 |
| Sweden | 605 | 0.2 | ND |
| United Kingdom | 1,243 | 0.7 | 0.7 |
| Total (MSs 24) | 15,835 | 0.5 | 0.4 |
| Iceland | 6 | NA | NA |
| Norway | 216 | 0 | 0 |

N: number of isolates; CIP: ciprofloxacin; CTX: cefotaxime; ND: not determined as resistance predicted from whole genome sequencing;

Table 9: Combined 'microbiological' and 'clinical' resistance to ciprofloxacin and cefotaxime among *S. Enteritidis* isolates from human cases in 2019

| Country | N | Microbiologically resistant to CIP and CTX (%) | Clinically resistant to CIP and CTX (%) |
|-----------------------|--------------|--|---|
| Austria | 1,131 | 0.1 | 0.1 |
| Belgium | 224 | 0 | 0 |
| Cyprus | 7 | NA | NA |
| Denmark | 4 | NA | NA |
| Estonia | 62 | 0 | 0 |
| Finland | 40 | 0 | 0 |
| France | 97 | 0 | 0 |
| Germany | 1,101 | 0 | 0 |
| Greece | 37 | 0 | 0 |
| Ireland | 36 | 0 | ND |
| Italy | 75 | 0 | 0 |
| Latvia | 10 | 0 | 0 |
| Lithuania | 316 | 0 | 0 |
| Luxembourg | 30 | 0 | 0 |
| Malta | 14 | 0 | 0 |
| Netherlands | 247 | 0 | 0 |
| Poland | 266 | 0.8 | 0.4 |
| Portugal | 115 | 0.9 | 0.9 |
| Romania | 68 | 0 | 0 |
| Slovakia | 65 | 0 | 0 |
| Slovenia | 88 | 0 | 0 |
| Spain | 399 | 0 | 0 |
| Sweden | 119 | 0 | ND |
| United Kingdom | 393 | 0.3 | 0.3 |
| Total (MSs 24) | 4,944 | 0.1 | 0.1 |
| Iceland | 1 | NA | NA |
| Norway | 121 | 0 | 0 |

N: number of isolates; CIP: ciprofloxacin; CTX: cefotaxime; NA: not applicable –fewer than 10 isolates tested; ND: not determined as resistance predicted from whole genome sequencing;

Table 10: Combined 'microbiological' and 'clinical' resistance to ciprofloxacin and cefotaxime among *S. Typhimurium* isolates from human cases in 2019

| Country | N | Microbiologically resistant to CIP and CTX (%) | Clinically resistant to CIP and CTX (%) |
|-----------------------|--------------|--|---|
| Austria | 113 | 0 | 0 |
| Belgium | 192 | 1.6 | 1.6 |
| Cyprus | 13 | 0 | 0 |
| Denmark | 26 | 0 | 0 |
| Estonia | 25 | 0 | 0 |
| Finland | 39 | 0 | 0 |
| France | 95 | 0 | 0 |
| Germany | 1,191 | 0 | 0 |
| Greece | 3 | NA | NA |
| Ireland | 31 | 0 | ND |
| Italy | 48 | 2.1 | 2.1 |
| Latvia | 15 | 0 | 0 |
| Lithuania | 63 | 0 | 0 |
| Luxembourg | 21 | 0 | 0 |
| Malta | 1 | NA | NA |
| Netherlands | 98 | 2.0 | 2.0 |
| Poland | 8 | 0 | 0 |
| Portugal | 79 | 0 | 0 |
| Romania | 45 | 0 | 0 |
| Slovakia | 3 | NA | NA |
| Slovenia | 28 | 0 | 0 |
| Spain | 33 | 9.1 | 9.1 |
| Sweden | 50 | 0 | ND |
| United Kingdom | 209 | 0 | 0.0 |
| Total (MSs 24) | 2,429 | 0.4 | 0.4 |
| Iceland | 1 | NA | NA |
| Norway | 58 | 0 | 0 |

N: number of isolates; CIP: ciprofloxacin; CTX: cefotaxime; NA: not applicable –fewer than 10 isolates tested; ND: not determined as resistance predicted from whole genome sequencing;

Table 11: Combined 'microbiological' and 'clinical' resistance to ciprofloxacin and cefotaxime among monophasic *S. Typhimurium* isolates from human cases in 2019

| Country | N | Microbiologically resistant to CIP and CTX (%) | Clinically resistant to CIP and CTX (%) |
|-----------------------|--------------|--|---|
| Austria | 105 | 1.0 | 1.0 |
| Belgium | 232 | 0.9 | 0.9 |
| Denmark | 70 | 0 | 0 |
| Estonia | 29 | 0 | 0 |
| France | 79 | 0 | 0 |
| Greece | 1 | NA | NA |
| Ireland | 24 | 0 | ND |
| Italy | 200 | 0 | 0 |
| Luxembourg | 34 | 0 | 0 |
| Malta | 14 | 0 | 0 |
| Netherlands | 110 | 0.9 | 0.9 |
| Portugal | 115 | 0.9 | 0.9 |
| Slovenia | 113 | 0 | 0 |
| Spain | 487 | 0.6 | 0.6 |
| Sweden | 165 | 0 | ND |
| United Kingdom | 41 | 0 | 0 |
| Total (MSs 16) | 1,819 | 0.4 | 0.4 |
| Norway | 27 | 0 | 0 |

N: number of isolates; CIP: ciprofloxacin; CTX: cefotaxime; NA: not applicable –fewer than 10 isolates tested; ND: not determined as resistance predicted from whole genome sequencing;

Table 12: Combined 'microbiological' and 'clinical' resistance to ciprofloxacin and cefotaxime among *S. Infantis* isolates from human cases in 2019

| Country | N | Microbiologically resistant to CIP and CTX (%) | Clinically resistant to CIP and CTX (%) |
|-----------------------|------------|--|---|
| Austria | 79 | 3.8 | 3.8 |
| Belgium | 60 | 1.7 | 1.7 |
| Cyprus | 2 | NA | NA |
| Denmark | 8 | NA | NA |
| Estonia | 3 | NA | NA |
| France | 128 | 0.8 | 0.8 |
| Germany | 314 | 0 | 0 |
| Greece | 1 | NA | NA |
| Ireland | 4 | NA | ND |
| Italy | 19 | 26.3 | 26.3 |
| Latvia | 7 | NA | NA |
| Lithuania | 25 | 0 | 0 |
| Luxembourg | 3 | NA | NA |
| Malta | 23 | 0 | 0 |
| Netherlands | 25 | 12.0 | 12.0 |
| Poland | 7 | NA | NA |
| Portugal | 3 | NA | NA |
| Romania | 5 | NA | NA |
| Slovakia | 5 | NA | NA |
| Slovenia | 9 | NA | NA |
| Spain | 35 | 2.9 | 2.9 |
| Sweden | 1 | NA | ND |
| United Kingdom | 32 | 6.3 | 6.3 |
| Total (MSs 23) | 798 | 2.1 | 2.1 |
| Norway | 1 | NA | NA |

N: number of isolates; CIP: ciprofloxacin; CTX: cefotaxime; NA: not applicable –fewer than 10 isolates tested; ND: not determined as resistance predicted from whole genome sequencing;

Table 13: Combined 'microbiological' and 'clinical' resistance to ciprofloxacin and cefotaxime among *S. Derby* isolates from human cases in 2019

| Country | N | Microbiologically resistant to CIP and CTX (%) | Clinically resistant to CIP and CTX (%) |
|-----------------------|------------|--|---|
| Austria | 6 | NA | NA |
| Belgium | 37 | 0 | 0 |
| Denmark | 10 | 0 | 0 |
| Estonia | 7 | NA | NA |
| France | 61 | 0 | 0.0 |
| Germany | 126 | 0 | 0 |
| Italy | 25 | 0 | 0 |
| Latvia | 3 | NA | NA |
| Lithuania | 24 | 0 | 0.0 |
| Luxembourg | 2 | NA | NA |
| Malta | 1 | NA | NA |
| Netherlands | 8 | NA | NA |
| Poland | 2 | NA | NA |
| Portugal | 2 | NA | NA |
| Romania | 4 | NA | NA |
| Slovenia | 3 | NA | NA |
| Spain | 15 | 0 | 0.0 |
| Sweden | 3 | NA | NA |
| United Kingdom | 6 | NA | NA |
| Total (MSs 19) | 345 | 0.9 | 0.9 |

N: number of isolates; CIP: ciprofloxacin; CTX: cefotaxime; NA: not applicable –fewer than 10 isolates tested; ND: not determined as resistance predicted from whole genome sequencing;

Table 14: Combined 'microbiological' and 'clinical' resistance to ciprofloxacin and cefotaxime among *S. Kentucky* isolates from human cases in 2019

| Country | N | Microbiologically resistant to CIP and CTX (%) | Clinically resistant to CIP and CTX (%) |
|-----------------------|------------|--|---|
| Austria | 17 | 0 | 0 |
| Belgium | 22 | 0 | 0 |
| Estonia | 1 | NA | NA |
| France | 71 | 1.4 | 0 |
| Germany | 68 | 13.2 | 13.2 |
| Ireland | 2 | NA | ND |
| Lithuania | 1 | NA | NA |
| Malta | 9 | NA | NA |
| Netherlands | 10 | 20.0 | 10.0 |
| Poland | 1 | NA | NA |
| Portugal | 2 | NA | NA |
| Romania | 1 | NA | NA |
| Slovenia | 2 | NA | NA |
| Spain | 5 | NA | NA |
| Sweden | 3 | NA | NA |
| United Kingdom | 15 | 13.3 | 13.3 |
| Total (MSs 16) | 230 | 7.0 | 6.1 |

N: number of isolates; CIP: ciprofloxacin; CTX: cefotaxime; NA: not applicable –fewer than 10 isolates tested; ND: not determined as resistance predicted from whole genome sequencing;

Table 15: ESBL, AmpC and carbapenemase phenotypes in *Salmonella* spp. isolates from humans by country, 2019

| Country | Tested for CTX and/or CAZ N | Res to CTX and/or CAZ N | Resistance Phenotype | | | | | | | | Serovars |
|-----------------------|--------------------------------|----------------------------|----------------------|------------|-----------|------------|--------------|-------------|---------------|-------------|---|
| | | | ESBL | | AmpC | | AmpC + ESBL* | | Carbapenemase | | |
| | | | N | % | N | % | N | % | N | % | |
| Austria | 1,884 | 10 | 8 | 0.4 | 1 | 0.1 | | | | | Infantis (3), Bovismorbificans (2), Enteritidis (1), monophasic S. Typhimurium (1), Coeln (1), Group E (1) |
| Belgium | 986 | 12 | 7 | 0.7 | 2 | 0.2 | | | | | Typhimurium (5), monophasic S. Typhimurium (2), Enteritidis (1), Infantis (1) |
| Cyprus | 96 | 0 | | | | | | | | | |
| Denmark | 197 | 2 | 2 | 1.0 | | | | | | | Infantis (2) |
| Estonia | 153 | 0 | | | | | | | | | |
| Finland | 107 | 0 | | | | | | | | | |
| France | 843 | 8 | 6 | 0.7 | 1 | 0.1 | | | | | Infantis (2), Hadar (1), Indiana (1), Newport (1), Typhimurium (1), Virchow (1) |
| Germany | 4694 | 152 | 55 | 1.2 | 7 | 0.1 | | | | | Infantis (16), Typhimurium (13), Kentucky (9), Derby (4), Anatum (2), Napoli (2), Virchow (2), Bardo (1), Bovismorbificans (1), Braenderup (1), Brandenburg (1), Chincol (1), Cholerasuis (1), Corvallis (1), Enteritidis (1), Haifa (1), Heidelberg (1), Minnesota (1), Muenchen (1), Schwarzengrund (1), Uganda (1) |
| Greece | 50 | 0 | | | | | | | | | |
| Ireland | 181 | 0 | | | | | | | | | |
| Italy | 569 | 9 | 7 | 1.2 | | | | | | | Infantis (6), Typhimurium (1) |
| Latvia | 53 | 0 | | | | | | | | | |
| Lithuania | 632 | 0 | | | | | | | | | |
| Luxembourg | 131 | 0 | | | | | | | | | |
| Malta | 113 | 3 | 3 | 2.7 | 2 | 1.8 | 2 | 1.8 | | | Kentucky (2), Infantis (1) |
| Netherlands | 727 | 8 | 8 | 1.1 | | | | | | | Infantis (3), Typhimurium (2), Corvallis (1), Kentucky (1), monophasic Typhimurium (1) |
| Portugal | 463 | 7 | 3 | 0.6 | 3 | 0.6 | 3 | 0.6 | | | Monophasic Typhimurium (3) |
| Romania | 147 | 3 | 3 | 2.0 | | | | | | | Derby (3) |
| Slovenia | 358 | 0 | | | | | | | | | |
| Spain | 1,400 | 11 | 8 | 0.6 | 1 | 0.1 | | | 1 | 0.1 | Typhimurium (4), monophasic Typhimurium (2), Bredney (1), Derby (1), Infantis (1), Oranienburg (1) |
| Sweden | 605 | 1 | 1 | 0.2 | | | | | | | London (1) |
| Total (21 MSs) | 14,389 | 226 | 111 | 0.8 | 17 | 0.1 | 5 | 0.03 | 1 | 0.01 | |
| Iceland | 6 | 0 | | | | | | | | | |
| Norway | 216 | 2 | 1 | 0.5 | 1 | 0.5 | | | | | Infantis (1), monophasic Typhimurium (1) |

ESBL: extended-spectrum b-lactamase; N: isolates with this phenotype; %: percentage of isolates with this phenotype from the total tested; CTX: cefotaxime; CAZ: ceftazidime; MSs: Member States.
* isolates with both ESBL and AmpC are a subset of those with ESBL and with AmpC

Table 16: Complete susceptibility and multi-resistance in *Salmonella* spp. from humans in 2019

| Country | Susceptible to all (%) | Multi-resistant (%) |
|--------------------------------|------------------------|---------------------|
| Austria (N=1884) | 52.6 | 10.2 |
| Belgium (N=981) | 35.3 | 38.8 |
| Denmark (N=197) | 49.2 | 37.1 |
| Estonia (N=153) | 48.4 | 30.7 |
| France (N=843) | 63.6 | 20.0 |
| Greece (N=49) | 55.1 | 10.2 |
| Ireland (N=181) | 62.4 | 18.8 |
| Italy (N=569) | 33.2 | 39.9 |
| Luxembourg (N=129) | 52.7 | 22.5 |
| Netherlands (N=727) | 59.3 | 23.1 |
| Portugal (N=463) | 58.7 | 26.1 |
| Romania (N=147) | 57.1 | 12.2 |
| Slovenia (N=355) | 51.8 | 34.4 |
| Spain (N=1383) | 43.9 | 33.4 |
| Total (MSs 14) (N=8061) | 49.9 | 25.4 |

MSs: Member States; N: number of isolates tested

Table 17: Complete susceptibility and multi-resistance in *S. Enteritidis* from humans in 2019

| Country | Susceptible to all (%) | Multi-resistant (%) |
|--------------------------------|------------------------|---------------------|
| Austria (N=1131) | 45.7 | 1.1 |
| Belgium (N=224) | 55.8 | 14.3 |
| Denmark (N=4) | NA | NA |
| Estonia (N=62) | 62.9 | 3.2 |
| France (N=97) | 77.3 | 1.0 |
| Greece (N=37) | 48.6 | 10.8 |
| Ireland (N=36) | 63.9 | 8.3 |
| Italy (N=75) | 42.7 | 10.7 |
| Luxembourg (N=30) | 76.7 | 0.0 |
| Netherlands (N=247) | 74.9 | 6.5 |
| Portugal (N=115) | 83.5 | 0.0 |
| Romania (N=68) | 85.3 | 0.0 |
| Slovenia (N=88) | 75.0 | 2.3 |
| Spain (N=396) | 80.1 | 0.8 |
| Total (MSs 14) (N=2610) | 60.4 | 3.2 |

MSs: Member States; N: number of isolates tested

Table 18: Complete susceptibility and multi-resistance in *S. Typhimurium* from humans in 2019

| Country | Susceptible to all (%) | Multi-resistant (%) |
|-------------------------------|------------------------|---------------------|
| Austria (N=113) | 70.8 | 19.5 |
| Belgium (N=190) | 21.6 | 41.6 |
| Denmark (N=26) | 38.5 | 46.2 |
| Estonia (N=25) | 32.0 | 40.0 |
| France (N=95) | 47.4 | 30.5 |
| Greece (N=3) | NA | NA |
| Ireland (N=31) | 48.4 | 25.8 |
| Italy (N=48) | 45.8 | 39.6 |
| Luxembourg (N=21) | 42.9 | 19.0 |
| Netherlands (N=98) | 39.8 | 22.4 |
| Portugal (N=79) | 67.1 | 17.7 |
| Romania (N=45) | 22.2 | 24.4 |
| Slovenia (N=27) | 66.7 | 14.8 |
| Spain (N=33) | 18.2 | 69.7 |
| Total (MSs 14) (N=834) | 42.9 | 30.9 |

MSs: Member States; N: number of isolates tested

Table 19: Complete susceptibility and multi-resistance in monophasic *S. Typhimurium* from humans in 2019

| Country | Susceptible to all (%) | Multi-resistant (%) |
|--------------------------------|------------------------|---------------------|
| Austria (N=105) | 16.2 | 59.0 |
| Belgium (N=231) | 6.9 | 77.1 |
| Denmark (N=70) | 4.3 | 74.3 |
| Estonia (N=29) | 3.4 | 86.2 |
| France (N=79) | 8.9 | 64.6 |
| Ireland (N=24) | 0.0 | 70.8 |
| Italy (N=200) | 3.0 | 80.5 |
| Luxembourg (N=34) | 5.9 | 67.6 |
| Netherlands (N=110) | 7.3 | 79.1 |
| Portugal (N=115) | 10.4 | 76.5 |
| Slovenia (N=112) | 2.7 | 92.0 |
| Spain (N=485) | 3.5 | 68.0 |
| Total (MSs 12) (N=1594) | 5.8 | 73.8 |

MSs: Member States; N: number of isolates tested

Table 20: Complete susceptibility and multi-resistance in *S. Infantis* from humans in 2019

| Country | Susceptible to all (%) | Multi-resistant (%) |
|-------------------------------|------------------------|---------------------|
| Austria (N=79) | 25.3 | 60.8 |
| Belgium (N=60) | 38.3 | 46.7 |
| Denmark (N=8) | NA | NA |
| Estonia (N=3) | NA | NA |
| France (N=128) | 85.9 | 11.7 |
| Greece (N=1) | NA | NA |
| Ireland (N=4) | NA | NA |
| Italy (N=19) | 26.3 | 52.6 |
| Luxembourg (N=2) | NA | NA |
| Netherlands (N=25) | 64.0 | 32.0 |
| Portugal (N=3) | NA | NA |
| Romania (N=5) | NA | NA |
| Slovenia (N=9) | NA | NA |
| Spain (N=35) | 54.3 | 40.0 |
| Total (MSs 14) (N=381) | 55.6 | 35.7 |

MSs: Member States; N: number of isolates tested

Table 21: Complete susceptibility and multi-resistance in *S. Derby* from humans in 2019

| Country | Susceptible to all (%) | Multi-resistant (%) |
|-------------------------------|------------------------|---------------------|
| Austria (N=6) | NA | NA |
| Belgium (N=37) | 67.6 | 8.1 |
| Denmark (N=10) | 100.0 | 0.0 |
| Estonia (N=7) | NA | NA |
| France (N=61) | 47.5 | 9.8 |
| Italy (N=25) | 44.0 | 8.0 |
| Luxembourg (N=2) | NA | NA |
| Netherlands (N=8) | NA | NA |
| Portugal (N=2) | NA | NA |
| Romania (N=4) | NA | NA |
| Slovenia (N=3) | NA | NA |
| Spain (N=13) | 46.2 | 15.4 |
| Total (MSs 12) (N=178) | 58.4 | 11.8 |

MSs: Member States; N: number of isolates tested

Table 22: Complete susceptibility and multi-resistance in *S. Kentucky* from humans in 2019

| Country | Susceptible to all (%) | Multi-resistant (%) |
|-------------------------------|------------------------|---------------------|
| Austria (N=17) | 11.8 | 76.5 |
| Belgium (N=22) | 4.5 | 86.4 |
| Estonia (N=1) | NA | NA |
| France (N=71) | 16.9 | 70.4 |
| Ireland (N=2) | NA | NA |
| Netherlands (N=10) | 20.0 | 80.0 |
| Portugal (N=2) | NA | NA |
| Romania (N=1) | NA | NA |
| Slovenia (N=2) | NA | NA |
| Spain (N=5) | NA | NA |
| Total (MSs 10) (N=133) | 15.0 | 73.7 |

MSs: Member States; N: number of isolates tested

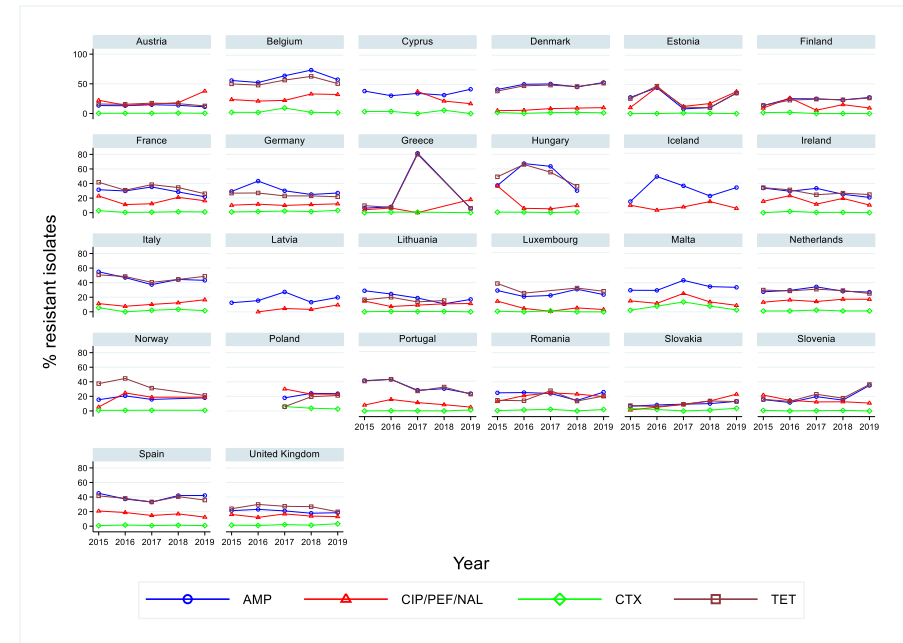


Figure 1: Trends in resistance to ampicillin, ciprofloxacin/pefloxacin/nalidixic acid, cefotaxime and tetracycline in *Salmonella* spp. from humans in 26 reporting countries, 2015–2019

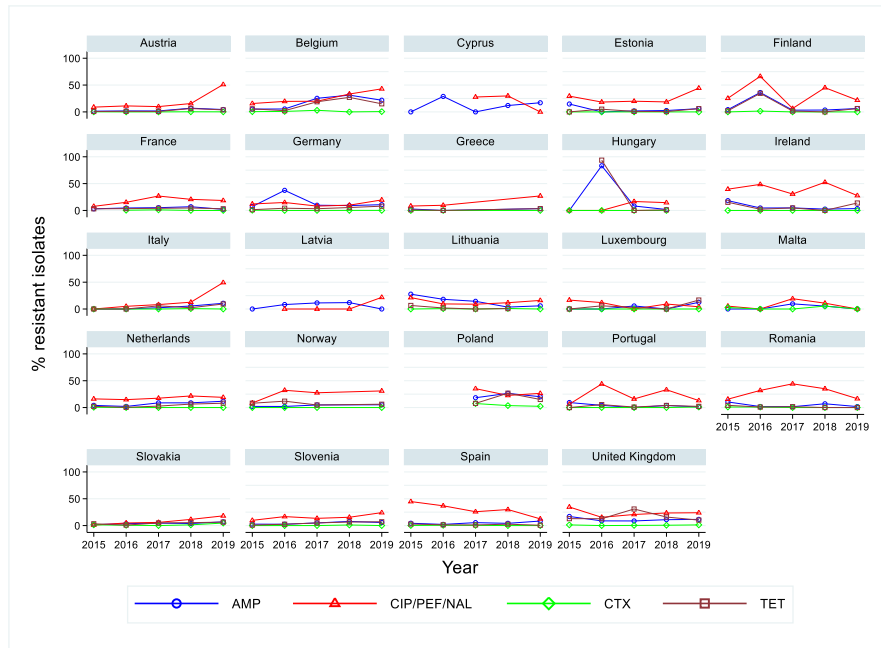


Figure 2: Trends in resistance to ampicillin, ciprofloxacin/pefloxacin/nalidixic acid, cefotaxime and tetracycline in *Salmonella* Enteritidis from humans in 24 reporting countries, 2015–2019

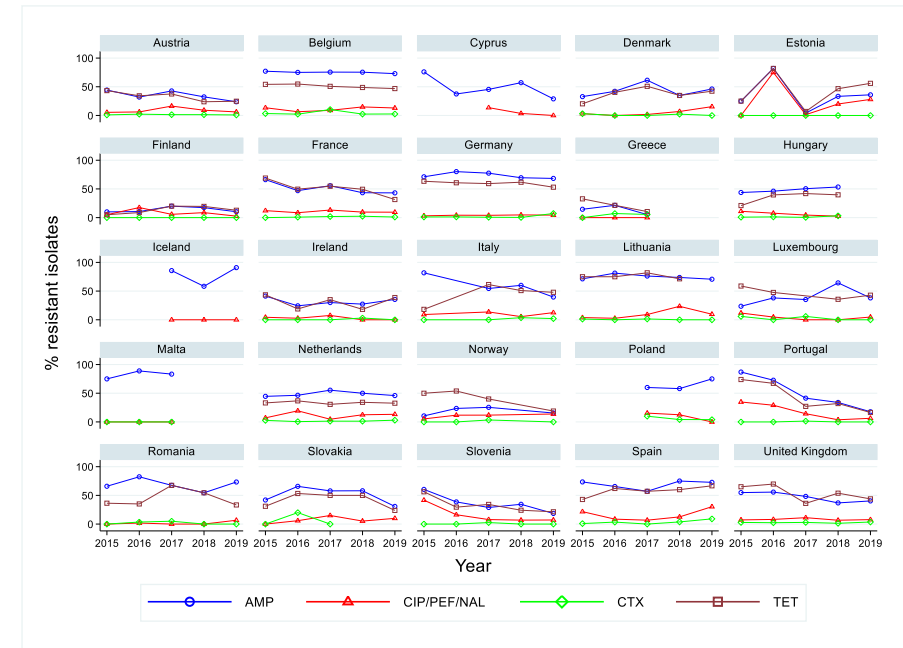


Figure 3: Trends in resistance to ampicillin, ciprofloxacin/pefloxacin/nalidixic acid, cefotaxime and tetracycline in *Salmonella* Typhimurium from humans in 25 reporting countries, 2015–2019

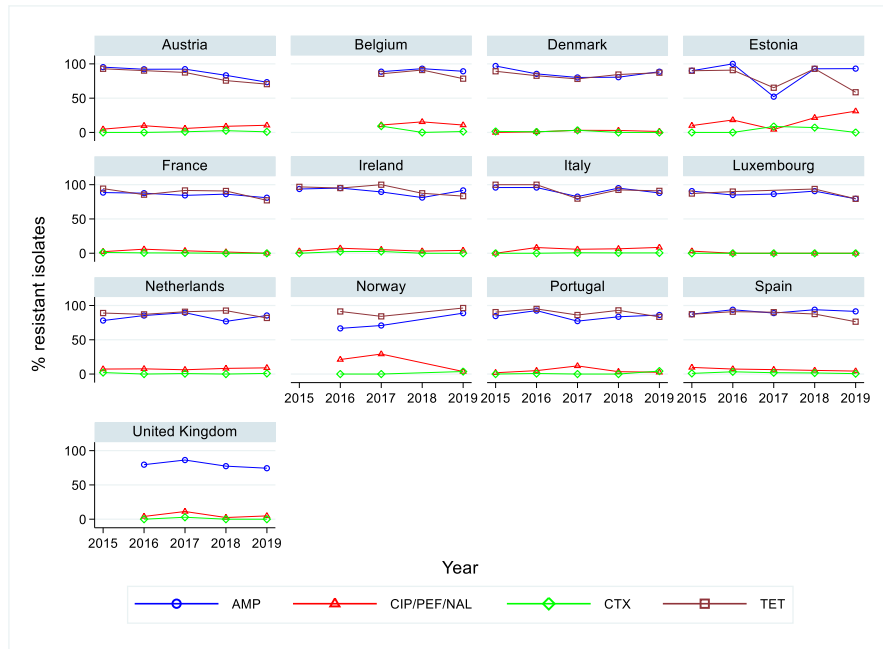


Figure 4: Trends in resistance to ampicillin, ciprofloxacin/pefloxacin/nalidixic acid, cefotaxime and tetracycline in monophasic *Salmonella* Typhimurium from humans in 13 reporting countries, 2015–2019



Figure 5: Trends in resistance to ampicillin, ciprofloxacin/pefloxacin/nalidixic acid, cefotaxime and tetracycline in *Salmonella* Infantis from humans in 11 reporting countries, 2015–2019

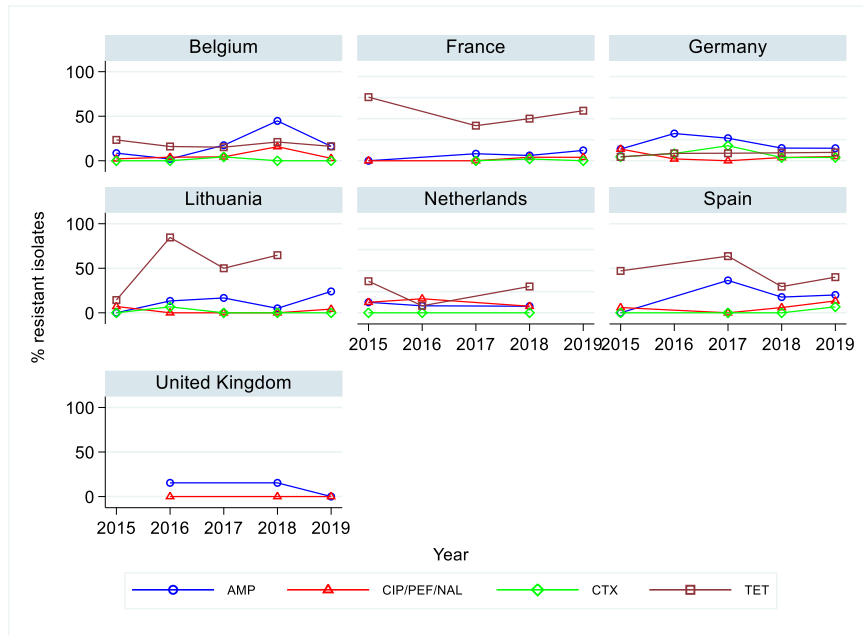


Figure 6: Trends in resistance to ampicillin, ciprofloxacin/pefloxacin/nalidixic acid, cefotaxime and tetracycline in *Salmonella* Derby from humans in 7 reporting countries, 2015–2019

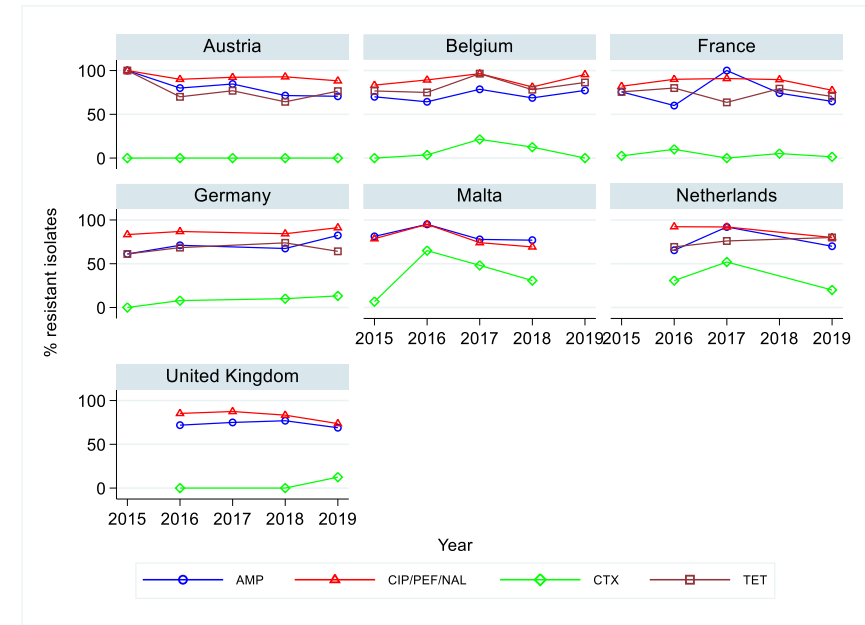


Figure 7: Trends in resistance to ampicillin, ciprofloxacin/pefloxacin/nalidixic acid, cefotaxime and tetracycline in *Salmonella* Kentucky from humans in 7 reporting countries, 2015–2019

B.2. Antimicrobial resistance in *Salmonella* spp. from animal carcasses

Table 23: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from fattening pig carcasses, 26 MSs and 1 non-MSs, 2019

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|-------------------------|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|------|---|---|
| Austria ^(a) | 5 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Belgium | 103 | 0 | 12.6 | 56.3 | 0 | 0 | 0 | 0 | 1.9 | 2.9 | 1 | 4.9 | 53.4 | 28.2 | 43.7 | 34 | 43.7 | 0 | 0 |
| Bulgaria ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Croatia | 46 | 4.3 | 34.8 | 41.3 | 0 | 0 | 0 | 0 | 4.3 | 13 | 4.3 | 0 | 56.5 | 26.1 | 45.7 | 28.3 | 43.5 | 0 | 0 |
| Cyprus ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Czechia | 11 | 0 | 27.3 | 63.6 | 9.1 | 9.1 | 0 | 0 | 9.1 | 9.1 | 0 | 0 | 63.6 | 0 | 72.7 | 9.1 | 63.6 | 0 | 0 |
| Denmark | 125 | 4 | 6.4 | 45.6 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0 | 52.8 | 19.2 | 45.6 | 39.2 | 42.4 | 0 | 0 |
| Estonia ^(a) | 9 | 0 | 0 | 11.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88.9 | 0 | 0 | 0 |
| Finland ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| France | 204 | 1 | 4.9 | 44.1 | 0 | 0 | 0 | 1.5 | 0 | 0.5 | 0 | 2.5 | 58.8 | 2.5 | 58.8 | 33.3 | 37.7 | 0 | 0 |
| Germany | 15 | 6.7 | 20 | 53.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 26.7 | 26.7 | 46.7 | 33.3 | 0 | 0 |
| Greece ^(a) | 2 | 0 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 50 | 50 | 50 | 50 | 0 | 0 |
| Hungary | 30 | 0 | 3.3 | 43.3 | 0 | 0 | 0 | 0 | 13.3 | 13.3 | 0 | 0 | 43.3 | 6.7 | 46.7 | 46.7 | 43.3 | 0 | 0 |
| Ireland | 62 | 19.4 | 21 | 67.7 | 0 | 0 | 0 | 1.6 | 1.6 | 1.6 | 0 | 1.6 | 66.1 | 25.8 | 56.5 | 24.2 | 50 | 0 | 0 |
| Italy | 197 | 4.6 | 18.8 | 47.2 | 1 | 1 | 0 | 0 | 5.6 | 8.1 | 2.5 | 0 | 43.7 | 13.7 | 54.8 | 35.5 | 40.1 | 0 | 0 |
| Latvia ^(a) | 6 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 50 | 50 | 0 | 0 |
| Malta | 10 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 0 | 10 | 0 | 20 | 80 | 10 | 0 | 0 |
| Netherlands | 23 | 4.3 | 0 | 26.1 | 4.3 | 4.3 | 0 | 21.7 | 4.3 | 4.3 | 0 | 4.3 | 30.4 | 17.4 | 34.8 | 52.2 | 21.7 | 4.3 | 0 |
| Poland | 20 | 0 | 25 | 45 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 45 | 40 | 40 | 40 | 45 | 0 | 0 |
| Portugal | 17 | 5.9 | 23.5 | 82.4 | 0 | 0 | 0 | 0 | 0 | 0 | 64.7 | 17.6 | 88.2 | 64.7 | 82.4 | 5.9 | 88.2 | 0 | 0 |
| Romania ^(a) | 3 | 0 | 33.3 | 33.3 | 33.3 | 33.3 | 0 | 0 | 0 | 33.3 | 0 | 0 | 33.3 | 33.3 | 0 | 66.7 | 33.3 | 33.3 | 0 |

EUSR on AMR in zoonotic and indicator bacteria from humans, animals and food 2018/2019

| | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--------------|------------|-------------|-------------|------------|------------|----------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|------------|----------|----------|
| Slovakia | 9 | 0 | 11.1 | 33.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 33.3 | 66.7 | 33.3 | 0 | 0 |
| Slovenia ^(a) | 4 | 0 | 25 | 25 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 25 | 25 | 25 | 75 | 25 | 0 | 0 | 0 |
| Spain | 166 | 10.8 | 24.7 | 59 | 0 | 0 | 0 | 0.6 | 26.5 | 30.7 | 3 | 1.8 | 59.6 | 25.3 | 67.5 | 21.7 | 57.8 | 0 | 0 | 0 |
| Sweden ^(a) | 1 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 | 0 |
| United Kingdom ^(a) | 9 | 0 | 0 | 11.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22.2 | 11.1 | 0 | 33.3 | 66.7 | 11.1 | 0 | 0 | 0 |
| Total (26 MSs) | 1,088 | 5.2 | 14.6 | 48.9 | 0.5 | 0.5 | 0 | 0.9 | 6.2 | 8.1 | 2.4 | 1.8 | 52.1 | 17.2 | 52.7 | 34.7 | 43.4 | 0.2 | 0 | 0 |
| Iceland | 10 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 50 | 40 | 40 | 30 | 0 | 0 | 0 |
| Total (MSs and non-MSs) | 1098 | 5.2 | 14.5 | 48.8 | 0.5 | 0.5 | 0 | 0.9 | 6.1 | 8 | 2.4 | 1.8 | 52 | 17.5 | 52.6 | 34.7 | 43.3 | 0.2 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFS: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 24: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from carcasses of calves under one year of age, 7 MSs, 2019

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|----------------------------|-----------|----------|------------|-----------|----------|----------|----------|------------|------------|------------|----------|-------------|-------------|------------|-------------|------------------|-------------|---|---|
| Belgium ^(a) | 2 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 50 | 50 | 0 | 50 | 0 | 0 |
| Croatia ^(a) | 4 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 75 | 25 | 0 | 0 |
| Denmark ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | - ^(b) | 0 | 0 | 0 |
| France | 43 | 0 | 9.3 | 25.6 | 0 | 0 | 0 | 7 | 0 | 2.3 | 0 | 14 | 34.9 | 7 | 55.8 | 41.9 | 27.9 | 0 | 0 |
| Germany ^(a) | 4 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 25 | 0 | 25 | 75 | 25 | 0 | 0 |
| Netherlands ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | - ^(b) | 0 | 0 | 0 |
| Spain | 32 | 0 | 0 | 18.8 | 0 | 0 | 0 | 0 | 3.1 | 3.1 | 0 | 0 | 31.3 | 6.3 | 34.4 | 53.1 | 18.8 | 0 | 0 |
| Total (7 MSs) | 91 | 0 | 4.4 | 22 | 0 | 0 | 0 | 3.3 | 1.1 | 2.2 | 0 | 17.6 | 31.9 | 7.7 | 41.8 | 51.6 | 23.1 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

(b): Colistin is not included in the calculation of complete susceptibility. Further information is found in Annex A 'Materials and Methods'.

Table 25: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from carcasses of broilers, 19 MSs and 2 non-MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|--|------------|------------|------------|-------------|------------|------------|----------|------------|-------------|-------------|------------|----------|-------------|------------|-------------|-------------|-------------|---|---|
| Austria | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87.3 | 87.3 | 0 | 0 | 87.3 | 0 | 87.3 | 12.7 | 87.3 | 0 | 0 |
| Bulgaria ^(a) | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 75 | 0 | 0 | 75 | 50 | 62.5 | 25 | 62.5 | 0 | 0 |
| Croatia | 86 | 0 | 0 | 20.9 | 0 | 0 | 0 | 0 | 93 | 93 | 0 | 0 | 16.3 | 1.2 | 16.3 | 7 | 17.4 | 0 | 0 |
| Cyprus ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 100 | 100 | 0 | 100 | 0 | 0 |
| Czechia | 35 | 0 | 0 | 14.3 | 0 | 0 | 0 | 8.6 | 28.6 | 28.6 | 0 | 5.7 | 20 | 0 | 20 | 71.4 | 20 | 0 | 0 |
| France | 143 | 0.7 | 6.3 | 11.9 | 0 | 0 | 0 | 0.7 | 0.7 | 0.7 | 2.8 | 0.7 | 13.3 | 4.9 | 25.2 | 65 | 11.9 | 0 | 0 |
| Germany | 42 | 0 | 4.8 | 7.1 | 0 | 0 | 0 | 2.4 | 38.1 | 42.9 | 0 | 0 | 23.8 | 14.3 | 31 | 50 | 23.8 | 0 | 0 |
| Greece | 13 | 7.7 | 0 | 23.1 | 0 | 0 | 0 | 0 | 53.8 | 92.3 | 7.7 | 0 | 61.5 | 0 | 53.8 | 0 | 53.8 | 0 | 0 |
| Hungary | 69 | 1.4 | 2.9 | 21.7 | 0 | 0 | 0 | 8.7 | 98.6 | 98.6 | 0 | 0 | 71 | 0 | 71 | 1.4 | 71 | 0 | 0 |
| Ireland ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 |
| Malta ^(a) | 8 | 0 | 0 | 37.5 | 0 | 0 | 0 | 0 | 37.5 | 37.5 | 0 | 0 | 50 | 0 | 37.5 | 12.5 | 37.5 | 0 | 0 |
| Netherlands | 21 | 14.3 | 0 | 23.8 | 0 | 0 | 0 | 19 | 61.9 | 61.9 | 0 | 0 | 61.9 | 61.9 | 33.3 | 14.3 | 47.6 | 0 | 0 |
| Poland | 143 | 7 | 1.4 | 26.6 | 0 | 0 | 0 | 0 | 77.6 | 80.4 | 0.7 | 1.4 | 51 | 0.7 | 49.7 | 16.8 | 49.7 | 0 | 0 |
| Portugal ^(a) | 6 | 0 | 0 | 16.7 | 16.7 | 16.7 | 0 | 16.7 | 66.7 | 66.7 | 16.7 | 16.7 | 33.3 | 33.3 | 50 | 16.7 | 50 | 16.7 | 16.7 |
| Romania | 35 | 0 | 0 | 2.9 | 0 | 0 | 0 | 0 | 45.7 | 48.6 | 0 | 0 | 40 | 20 | 40 | 51.4 | 40 | 0 | 0 |
| Slovakia ^(a) | 6 | 0 | 0 | 33.3 | 0 | 0 | 0 | 0 | 66.7 | 66.7 | 0 | 0 | 50 | 16.7 | 50 | 16.7 | 50 | 0 | 0 |
| Slovenia | 11 | 0 | 0 | 27.3 | 0 | 0 | 0 | 0 | 90.9 | 100 | 0 | 0 | 90.9 | 0 | 90.9 | 0 | 90.9 | 0 | 0 |
| Spain | 88 | 1.1 | 3.4 | 6.8 | 0 | 0 | 0 | 1.1 | 31.8 | 43.2 | 1.1 | 3.4 | 15.9 | 10.2 | 21.6 | 51.1 | 15.9 | 0 | 0 |
| United Kingdom | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 99 | 0 | 0 | 0 |
| Total (19 MSs) | 873 | 1.9 | 2.1 | 13.7 | 0.1 | 0.1 | 0 | 1.9 | 48.8 | 51.4 | 0.9 | 1 | 33.9 | 6.1 | 35.5 | 40.1 | 32.9 | 0.1 | 0.1 |
| Iceland ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Republic of North Macedonia ^(a) | 6 | 0 | 0 | 16.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16.7 | 0 | 16.7 | 83.3 | 16.7 | 0 | 0 |
| Total (MSs and non-MSs) | 880 | 1.9 | 2 | 13.8 | 0.1 | 0.1 | 0 | 1.9 | 48.4 | 51 | 0.9 | 1 | 33.8 | 6 | 35.3 | 40.5 | 32.7 | 0.1 | 0.1 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*; MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 26: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from carcasses of fattening turkeys, 9MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|-------------------------------|------------|------------|------------|-------------|----------|----------|----------|------------|-------------|-------------|------------|------------|-------------|------------|-------------|-------------|-------------|---|---|
| Czechia ^(a) | 5 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 20 | 0 | 0 | 0 |
| France | 188 | 0 | 2.1 | 12.2 | 0 | 0 | 0 | 0 | 3.7 | 3.7 | 0 | 2.1 | 8 | 5.9 | 62.8 | 35.6 | 9.6 | 0 | 0 |
| Germany | 91 | 0 | 1.1 | 13.2 | 0 | 0 | 0 | 0 | 41.8 | 51.6 | 1.1 | 0 | 13.2 | 3.3 | 39.6 | 30.8 | 12.1 | 0 | 0 |
| Hungary | 29 | 3.4 | 3.4 | 31 | 0 | 0 | 0 | 6.9 | 75.9 | 89.7 | 0 | 0 | 24.1 | 13.8 | 69 | 10.3 | 44.8 | 0 | 0 |
| Ireland ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 |
| Poland | 17 | 23.5 | 11.8 | 52.9 | 0 | 0 | 0 | 0 | 52.9 | 76.5 | 0 | 0 | 47.1 | 0 | 47.1 | 17.6 | 52.9 | 0 | 0 |
| Romania | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 38.5 | 0 | 0 | 100 | 0 | 0 | 0 | 0 |
| Spain | 11 | 9.1 | 0 | 18.2 | 0 | 0 | 0 | 0 | 81.8 | 90.9 | 0 | 0 | 36.4 | 18.2 | 27.3 | 0 | 27.3 | 0 | 0 |
| United Kingdom ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66.7 | 0 | 66.7 | 33.3 | 0 | 0 | 0 |
| Total (9MSs) | 358 | 1.7 | 2.2 | 16.5 | 0 | 0 | 0 | 0.6 | 23.7 | 32.4 | 0.3 | 2.5 | 13.7 | 5.6 | 57.3 | 28.8 | 15.1 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

B.3. Antimicrobial resistance in *Salmonella* spp. from food-producing animals

Table 27: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from fattening pigs, 8 MSs, 2019

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|-------------------------|------------|----------|-------------|-------------|------------|------------|----------|------------|------------|------------|------------|------------|-------------|-------------|-----------|-------------|-------------|---|---|
| Croatia | 60 | 1.7 | 13.3 | 53.3 | 0 | 0 | 0 | 0 | 20 | 20 | 0 | 0 | 55 | 21.7 | 53.3 | 35 | 50 | 0 | 0 |
| Denmark | 122 | 6.6 | 6.6 | 35.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 18 | 46.7 | 43.4 | 36.1 | 0 | 0 |
| Estonia ^(a) | 5 | 0 | 20 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 0 | 20 | 60 | 20 | 0 | 0 |
| Finland ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Germany | 42 | 0 | 19 | 47.6 | 0 | 0 | 0 | 0 | 2.4 | 2.4 | 2.4 | 4.8 | 47.6 | 21.4 | 50 | 42.9 | 42.9 | 0 | 0 |
| Italy | 109 | 8.3 | 16.5 | 37.6 | 3.7 | 3.7 | 0 | 0.9 | 1.8 | 6.4 | 0 | 0.9 | 41.3 | 13.8 | 45 | 46.8 | 36.7 | 0.9 | 0 |
| Netherlands | 10 | 0 | 10 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 40 | 40 | 30 | 0 | 0 |
| Slovenia ^(a) | 9 | 0 | 22.2 | 22.2 | 0 | 0 | 0 | 0 | 11.1 | 11.1 | 0 | 0 | 22.2 | 11.1 | 11.1 | 77.8 | 22.2 | 0 | 0 |
| Total (8 MSs) | 359 | 5 | 12.8 | 40.4 | 1.1 | 1.1 | 0 | 0.3 | 4.5 | 5.8 | 0.3 | 0.8 | 43.2 | 16.7 | 46 | 44.3 | 38.4 | 0.3 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 28: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from calves under one year of age, 3 MSs, 2019

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|------------------------|-----------|------------|-------------|-------------|----------|----------|----------|------------|------------|-------------|----------|------------|-------------|-------------|-------------|-------------|-------------|---|---|
| Croatia ^(a) | 8 | 0 | 12.5 | 37.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 25 | 62.5 | 25 | 0 | 0 |
| Italy | 20 | 30 | 35 | 70 | 0 | 0 | 0 | 5 | 15 | 25 | 0 | 0 | 60 | 30 | 75 | 25 | 75 | 0 | 0 |
| Spain | 36 | 0 | 5.6 | 11.1 | 0 | 0 | 0 | 0 | 5.6 | 8.3 | 0 | 5.6 | 16.7 | 2.8 | 33.3 | 58.3 | 16.7 | 0 | 0 |
| Total (3 MSs) | 64 | 9.4 | 15.6 | 32.8 | 0 | 0 | 0 | 1.6 | 7.8 | 12.5 | 0 | 3.1 | 31.3 | 10.9 | 45.3 | 48.4 | 35.9 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 29: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from broiler flocks, 25 MSs and 1 non-MS, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|----------------------------|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|------|---|---|
| Austria | 170 | 0 | 0 | 2.4 | 0 | 0 | 0 | 0.6 | 70 | 70 | 0 | 1.8 | 70.6 | 1.2 | 70.6 | 28.2 | 70.6 | 0 | 0 |
| Belgium | 173 | 0.6 | 3.5 | 39.3 | 0 | 0 | 0 | 8.1 | 41.6 | 41.6 | 0 | 1.7 | 66.5 | 41.6 | 42.2 | 29.5 | 53.2 | 0 | 0 |
| Bulgaria ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 0 | 0 | 20 | 0 | 20 | 80 | 20 | 0 | 0 |
| Croatia | 84 | 0 | 1.2 | 16.7 | 0 | 0 | 0 | 0 | 89.3 | 88.1 | 1.2 | 0 | 19 | 0 | 19 | 9.5 | 17.9 | 0 | 0 |
| Cyprus | 35 | 22.9 | 5.7 | 22.9 | 0 | 0 | 0 | 25.7 | 91.4 | 91.4 | 0 | 2.9 | 91.4 | 65.7 | 91.4 | 8.6 | 91.4 | 0 | 0 |
| Czechia | 116 | 0.9 | 0 | 3.4 | 0 | 0 | 0 | 0.9 | 21.6 | 28.4 | 0 | 10.3 | 9.5 | 0 | 9.5 | 71.6 | 9.5 | 0 | 0 |
| Denmark | 31 | 0 | 3.2 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 54.8 | 45.2 | 29 | 0 | 0 |
| France | 165 | 5.5 | 0.6 | 6.7 | 0 | 0 | 0 | 0.6 | 1.8 | 1.8 | 0 | 2.4 | 8.5 | 3.6 | 8.5 | 82.4 | 6.1 | 0 | 0 |
| Germany | 28 | 0 | 0 | 10.7 | 0 | 0 | 0 | 0 | 39.3 | 39.3 | 0 | 7.1 | 42.9 | 14.3 | 28.6 | 53.6 | 42.9 | 0 | 0 |
| Greece | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41.7 | 79.2 | 8.3 | 0 | 37.5 | 8.3 | 20.8 | 12.5 | 20.8 | 0 | 0 |
| Hungary | 170 | 0.6 | 1.8 | 30 | 1.2 | 2.4 | 0 | 2.4 | 92.4 | 92.9 | 1.2 | 0 | 45.3 | 0 | 47.1 | 6.5 | 46.5 | 1.2 | 0 |
| Ireland | 22 | 0 | 0 | 4.5 | 0 | 4.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90.9 | 0 | 0 | 0 |
| Italy | 121 | 0 | 7.4 | 42.1 | 24.8 | 24.8 | 0 | 0 | 52.1 | 56.2 | 0 | 0 | 62 | 48.8 | 59.5 | 28.9 | 51.2 | 24.8 | 0 |
| Latvia ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 50 | 0 | 0 | 0 |
| Luxembourg ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Malta | 65 | 4.6 | 3.1 | 49.2 | 6.2 | 4.6 | 0 | 1.5 | 43.1 | 43.1 | 0 | 1.5 | 35.4 | 0 | 20 | 21.5 | 29.2 | 6.2 | 6.2 |
| Netherlands ^(a) | 7 | 14.3 | 0 | 28.6 | 14.3 | 14.3 | 0 | 14.3 | 57.1 | 57.1 | 0 | 0 | 71.4 | 57.1 | 71.4 | 14.3 | 71.4 | 14.3 | 14.3 |
| Poland | 95 | 2.1 | 9.5 | 13.7 | 0 | 0 | 0 | 0 | 75.8 | 78.9 | 0 | 1.1 | 58.9 | 8.4 | 51.6 | 15.8 | 52.6 | 0 | 0 |
| Portugal | 66 | 0 | 3 | 10.6 | 0 | 0 | 0 | 1.5 | 4.5 | 9.1 | 0 | 3 | 12.1 | 12.1 | 4.5 | 78.8 | 12.1 | 0 | 0 |
| Romania | 170 | 2.9 | 2.4 | 17.1 | 0.6 | 0.6 | 0 | 4.7 | 60 | 68.8 | 1.2 | 0 | 41.2 | 12.9 | 41.8 | 25.9 | 40.6 | 0 | 0 |
| Slovakia | 61 | 0 | 0 | 37.7 | 0 | 0 | 0 | 0 | 88.5 | 88.5 | 0 | 0 | 47.5 | 0 | 47.5 | 11.5 | 47.5 | 0 | 0 |
| Slovenia | 129 | 0 | 0 | 22.5 | 0 | 0 | 0 | 10.1 | 91.5 | 91.5 | 0 | 0 | 88.4 | 0 | 88.4 | 6.2 | 88.4 | 0 | 0 |
| Spain | 170 | 10.6 | 2.4 | 12.9 | 1.2 | 0 | 0 | 0 | 37.6 | 45.3 | 0 | 4.1 | 32.9 | 17.6 | 32.4 | 48.2 | 31.8 | 1.2 | 0 |

EUSR on AMR in zoonotic and indicator bacteria from humans, animals and food 2018/2019

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|--------------------------------|--------------|------------|------------|-------------|------------|------------|----------|------------|-------------|-------------|------------|------------|-------------|-------------|-------------|-------------|-------------|------------|------------|
| Sweden ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| United Kingdom | 171 | 0 | 0 | 2.9 | 0 | 0 | 0 | 0 | 2.9 | 6.4 | 0 | 1.2 | 5.8 | 3.5 | 4.1 | 84.8 | 0.6 | 0 | 0 |
| Total (25 MSs) | 2,084 | 2.4 | 2.1 | 18.5 | 1.9 | 1.9 | 0 | 2.6 | 48.8 | 51.8 | 0.3 | 1.8 | 41.4 | 11.8 | 38.2 | 38.6 | 38.2 | 1.9 | 0.2 |
| Iceland ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (MSs and non-MSs) | 2,089 | 2.3 | 2.1 | 18.5 | 1.9 | 1.9 | 0 | 2.6 | 48.7 | 51.7 | 0.3 | 1.8 | 41.3 | 11.8 | 38.1 | 38.7 | 38.2 | 1.9 | 0.2 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFS: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 30: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from laying hen flocks, 24 MSs and 1 non-MS, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|------------------------|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|------|---|---|
| Austria | 40 | 0 | 2.5 | 2.5 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 15 | 7.5 | 0 | 12.5 | 87.5 | 7.5 | 0 | 0 |
| Belgium | 31 | 0 | 6.5 | 12.9 | 3.2 | 0 | 0 | 3.2 | 6.5 | 9.7 | 0 | 9.7 | 16.1 | 9.7 | 19.4 | 74.2 | 16.1 | 0 | 0 |
| Bulgaria | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17.6 | 17.6 | 0 | 17.6 | 0 | 0 | 0 | 82.4 | 0 | 0 | 0 |
| Croatia | 27 | 7.4 | 0 | 22.2 | 0 | 0 | 0 | 0 | 25.9 | 29.6 | 0 | 0 | 18.5 | 0 | 18.5 | 55.6 | 18.5 | 0 | 0 |
| Cyprus | 10 | 10 | 0 | 10 | 0 | 0 | 0 | 10 | 20 | 20 | 0 | 0 | 20 | 20 | 30 | 70 | 20 | 0 | 0 |
| Czechia ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Denmark | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16.7 | 0 | 16.7 | 83.3 | 0 | 0 | 0 |
| Estonia ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| France | 115 | 0 | 0 | 3.5 | 0 | 0 | 0 | 0 | 1.7 | 1.7 | 0 | 4.3 | 3.5 | 0 | 3.5 | 94.8 | 3.5 | 0 | 0 |
| Germany | 108 | 0 | 0 | 3.7 | 0 | 0 | 0 | 0 | 3.7 | 4.6 | 0 | 29.6 | 7.4 | 0.9 | 4.6 | 89.8 | 3.7 | 0 | 0 |
| Greece | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10.8 | 0 | 0 | 0 | 0 | 0 | 89.2 | 0 | 0 | 0 |
| Hungary | 53 | 1.9 | 1.9 | 9.4 | 1.9 | 1.9 | 0 | 1.9 | 17 | 18.9 | 0 | 3.8 | 5.7 | 0 | 5.7 | 73.6 | 7.5 | 1.9 | 1.9 |
| Ireland ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 80 | 0 | 0 | 0 |
| Italy | 179 | 0 | 2.2 | 3.9 | 0.6 | 0.6 | 0 | 0 | 49.2 | 49.2 | 0 | 8.9 | 10.6 | 3.4 | 11.7 | 46.4 | 9.5 | 0.6 | 0 |
| Malta | 40 | 7.5 | 0 | 10 | 0 | 0 | 0 | 0 | 7.5 | 7.5 | 0 | 2.5 | 10 | 0 | 10 | 90 | 10 | 0 | 0 |
| Netherlands | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.7 | 6.7 | 0 | 26.7 | 0 | 0 | 0 | 93.3 | 0 | 0 | 0 |
| Poland | 142 | 1.4 | 2.1 | 6.3 | 0 | 0 | 0 | 0 | 17.6 | 19.7 | 0 | 6.3 | 14.1 | 0.7 | 2.8 | 66.2 | 3.5 | 0 | 0 |
| Portugal | 28 | 0 | 10.7 | 3.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.6 | 7.1 | 7.1 | 82.1 | 3.6 | 0 | 0 |
| Romania | 47 | 2.1 | 2.1 | 4.3 | 0 | 0 | 0 | 0 | 14.9 | 14.9 | 0 | 0 | 10.6 | 0 | 8.5 | 83 | 10.6 | 0 | 0 |
| Slovakia | 16 | 6.3 | 0 | 0 | 0 | 0 | 0 | 0 | 6.3 | 6.3 | 0 | 6.3 | 6.3 | 0 | 6.3 | 87.5 | 6.3 | 0 | 0 |
| Slovenia | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45.5 | 45.5 | 0 | 0 | 36.4 | 0 | 36.4 | 54.5 | 36.4 | 0 | 0 |
| Spain | 169 | 0.6 | 0 | 4.1 | 0 | 0 | 0 | 0 | 7.1 | 8.9 | 0 | 6.5 | 7.7 | 3.6 | 6.5 | 82.2 | 4.1 | 0 | 0 |
| Sweden ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |

EURS on AMR in zoonotic and indicator bacteria from humans, animals and food 2018/2019

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|--|--------------|------------|------------|------------|------------|------------|----------|------------|-------------|-------------|----------|------------|----------|----------|------------|-------------|------------|------------|------------|
| United Kingdom | 52 | 1.9 | 1.9 | 15.4 | 0 | 0 | 0 | 0 | 1.9 | 3.8 | 0 | 0 | 13.5 | 5.8 | 11.5 | 80.8 | 11.5 | 0 | 0 |
| Total (24 MSs) | 1,184 | 1.1 | 1.4 | 5.3 | 0.3 | 0.2 | 0 | 0.3 | 14.9 | 16.2 | 0 | 8.1 | 9 | 2 | 7.7 | 76.3 | 6.5 | 0.2 | 0.1 |
| Rep. of North Macedonia ^(a) | 9 | 0 | 0 | 11.1 | 11.1 | 11.1 | 0 | 0 | 0 | 11.1 | 0 | 0 | 11.1 | 0 | 11.1 | 88.9 | 11.1 | 11.1 | 0 |
| Total (MSs and non-MSs) | 1,193 | 1.1 | 1.3 | 5.4 | 0.3 | 0.3 | 0 | 0.3 | 14.8 | 16.2 | 0 | 8 | 9 | 2 | 7.7 | 76.4 | 6.5 | 0.3 | 0.1 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFS: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 31: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* spp. from fattening turkey flocks, 16 MS, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|-------------------------|------------|------------|------------|-------------|------------|------------|----------|------------|-------------|-------------|------------|------------|-----------|-------------|-----------|-------------|-------------|---|---|
| Austria | 15 | 6.7 | 0 | 20 | 0 | 0 | 0 | 0 | 6.7 | 6.7 | 0 | 13.3 | 13.3 | 0 | 20 | 53.3 | 6.7 | 0 | 0 |
| Belgium ^(a) | 5 | 0 | 20 | 40 | 0 | 0 | 0 | 0 | 20 | 20 | 0 | 0 | 40 | 0 | 40 | 40 | 40 | 0 | 0 |
| Croatia | 11 | 9.1 | 0 | 0 | 0 | 0 | 0 | 0 | 18.2 | 27.3 | 0 | 0 | 18.2 | 9.1 | 9.1 | 63.6 | 9.1 | 0 | 0 |
| Cyprus ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 40 | 0 | 0 | 60 | 60 | 60 | 40 | 60 | 0 | 0 |
| Czechia | 10 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 0 | 20 | 10 | 20 | 70 | 10 | 0 | 0 |
| France | 153 | 0 | 3.9 | 30.7 | 0 | 0 | 0 | 0 | 13.1 | 13.1 | 0 | 2.6 | 28.1 | 16.3 | 30.1 | 60.1 | 26.8 | 0 | 0 |
| Germany ^(a) | 9 | 0 | 0 | 33.3 | 0 | 0 | 0 | 0 | 11.1 | 22.2 | 0 | 0 | 33.3 | 0 | 11.1 | 44.4 | 0 | 0 | 0 |
| Hungary | 170 | 10 | 1.8 | 55.9 | 0 | 0 | 0 | 20.6 | 76.5 | 93.5 | 0 | 3.5 | 37.1 | 12.9 | 85.9 | 4.7 | 68.8 | 0 | 0 |
| Ireland | 16 | 0 | 0 | 6.3 | 0 | 0 | 0 | 0 | 25 | 25 | 0 | 0 | 56.3 | 0 | 56.3 | 18.8 | 6.3 | 0 | 0 |
| Italy | 49 | 8.2 | 8.2 | 61.2 | 26.5 | 26.5 | 0 | 0 | 61.2 | 69.4 | 8.2 | 0 | 49 | 46.9 | 69.4 | 20.4 | 63.3 | 26.5 | 0 |
| Poland | 20 | 40 | 20 | 60 | 5 | 5 | 0 | 0 | 60 | 60 | 0 | 0 | 65 | 5 | 55 | 25 | 60 | 0 | 0 |
| Portugal ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Romania ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 50 | 50 | 0 | 0 | 0 |
| Slovakia ^(a) | 5 | 100 | 0 | 100 | 0 | 0 | 0 | 20 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Spain | 170 | 12.4 | 7.1 | 54.1 | 4.1 | 0.6 | 0 | 1.8 | 34.7 | 55.3 | 0 | 0 | 54.1 | 33.5 | 47.6 | 19.4 | 54.7 | 4.1 | 0 |
| United Kingdom | 170 | 1.2 | 0 | 4.7 | 0 | 0 | 0 | 0 | 4.1 | 5.3 | 0 | 0 | 75.3 | 1.8 | 75.3 | 20 | 4.7 | 0 | 0 |
| Total (16MSs) | 815 | 7.2 | 3.7 | 36.8 | 2.6 | 1.8 | 0 | 4.8 | 33.7 | 42.7 | 0.5 | 1.5 | 48 | 16.7 | 58 | 27.1 | 38.8 | 2.5 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Occurrence of resistance to selected antimicrobials in *Salmonella* Derby

Table 32: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins in *Salmonella* Derby from fattening pig carcasses, 19 MSs, 2019

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|-------------------------------|------------|------------|------------|-------------|------------|------------|----------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|------------|---|---|
| Belgium | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.8 | 4.8 | 0 | 4.8 | 95.2 | 0 | 0 | 0 |
| Croatia | 15 | 0 | 6.7 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 13.3 | 0 | 26.7 | 20 | 13.3 | 53.3 | 13.3 | 0 | 0 |
| Czechia ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 0 | 0 | 25 | 0 | 25 | 25 | 0 | 0 | 0 |
| Denmark | 56 | 1.8 | 1.8 | 16.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 23.2 | 21.4 | 64.3 | 17.9 | 0 | 0 |
| Estonia ^(a) | 8 | 0 | 0 | 12.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87.5 | 0 | 0 | 0 |
| Finland ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| France | 63 | 0 | 1.6 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 50.8 | 1.6 | 50.8 | 47.6 | 4.8 | 0 | 0 |
| Hungary ^(a) | 4 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 75 | 25 | 0 | 0 |
| Ireland ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 20 | 80 | 0 | 0 | 0 |
| Italy | 55 | 0 | 1.8 | 23.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14.5 | 3.6 | 12.7 | 65.5 | 3.6 | 0 | 0 |
| Latvia ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Netherlands ^(a) | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 16.7 | 0 | 0 | 0 | 0 | 16.7 | 16.7 | 16.7 | 66.7 | 0 | 0 | 0 |
| Poland ^(a) | 5 | 0 | 20 | 40 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 20 | 0 | 60 | 20 | 0 | 0 |
| Portugal ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Romania ^(a) | 1 | 0 | 100 | 100 | 100 | 100 | 0 | 0 | 0 | 100 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 100 | 0 |
| Slovakia ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Slovenia ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Spain | 22 | 9.1 | 4.5 | 4.5 | 0 | 0 | 0 | 0 | 0 | 4.5 | 0 | 0 | 36.4 | 31.8 | 59.1 | 40.9 | 36.4 | 0 | 0 |
| United Kingdom ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 50 | 0 | 0 | 0 |
| Total (19 MSs) | 283 | 1.1 | 2.5 | 10.6 | 0.4 | 0.4 | 0 | 0.4 | 0.4 | 2.5 | 0.7 | 1.1 | 25.4 | 10.6 | 25.4 | 62.9 | 9.9 | 0.4 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

(b): Colistin is not included in the calculation of complete susceptibility. Further information is found in Annex A 'Materials and Methods'.

Table 33: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* Derby from carcasses of calves of less than 1 year of age, 1 EU MSs, 2019

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX. applying ECOFFs | Resistance to both CIP/CTX. applying CBPs |
|---------------------|-----------|----------|-----------|------------|----------|----------|----------|-----------|----------|------------|----------|----------|-------------|------------|-------------|-------------|-------------|---|---|
| France | 12 | 0 | 25 | 8.3 | 0 | 0 | 0 | 25 | 0 | 8.3 | 0 | 0 | 41.7 | 8.3 | 41.7 | 58.3 | 33.3 | 0 | 0 |
| Total (1 MS) | 12 | 0 | 25 | 8.3 | 0 | 0 | 0 | 25 | 0 | 8.3 | 0 | 0 | 41.7 | 8.3 | 41.7 | 58.3 | 33.3 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

Table 34: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *Salmonella* Derby from fattening pigs, 7 EU MSs, 2019

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX. applying ECOFFs | Resistance to both CIP/CTX. applying CBPs |
|-------------------------|------------|------------|------------|-------------|----------|----------|----------|----------|----------|------------|----------|----------|-------------|-----------|-------------|-------------|-------------|---|---|
| Croatia ^(a) | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14.3 | 0 | 14.3 | 71.4 | 0 | 0 | 0 |
| Denmark | 67 | 1.5 | 4.5 | 13.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20.9 | 20.9 | 31.3 | 55.2 | 17.9 | 0 | 0 |
| Estonia ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Finland ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Italy | 32 | 0 | 0 | 12.5 | 0 | 0 | 0 | 0 | 0 | 3.1 | 0 | 0 | 31.3 | 3.1 | 31.3 | 65.6 | 12.5 | 0 | 0 |
| Slovenia ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (6 MSs) | 115 | 0.9 | 2.6 | 11.3 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 | 0 | 21.7 | 13 | 27.8 | 62.6 | 13.9 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Occurrence of resistance (%) to selected antimicrobials in *S. Infantis*

Table 35: Occurrence of resistance (%) to selected antimicrobials, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Infantis* from broiler carcasses, 16 EU MSs and 1 non-MS, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|--------------------------------|------------|------------|------------|-------------|----------|----------|----------|------------|-------------|-------------|------------|------------|-------------|------------|-------------|------------|-------------|---|---|
| Austria | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98 | 98 | 0 | 0 | 98 | 0 | 98 | 2 | 98 | 0 | 0 |
| Bulgaria ^(a) | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85.7 | 85.7 | 0 | 0 | 85.7 | 57.1 | 71.4 | 14.3 | 71.4 | 0 | 0 |
| Croatia | 79 | 0 | 0 | 21.5 | 0 | 0 | 0 | 0 | 98.7 | 98.7 | 0 | 0 | 17.7 | 1.3 | 17.7 | 1.3 | 19 | 0 | 0 |
| Cyprus ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 100 | 100 | 0 | 100 | 0 | 0 |
| Czechia | 12 | 0 | 0 | 41.7 | 0 | 0 | 0 | 25 | 58.3 | 58.3 | 0 | 0 | 58.3 | 0 | 58.3 | 41.7 | 58.3 | 0 | 0 |
| Germany ^(a) | 9 | 0 | 11.1 | 0 | 0 | 0 | 0 | 11.1 | 77.8 | 77.8 | 0 | 0 | 77.8 | 0 | 77.8 | 22.2 | 77.8 | 0 | 0 |
| Greece ^(a) | 6 | 16.7 | 0 | 33.3 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Hungary | 58 | 1.7 | 3.4 | 10.3 | 0 | 0 | 0 | 10.3 | 100 | 100 | 0 | 0 | 84.5 | 0 | 84.5 | 0 | 84.5 | 0 | 0 |
| Malta ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Netherlands ^(a) | 9 | 11.1 | 0 | 11.1 | 0 | 0 | 0 | 33.3 | 77.8 | 66.7 | 0 | 0 | 77.8 | 44.4 | 66.7 | 11.1 | 66.7 | 0 | 0 |
| Poland | 35 | 0 | 0 | 5.7 | 0 | 0 | 0 | 0 | 88.6 | 88.6 | 2.9 | 0 | 91.4 | 2.9 | 85.7 | 5.7 | 85.7 | 0 | 0 |
| Portugal ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 100 | 100 | 0 | 50 | 100 | 50 | 100 | 0 | 100 | 0 | 0 |
| Romania | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 87.5 | 43.8 | 87.5 | 0 | 87.5 | 0 | 0 |
| Slovakia ^(a) | 2 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Slovenia | 11 | 0 | 0 | 27.3 | 0 | 0 | 0 | 0 | 90.9 | 100 | 0 | 0 | 90.9 | 0 | 90.9 | 0 | 90.9 | 0 | 0 |
| Spain | 19 | 0 | 10.5 | 0 | 0 | 0 | 0 | 5.3 | 100 | 100 | 5.3 | 0 | 63.2 | 42.1 | 63.2 | 0 | 63.2 | 0 | 0 |
| Total (16 MSs) | 318 | 0.9 | 1.6 | 11.6 | 0 | 0 | 0 | 4.7 | 94.7 | 94.7 | 0.6 | 0.3 | 69.2 | 8.5 | 67.9 | 4.1 | 68.2 | 0 | 0 |
| Iceland ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (MSs and non-MSs) | 319 | 0.9 | 1.6 | 11.6 | 0 | 0 | 0 | 4.7 | 94.4 | 94.4 | 0.6 | 0.3 | 69 | 8.5 | 67.7 | 4.4 | 68 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 36: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins in *S. Infantis* from turkey carcasses, 2 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX. applying ECOFFs | Resistance to both CIP/CTX. applying CBPs |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|------------|------------|----------|----------|-------------|----------|-------------|----------|-------------|---|---|
| Germany ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Hungary ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 80 | 0 | 80 | 0 | 80 | 0 | 0 |
| Total (2MSs) | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 87.5 | 0 | 87.5 | 0 | 87.5 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 37: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Infantis*, from broiler flocks, 20 MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|----------------------------|------------|------------|------------|-------------|------------|------------|----------|------------|-------------|-------------|------------|------------|-------------|-------------|-------------|------------|-------------|---|---|
| Austria | 122 | 0 | 0 | 1.6 | 0 | 0 | 0 | 0.8 | 97.5 | 97.5 | 0 | 2.5 | 96.7 | 0 | 97.5 | 2.5 | 96.7 | 0 | 0 |
| Belgium | 60 | 0 | 3.3 | 53.3 | 0 | 0 | 0 | 15 | 90 | 90 | 0 | 0 | 95 | 48.3 | 86.7 | 3.3 | 91.7 | 0 | 0 |
| Bulgaria ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Croatia | 51 | 0 | 2 | 27.5 | 0 | 0 | 0 | 0 | 90.2 | 90.2 | 0 | 0 | 31.4 | 0 | 29.4 | 7.8 | 29.4 | 0 | 0 |
| Cyprus | 25 | 4 | 8 | 4 | 0 | 0 | 0 | 36 | 100 | 100 | 0 | 0 | 100 | 92 | 100 | 0 | 100 | 0 | 0 |
| Czechia | 10 | 0 | 0 | 30 | 0 | 0 | 0 | 10 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| France ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 0 | 0 | 20 | 0 | 20 | 80 | 20 | 0 | 0 |
| Germany ^(a) | 9 | 0 | 0 | 22.2 | 0 | 0 | 0 | 0 | 88.9 | 88.9 | 0 | 11.1 | 100 | 11.1 | 88.9 | 0 | 100 | 0 | 0 |
| Greece ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Hungary | 113 | 0 | 2.7 | 8 | 1.8 | 3.5 | 0 | 3.5 | 100 | 100 | 1.8 | 0 | 66.4 | 0 | 69 | 0 | 69 | 1.8 | 0 |
| Ireland ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Italy | 59 | 0 | 13.6 | 74.6 | 50.8 | 50.8 | 0 | 0 | 94.9 | 94.9 | 0 | 0 | 93.2 | 91.5 | 93.2 | 3.4 | 93.2 | 50.8 | 0 |
| Malta | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 6.7 | 46.7 | 46.7 | 0 | 0 | 66.7 | 0 | 46.7 | 33.3 | 46.7 | 0 | 0 |
| Netherlands ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 66.7 | 100 | 0 | 100 | 0 | 0 |
| Poland | 34 | 0 | 5.9 | 5.9 | 0 | 0 | 0 | 0 | 91.2 | 91.2 | 0 | 0 | 94.1 | 20.6 | 91.2 | 5.9 | 91.2 | 0 | 0 |
| Portugal ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Romania | 64 | 0 | 3.1 | 6.3 | 0 | 0 | 0 | 12.5 | 98.4 | 98.4 | 0 | 0 | 87.5 | 28.1 | 87.5 | 1.6 | 87.5 | 0 | 0 |
| Slovakia | 51 | 0 | 0 | 45.1 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 54.9 | 0 | 54.9 | 0 | 54.9 | 0 | 0 |
| Slovenia | 115 | 0 | 0 | 21.7 | 0 | 0 | 0 | 11.3 | 100 | 100 | 0 | 0 | 96.5 | 0 | 96.5 | 0 | 96.5 | 0 | 0 |
| Spain | 39 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 69.2 | 69.2 | 0 | 0 | 64.1 | 48.7 | 64.1 | 28.2 | 64.1 | 0 | 0 |
| Total (20 MSs) | 786 | 0.3 | 2.5 | 20.5 | 4.1 | 4.3 | 0 | 5.9 | 93.1 | 93.1 | 0.3 | 0.5 | 80.7 | 19.5 | 79.8 | 5.3 | 80.2 | 4.1 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline. CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 38: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Infantis* from laying hens, 16 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX. applying ECOFFs | Resistance to both CIP/CTX. applying CBPs |
|-----------------------|------------|----------|------------|----------|------------|------------|----------|------------|-------------|-------------|----------|----------|-------------|------------|-------------|-------------|-------------|---|---|
| Austria | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Belgium | 14 | 0 | 7.1 | 14.3 | 0 | 0 | 0 | 7.1 | 14.3 | 21.4 | 0 | 0 | 28.6 | 21.4 | 28.6 | 64.3 | 28.6 | 0 | 0 |
| Bulgaria | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Croatia | 5 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 20 | 0 | 20 | 0 | 20 | 0 | 0 |
| Cyprus | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 50 | 50 | 0 | 0 | 50 | 50 | 50 | 50 | 50 | 0 | 0 |
| France | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 0 | 0 | 0 | 0 | 0 | 75 | 0 | 0 | 0 |
| Germany | 5 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 60 | 60 | 0 | 0 | 40 | 0 | 40 | 40 | 40 | 0 | 0 |
| Greece | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Hungary | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 75 | 75 | 0 | 0 | 50 | 0 | 50 | 25 | 50 | 0 | 0 |
| Italy | 11 | 0 | 0 | 9.1 | 9.1 | 9.1 | 0 | 0 | 9.1 | 9.1 | 0 | 0 | 27.3 | 27.3 | 27.3 | 72.7 | 27.3 | 9.1 | 0 |
| Malta | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Netherlands | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Poland | 13 | 0 | 0 | 7.7 | 0 | 0 | 0 | 0 | 15.4 | 15.4 | 0 | 0 | 15.4 | 0 | 15.4 | 84.6 | 15.4 | 0 | 0 |
| Portugal | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14.3 | 0 | 85.7 | 0 | 0 | 0 |
| Romania | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Spain | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14.3 | 14.3 | 0 | 0 | 9.5 | 4.8 | 9.5 | 85.7 | 9.5 | 0 | 0 |
| Total (16 MSs) | 114 | 0 | 0.9 | 7 | 0.9 | 0.9 | 0 | 2.6 | 22.8 | 23.7 | 0 | 0 | 19.3 | 7.9 | 19.3 | 71.9 | 19.3 | 0.9 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 39: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Infantis* from fattening turkeys, 8 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX. applying ECOFFs | Resistance to both CIP/CTX. applying CBPs |
|------------------------|-----------|----------|----------|-------------|-------------|-------------|----------|------------|-------------|-------------|----------|------------|-------------|-------------|-------------|------------|-------------|---|---|
| Austria ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 50 | 0 | 0 | 50 | 0 | 50 | 50 | 50 | 0 | 0 |
| Croatia ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66.7 | 66.7 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 0 | 0 |
| Cyprus ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 100 | 100 | 0 | 100 | 0 | 0 |
| France ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Hungary | 33 | 0 | 0 | 24.2 | 0 | 0 | 0 | 15.2 | 100 | 100 | 0 | 3 | 97 | 3 | 100 | 0 | 100 | 0 | 0 |
| Italy | 12 | 0 | 0 | 66.7 | 58.3 | 58.3 | 0 | 0 | 100 | 100 | 0 | 0 | 83.3 | 83.3 | 83.3 | 0 | 83.3 | 58.3 | 0 |
| Poland ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Spain | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 91.7 | 91.7 | 0 | 0 | 25 | 25 | 25 | 8.3 | 25 | 0 | 0 |
| Total (8 MSs) | 66 | 0 | 0 | 24.2 | 10.6 | 10.6 | 0 | 7.6 | 93.9 | 93.9 | 0 | 1.5 | 74.2 | 24.2 | 75.8 | 6.1 | 75.8 | 10.6 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Occurrence of resistance (%) to selected antimicrobials in *S. Kentucky*

Table 40: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Kentucky* from broiler carcasses, 7 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|------------------------|-----------|-------------|------------|-------------|----------|----------|----------|----------|-------------|-------------|----------|----------|-----------|----------|-------------|-------------|-----------|---|---|
| Croatia ^(a) | 1 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| France ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Hungary ^(a) | 9 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ireland ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Malta ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Poland | 11 | 81.8 | 9.1 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 90.9 | 0 | 81.8 | 0 | 90.9 | 0 | 0 |
| Spain ^(a) | 2 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 |
| Total (7 MSs) | 27 | 33.3 | 3.7 | 81.5 | 0 | 0 | 0 | 0 | 81.5 | 81.5 | 0 | 0 | 37 | 0 | 33.3 | 18.5 | 37 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 41: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins in *S. Kentucky* from turkey carcasses, 3 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|------------------------|----------|-----------|-------------|------------|----------|----------|----------|----------|------------|------------|----------|----------|-----------|----------|-----------|----------|-----------|---|---|
| Hungary ^(a) | 3 | 33.3 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 33.3 | 0 | 33.3 | 0 | 33.3 | 0 | 0 |
| Poland ^(a) | 4 | 100 | 25 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Spain ^(a) | 1 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Total (3MSs) | 8 | 75 | 12.5 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 75 | 0 | 75 | 0 | 75 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 42: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Kentucky* from broilers, 10 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|----------------------------|------------|-------------|------------|-------------|------------|------------|----------|------------|-------------|-------------|------------|------------|-------------|------------|-------------|-------------|-------------|---|---|
| Cyprus ^(a) | 8 | 87.5 | 0 | 87.5 | 0 | 0 | 0 | 0 | 87.5 | 87.5 | 0 | 12.5 | 87.5 | 0 | 87.5 | 12.5 | 87.5 | 0 | 0 |
| Czechia ^(a) | 1 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Hungary | 41 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ireland ^(a) | 5 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 0 | 0 |
| Italy ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Malta | 23 | 13 | 8.7 | 60.9 | 17.4 | 13 | 0 | 0 | 82.6 | 82.6 | 0 | 0 | 30.4 | 0 | 13 | 13 | 43.5 | 17.4 | 17.4 |
| Netherlands ^(a) | 1 | 100 | 0 | 100 | 100 | 100 | 0 | 100 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 100 | 100 |
| Poland ^(a) | 2 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Romania | 10 | 50 | 0 | 90 | 0 | 0 | 0 | 0 | 100 | 100 | 10 | 0 | 60 | 10 | 50 | 0 | 60 | 0 | 0 |
| Spain | 17 | 52.9 | 0 | 47.1 | 0 | 0 | 0 | 0 | 70.6 | 70.6 | 0 | 0 | 58.8 | 0 | 58.8 | 29.4 | 58.8 | 0 | 0 |
| Total (10 MSs) | 109 | 25.7 | 1.8 | 77.1 | 4.6 | 3.7 | 0 | 0.9 | 86.2 | 86.2 | 0.9 | 0.9 | 31.2 | 0.9 | 26.6 | 11.9 | 33.9 | 4.6 | 4.6 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 43: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Kentucky* from laying hens, 7 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|-------------------------------|------------|------------|------------|-------------|------------|------------|----------|----------|-------------|-------------|----------|------------|-----------|------------|-------------|-------------|-------------|---|---|
| Hungary ^(a) | 3 | 0 | 0 | 100 | 33.3 | 33.3 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 33.3 | 33.3 |
| Italy | 84 | 0 | 4.8 | 3.6 | 0 | 0 | 0 | 0 | 95.2 | 95.2 | 0 | 1.2 | 13.1 | 3.6 | 15.5 | 3.6 | 14.3 | 0 | 0 |
| Malta | 10 | 30 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 30 | 70 | 30 | 0 | 0 |
| Poland ^(a) | 1 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Romania ^(a) | 1 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Spain | 12 | 8.3 | 0 | 8.3 | 0 | 0 | 0 | 0 | 16.7 | 16.7 | 0 | 0 | 16.7 | 8.3 | 8.3 | 75 | 8.3 | 0 | 0 |
| United Kingdom ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (7MSs) | 113 | 4.4 | 3.5 | 10.6 | 0.9 | 0.9 | 0 | 0 | 79.6 | 79.6 | 0 | 0.9 | 15 | 3.5 | 15.9 | 18.6 | 15.9 | 0.9 | 0.9 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 44: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Kentucky* from fattening turkeys, 5 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX. applying ECOFFs | Resistance to both CIP/CTX. applying CBPs |
|-------------------------|-----------|-------------|------------|-------------|----------|----------|----------|------------|-------------|-------------|----------|----------|-------------|------------|-------------|------------|-------------|---|---|
| Hungary | 23 | 73.9 | 0 | 91.3 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 82.6 | 0 | 87 | 0 | 82.6 | 0 | 0 |
| Italy ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Poland ^(a) | 6 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Slovakia ^(a) | 5 | 100 | 0 | 100 | 0 | 0 | 0 | 20 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Spain | 18 | 83.3 | 22.2 | 83.3 | 0 | 0 | 0 | 16.7 | 88.9 | 88.9 | 0 | 0 | 88.9 | 16.7 | 83.3 | 5.6 | 83.3 | 0 | 0 |
| Total (5 MSs) | 53 | 81.1 | 7.5 | 88.7 | 0 | 0 | 0 | 7.5 | 96.2 | 96.2 | 0 | 0 | 86.8 | 5.7 | 86.8 | 1.9 | 84.9 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Occurrence of resistance (%) to selected antimicrobials in *S. Enteritidis*

Table 45: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Enteritidis* from broiler carcasses, 8 EU MSs and 1 non-MS, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|--|-----------|----------|----------|------------|----------|----------|----------|----------|-------------|-------------|------------|------------|----------|----------|----------|-------------|----------|---|---|
| Croatia ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Czechia | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.4 | 15.4 | 0 | 15.4 | 0 | 0 | 0 | 84.6 | 0 | 0 | 0 |
| France ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Germany ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Poland | 39 | 0 | 0 | 5.1 | 0 | 0 | 0 | 0 | 76.9 | 76.9 | 0 | 2.6 | 0 | 0 | 0 | 23.1 | 0 | 0 | 0 |
| Portugal ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Slovakia ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66.7 | 66.7 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 0 | 0 |
| Spain | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 75 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| Total (8 MSs) | 64 | 0 | 0 | 3.1 | 0 | 0 | 0 | 0 | 59.4 | 59.4 | 1.6 | 4.7 | 0 | 0 | 0 | 40.6 | 0 | 0 | 0 |
| Rep. of North Macedonia ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (MSs and non-MSs) | 69 | 0 | 0 | 2.9 | 0 | 0 | 0 | 0 | 55.1 | 55.1 | 1.4 | 4.3 | 0 | 0 | 0 | 44.9 | 0 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

Table 46: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Enteritidis* from broilers, 15 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX. applying ECOFFs | Resistance to both CIP/CTX. applying CBPs |
|-------------------------------|------------|----------|------------|------------|----------|----------|----------|------------|-------------|-------------|----------|-------------|------------|------------|------------|-------------|------------|---|---|
| Austria ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Belgium ^(a) | 2 | 0 | 0 | 50 | 0 | 0 | 0 | 50 | 50 | 50 | 0 | 0 | 50 | 0 | 0 | 0 | 50 | 0 | 0 |
| Czechia | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17.7 | 17.7 | 0 | 15.2 | 0 | 0 | 0 | 82.3 | 0 | 0 | 0 |
| Denmark ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| France | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Germany ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Hungary ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Italy ^(a) | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Netherlands ^(a) | 1 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 100 | 0 | 0 |
| Poland | 35 | 0 | 2.9 | 5.7 | 0 | 0 | 0 | 0 | 65.7 | 68.6 | 0 | 2.9 | 17.1 | 2.9 | 2.9 | 22.9 | 2.9 | 0 | 0 |
| Portugal ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Romania ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Slovakia ^(a) | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 33.3 | 0 | 0 | 0 | 0 | 0 | 66.7 | 0 | 0 | 0 |
| Spain ^(a) | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71.4 | 71.4 | 0 | 85.7 | 28.6 | 0 | 14.3 | 28.6 | 14.3 | 0 | 0 |
| United Kingdom ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66.7 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Total (15 MSs) | 162 | 0 | 0.6 | 2.5 | 0 | 0 | 0 | 0.6 | 29.6 | 30.2 | 0 | 14.8 | 5.6 | 1.2 | 1.9 | 66.7 | 2.5 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

(b): Colistin is not included in the calculation of complete susceptibility. Further information is found in Annex A 'Materials and Methods'.

Table 47: Occurrence of resistance (%) to selected antimicrobials, using harmonised ECOFFs, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Enteritidis* from laying hens, 21 MSs and 1 non-MS, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|--|------------|----------|------------|------------|----------|----------|----------|----------|------------|-------------|----------|-------------|------------|------------|------------|-------------|------------|---|---|
| Austria | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35.3 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Belgium ^(a) | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Bulgaria | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.3 | 6.3 | 0 | 37.5 | 0 | 0 | 0 | 93.8 | 0 | 0 | 0 |
| Croatia | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 0 | 0 |
| Czechia ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Denmark ^(a) | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Estonia ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| France | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 8 | 0 | 0 | 0 | 96 | 0 | 0 | 0 |
| Germany | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.9 | 1.9 | 0 | 61.5 | 0 | 0 | 0 | 98.1 | 0 | 0 | 0 |
| Greece ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Hungary | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 0 | 6.7 | 0 | 0 | 0 | 80 | 0 | 0 | 0 |
| Italy | 34 | 0 | 0 | 2.9 | 0 | 0 | 0 | 0 | 8.8 | 8.8 | 0 | 38.2 | 8.8 | 0 | 5.9 | 82.4 | 2.9 | 0 | 0 |
| Malta ^(a) | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16.7 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Netherlands ^(a) | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12.5 | 12.5 | 0 | 50 | 0 | 0 | 0 | 87.5 | 0 | 0 | 0 |
| Poland | 109 | 0 | 1.8 | 5.5 | 0 | 0 | 0 | 0 | 18.3 | 20.2 | 0 | 8.3 | 13.8 | 0.9 | 1.8 | 65.1 | 2.8 | 0 | 0 |
| Portugal ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Romania ^(a) | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Slovakia ^(a) | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11.1 | 11.1 | 0 | 11.1 | 0 | 0 | 0 | 88.9 | 0 | 0 | 0 |
| Slovenia ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 0 |
| Spain | 24 | 0 | 0 | 4.2 | 0 | 0 | 0 | 0 | 16.7 | 16.7 | 0 | 33.3 | 0 | 0 | 0 | 79.2 | 0 | 0 | 0 |
| United Kingdom ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (21 MSs) | 361 | 0 | 0.6 | 2.2 | 0 | 0 | 0 | 0 | 10 | 10.8 | 0 | 23.8 | 5.3 | 0.3 | 1.4 | 83.7 | 1.4 | 0 | 0 |
| Rep. of North Macedonia ^(a) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (MSs and non-MSs) | 365 | 0 | 0.5 | 2.2 | 0 | 0 | 0 | 0 | 9.9 | 10.7 | 0 | 23.6 | 5.2 | 0.3 | 1.4 | 83.8 | 1.4 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFS: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

(b): Colistin is not included in the calculation of complete susceptibility. Further information is found in Annex A 'Materials and Methods'.

Table 48: Occurrence of resistance (%) to selected antimicrobials, complete susceptibility and multiresistance to all antimicrobials tested and co-resistance to (fluoro)quinolones and third-generation cephalosporins, in *S. Enteritidis* from fattening turkeys, 6 EU MSs, 2018

| Country | N | GEN (%) | CHL (%) | AMP (%) | CTX (%) | CAZ (%) | MEM (%) | TGC (%) | NAL (%) | CIP (%) | AZM (%) | COL (%) | SMX (%) | TMP (%) | TET (%) | CS | MDR | Resistance to both CIP/CTX, applying ECOFFs | Resistance to both CIP/CTX, applying CBPs |
|------------------------|-----------|------------|----------|------------|----------|----------|----------|----------|------------|------------|----------|------------|------------|----------|------------|-------------|------------|---|---|
| Austria ^(a) | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Croatia ^(a) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Czechia ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| France ^(a) | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12.5 | 0 | 0 | 0 | -(b) | 0 | 0 | 0 |
| Poland ^(a) | 4 | 25 | 0 | 25 | 0 | 0 | 0 | 0 | 50 | 50 | 0 | 0 | 25 | 0 | 25 | 50 | 25 | 0 | 0 |
| Spain ^(a) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| Total (6 MSs) | 21 | 4.8 | 0 | 4.8 | 0 | 0 | 0 | 0 | 9.5 | 9.5 | 0 | 4.8 | 4.8 | 0 | 4.8 | 90.5 | 4.8 | 0 | 0 |

N: total number of isolates tested; %: percentage of isolates with this phenotype from the total tested; GEN: gentamicin; CHL: chloramphenicol; AMP: ampicillin; CTX: cefotaxime; CAZ: Ceftazidime; MEM: meropenem; TGC: tigecycline, NAL: nalidixic acid; CIP: ciprofloxacin; AZM: azithromycin; COL: colistin; SMX: sulfamethoxazole; TMP: trimethoprim; TET: tetracycline.

CS: percentage of isolates showing complete susceptibility to all antimicrobial classes of the harmonised set for *Escherichia coli*; MDR: percentage of isolates showing resistance to at least 3 antimicrobial classes of the harmonised set for *Escherichia coli*

MSs: Member States; ECOFFs: epidemiological cut-off values; CBPs: clinical breakpoints

(a): The occurrence of resistance is assessed on less than 10 isolates and should only be considered as part of the total of MSs data and/or the total of MSs and non-MSs.

(b): Colistin is not included in the calculation of complete susceptibility. Further information is found in Annex A 'Materials and Methods'.