**Supplementary information**

**Table S1:** Amino acid identity similarities of MCR-1 to -7.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | MCR-1 | MCR-2 | MCR-3 | MCR-4 | MCR-5 | MCR-6 | MCR-7 |
| MCR-1 |  |  |  |  |  |  |  |
| MCR-2 | 81% |  |  |  |  |  |  |
| MCR-3 | 33% | 32% |  |  |  |  |  |
| MCR-4 | 34% | 35% | 49% |  |  |  |  |
| MCR-5 | 36% | 35% | 35% | 34% |  |  |  |
| MCR-6 | 83% | 88% | 34% | 33% | 37% |  |  |
| MCR-7 | 35% | 34% | 70% | 45% | 36% | 33% |  |

**Table S2:** Charaterization of *mcr* variants.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Gene name** | **Amino acid identity (%)** | **Amino acid changes** | **Accession number** | **Reference** | **Isolate** | **Country** | **Source** |
| *mcr-1* | n/a | n/a | KP347127: 22413..24038 | Liu YY et al. 2016 | *E. coli* | China | Livestock (Pig) |
| *mcr-1.2* | 539/540 (99.8%) | Q3L | KX236309: 3137..4762 | Di Pilato et al. 2016 | *K. pneumoniae* | Italy | Human |
| *mcr-1.3* | 539/540 (99.8%) | I38V | KU934208: 18648..20273 | Yang YQ et al. 2017 | *E. coli* | China | Livestock (Chicken) |
| *mcr-1.4* | 539/540 (99.8%) | D440N | KY041856: 1..1626 | Unpublished | *E. coli* | China | Sewage |
| *mcr-1.5* | 539/540 (99.8%) | H452Y | KY471308: 18427..20049 | Tijet et al. 2017 | *E. coli* | Argentina | Human |
| *mcr-1.6* | 539/540 (99.8%) | R536H | KY352406: 4093..5718 | Lu et al. 2017 | *S. enterica* | China | Human |
| *mcr-1.7* | 539/540 (99.8%) | A215T | KY829117: 12188..13813 | Unpublished | *E. coli* | China | Sewage |
| *mcr-1.8* | 539/540 (99.8%) | Q3R | KY683842: 1..1626 | Unpublished | *E. coli* | Brunei | Livestock (Poultry) |
| *mcr-1.9* | 539/540 (99.8%) | V413A | KY964067: 27202..28809 | Unpublished | *E. coli* | Portugal | Livestock (Pig) |
| *mcr-1.10* | 533/540 (98.7%) | M2V, R11C, A23S, M155V, M234T, A354T, A443T | MF176238: 1..1626 | AbuOun et al. 2017 | *M. porci* | The United Kingdom | Livestock (Pig) |
| *mcr-1.11* | 540/541 (99.8%) | W8\_Y9insV | KY853650: 51584..53212 | Unpublished | *E. coli* | Peru | Human |
| *mcr-1.12* | 539/540 (99.8%) | Q3H | LC337668: 1..1626 | Unpublished | *E. coli* | Japan | Meat (Pork) |
| *mcr-2* | n/a | n/a | LT598652: 26779..28395 | Xavier et al. 2016 | *E. coli* | Belgium | Livestock (Pig) |
| *mcr-2.2* | 530/538 (98.5%) | H4Q, V57L, V140F, G320D, A339T, Y359F, G528D, A534T | MF176239: 1..1617 | AbuOun et al. 2017 | M. pluranimalium | Spain | Livestock (Pig) |
| *mcr-3* | n/a | n/a | KY924928: 161134..162759 | Yin et al. 2017 | *E. coli* | China | Livestock (Pig) |
| *mcr-3.2* | 539/540 (99.8%) | T488I | NMWW01000143: 317..1942 | Hernández et al. 2017 | *E. coli* | Spain | Livestock (Cattle) |
| *mcr-3.3* | 518/540 (95.9%) | V122G, R297L, I313V, E337K, H341Y, D358E, G428A, Q468K, T488I, V493M, D494N, A496E, Q500K, K501N, D504A, T505N, S525A, V526I, K529Q, G530E, S535K, V540N | MF495680:240179..241801 | Ling et al. 2017 | *Aeromonas veronii* | China | Meat (Chicken) |
| *mcr-3.4* | 539/540 (99.8%) | G373V | NQCO01000074: 2955..4580 | Unpublished | *Shigella sonnei* | Thailand | Human |
| *mcr-3.5* | 537/540 (99.4%) | M23V, A457E, T488I | MF489760: 49180..50805 | Unpublished | *E. coli* | China | Human |
| *mcr-3.6* | 513/540  (95.0%) | M13I, D41Y, I71V, S117N, V122G, E139D, R297L, I313V, E337K, H341Y, G428A, L458M, Q468K, T488I, V493M, D494N, A496E, Q500K, K501N, D504A, T505N, S525A, V526I, K529Q, G530E, S535K, V540N | MF598076: 1..1623 | Eichhorn et al. 2018 | *Aeromonas allosaccharophila* | Germany | Animal (Fish) |
| *mcr-3.7* | 522/540 (96.7%) | M13I, V61A, I71V, V122G, A127V, A154V, Q226K, R297L, I313V, I336V, E337K, H341Y, G428A, L458M, Q468K, V493M, D494N, A496E | MF598077: 94..1719 | Eichhorn et al. 2018 | *Aeromonas media* | Germany | Livestock (Turkey) |
| *mcr-3.8* | 516/540 (95.6%) | M13I, V122G, R297L, I313V, E337K, H341Y, D358E, G428A, L458M, Q468K, T488I, V493M, D494N, A496E, Q500K, K501N, D504A, T505N, S525A, V526I, K529Q, G530E, S535K, V540N | MF598078: 1..1623 | Eichhorn et al. 2018 | *Aeromonas jandaei* | Germany | Animal (Fish) |
| *mcr-3.9* | 529/540 (98.0%) | M13I, I71V, V122G, E144K, L151I, R297L, I313V, E337K, H341Y, D358E, Q468K | MF598080: 1..1626 | Eichhorn et al. 2018 | *Aeromonas hydrophila* | Germany | Animal (Fish) |
| *mcr-3.10* | 533/540 (98.7%) | V122G, R297L, I313V, E337K, H341Y, D358E, Q468K | MG214531: 6793..8418 | Wang et al. 2018 | *Aeromonas caviae* | China | Livestock (Duck) |
| *mcr-3.11* | 538/540 (99.6%) | G373V, Q468T | MG489958: 1..1626 | Unpublished | *E. coli* | China | Livestock (Chicken) |
| *mcr-4* | n/a | n/a | MF543359: 5808..7433 | Carattoli et al. 2017 | *S. enterica* | Italy | Livestock (Pig) |
| *mcr-4.2* | 539/540 (99.8%) | Q331R | MG581979: 10..1630 | Carretto et al. 2018 | *S. enterica* | Italy | Human |
| *mcr-5* | n/a | n/a | KY807920: 9896..11539 | Borowiak, Fischer, et al. 2017 | *S.enterica* | Germany | Livestock (Chicken) |
| *mcr-5.2* | 546/547 (99.8%) | E134del | MG384740: 1..1641 | Unpublished | *E. coli* | Germany | Livestock (Pig) |
| *mcr-6* | n/a | n/a | MF176240: 1..1617 | AbuOun et al. 2017 | *M. pluranimalium* | The United Kingdom | Livestock (Pig) |
| *mcr-7* | n/a | n/a | MG267386: 23610..25229 | Yang et al. 2018 | *K. pneumoniae* | China | Livestock (Chicken) |

n/a: not applicable

**Table S3:** Characterization of individuals carrying *mcr-*positive bacteria.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Year** | **Species** | **Site of infection/isolation** | **Gender** | **Age** | **Individual status** | **Travel history/origin** | **Animal contact history** | **MIC (mg/L)** | | **Reference** |
| **Polymyxin B** | **Colistin** |
| Algeria | 2011 | *E. coli* (n=1) | Urine | Male | 18 years old | Patient with polytrauma | No history of travelling abroad | NA | NA | 4 | Berrazeg et al. 2016 |
| Algeria | 2011 | *E. coli* (n=1) | Sperm culture | Male | 29 years old | Patient with infertility | NA | NA | NA | 8 | Yanat et al. 2016 |
| Algeria | 2013 | *E. coli* (n=7) **a**  *K. pneumoniae* (n=1) | Rectal swab | NA | NA | Pilgrims | Travelled to Mecca | NA | NA | 3 – 4 | Leangapichart et al. 2016 |
| Algeria | 2014 | *E. coli* (n=1) | Rectal swab | NA | NA | Pilgrims | Travelled to Mecca | NA | NA | 4 | Leangapichart et al. 2016 |
| Argentina | 2012 | *E. coli* (n=1) **b** | Blood | NA | NA | Patient with neurologic disease | NA | NA | 8 | 8 | Rapoport et al. 2016 |
| Argentina | 2012 | *E. coli* (n=1) | Urine | NA | NA | Patient with diabetes | NA | NA | 16 | 16 | Rapoport et al. 2016 |
| Argentina | 2013 | *E. coli* (n=1) **b** | Abdominal | NA | NA | Patient with appendicitis | NA | NA | 16 | 8 | Rapoport et al. 2016 |
| Argentina | 2013 | *E. coli* (n=1) | Blood | NA | NA | Patient with urinary tract infection | NA | NA | 8 | 8 | Rapoport et al. 2016 |
| Argentina | 2015 | *E. coli* (n=1) **b** | Urine | NA | NA | Patient with prostate cancer | NA | NA | 8 | 8 | Rapoport et al. 2016 |
| Argentina | 2015 | *E. coli* (n=1) | Urine | NA | NA | Patient with heart failure | NA | NA | 8 | 8 | Rapoport et al. 2016 |
| Argentina | 2015 | *E. coli* (n=1) | Bone | NA | NA | Patient with rheumatoid arthritis | NA | NA | 8 | 8 | Rapoport et al. 2016 |
| Argentina | 2015 | *E. coli* (n=1) | Blood | NA | NA | Patient with secondary peritonitis/colon cancer | NA | NA | 8 | 8 | Rapoport et al. 2016 |
| Argentina | 2016 | *E. coli* (n=1) | Abscess | NA | NA | Hospital patient | NA | NA | 8 | 8 | Rapoport et al. 2016 |
| Australia | 2011 | *E. coli* | Urine | Female | 70 years old | Patient in the intensive care unit (ICU) for subarachnoid hemorrhage | No history of travel abroad for past 5 years | NA | NA | 4 | Ellem et al. 2017 |
| Australia | 2013 | *E. coli* | Urine | Female | 71 years old | Patient with diabetes mellitus | No history of travel abroad for past 5 years | NA | NA | >4 | Ellem et al. 2017 |
| Austria | 2016 | *E. coli* (n=1) | Fecal sample | Female | 60 years old | Patient with acute myeloid leukemia secondary to myelodysplastic syndrome | No history of travel abroad | NA | NA | 4 | Hartl et al. 2017 |
| Bahrain | 2015 | *E. coli* (n=2) | Wound (n=1)  Urine (n=1) | NA | NA | Clinical | NA | NA | NA | 16 | Sonnevend et al. 2016 |
| Bahrain | 2015 | *E. coli* (n=4) | Groin and peri-rectal | Male | NA | Clinical | NA | NA | NA | 4 | Snesrud et al. 2017 |
| Belgium | 2015 | *E. coli* (n=1) | Pus | NA | NA | Hospital patient | NA | NA | NA | 4 | Huang et al. 2017 |
| Brazil | 2016 | *E. coli* (n=1) | Wound | Male | Late 60’s | Patient with calcaneal ulcer | NA | NA | NA | >4 | Fernandes, McCulloch, et al. 2016 |
| Brazil | 2016 | *K. pneumoniae* (n=1) | Urine | Male | 61 years old | Patient with urinary tract infection | NA | NA | NA | 16 | Aires et al. 2017 |
| Brazil | 2015 | *E. coli* (n=2) | Rectal swab (n=1)  Blood (n=1) | Male | 66 years old | Patient diagnosed with pneumoniae | NA | NA | NA | 8 | Conceição-Neto et al. 2017 |
| Brazil | 2015 | *E. coli* (n=1) | Rectal swab (n=1) | Female | 71 years old | Liver transplant patient with septic shock | NA | NA | NA | 4 | Conceição-Neto et al. 2017 |
| Cambodia | 2012 | *E. coli* (n=1) | Fecal sample | NA | Child | Hospital patient | NA | NA | NA | NA | Stoesser et al. 2016 |
| Canada | 2010 | *E. coli* (n=1) | Blood | Male | NA | Patient admitted to emergency department | NA | NA | NA | 16 | Walkty et al. 2016 |
| Canada | 2010 | *E. coli* (n=1) | Blood | Male | NA | Patient admitted to emergency department | NA | NA | NA | 4 | Walkty et al. 2016 |
| Canada | 2011 | *E. coli* (n=1) | Gastrostomy tube site and rectum | NA | NA | NA | Lived in Egypt for 5 years previously | NA | NA | 4 | Mulvey et al. 2016 |
| Canada | 2015 – 2016 | *E. coli* (n=1) | Urine | Male | 61 years old | Patient who underwent trans-urethral prostate resection | Travelled to China | NA | NA | 3 | Payne et al. 2016 |
| China | 2012 | *E. coli* (n=1) | Urine | NA | NA | Hospital patient | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | 2012 | *E. coli* (n=25) **c** | Rectum | Male (n=11)  Female (n=9) | <7 years old (n=4)  7 – 15 years old (n=5)  16 – 60 years old (n=5)  >60 years old (n=6) | Rural resident | NA | Staying near to commercial farm (n=10) | NA | 3 – 6 | Lima Barbieri et al. 2017 |
| China | 2013 | *E. coli* (n=3) | Urine (n=1)  Sputum (n=1)  Drainage fluid (n=1) | NA | NA | Hospital patient | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | 2014 | *E. coli* (n=12) | Blood (n=2)  Drainage fluid (n=5)  Pus (n=1)  Sputum (n=2)  Urine (n=2) | NA | NA | Hospital patient | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | 2015 | *E. coli* (n=95) | Abscess (n=2)  Bile (n=7)  Blood (n=7)  Catheter (n=2)  Drainage fluid (n=5)  Pus (n=1)  Respiratory tract (n=1)  Secretion (n=6)  Sputum (n=12)  Urine (n=16)  Wound (n=1)  Fecal sample (n=35) | NA | NA | Hospital patient | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | 2015 | *E. coli* (n=19) | Fecal sample | NA | NA | Healthy individual | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | NA | *K. pneumoniae* (n=13) | NA | NA | NA | Hospital patient | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | NA | *Enterobacter cloacae* | NA | NA | NA | Hospital patient | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | NA | *Enterobacter aerogenes* | NA | NA | NA | Hospital patient | NA | NA | NA | NA | Wang Y et al. 2017 |
| China | 2014 | *E. coli*  (n=13) | Urine (n=3)  Sputum (n=1)  Drainage fluid (n=3)  Bile (n=2)  Ascites (n=3)  Wound (n=1) | NA | NA | Hospital patient | NA | NA | NA | NA | Liu YY et al. 2016 |
| China | 2014 | *K. pneumoniae* (n=3) | Urine (n=1)  Sputum (n=2) | NA | NA | Hospital patient | NA | NA | NA | NA | Liu YY et al. 2016 |
| China | 2014 | *E. coli*  (n=1) | Blood | NA | NA | Patient with bacteremia | NA | NA | NA | >2 | Du et al. 2016 |
| China | 2015 | *E. coli*  (n=1) | Blood | NA | NA | Patient with bacteremia | NA | NA | NA | >2 | Du et al. 2016 |
| China | 2015 | *K. pneumoniae* (n=2) **d** | Surgical wound (n=1)  Peritoneal fluid (n=1) | NA | NA | Hospital patient | NA | NA | NA | >2 | Du et al. 2016 |
| China | 2011 and earlier | NA (n=15) | Fecal sample (Human microbiome) | NA | NA | Healthy individual | NA | NA | NA | NA | Hu et al. 2016; Ruppé et al. 2016 |
| China | 2011 and earlier | NA (n=12) | Fecal sample (Human microbiome) | NA | NA | Patient with type II diabetes | NA | NA | NA | NA | Hu et al. 2016; Ruppé et al. 2016 |
| China | 2015 | *E. coli* (n=1) **e** | Fecal sample | NA | 1 year old | Patient with diarrhea, cough and fever | NA | No history of poultry contact | NA | 8 | Gu et al. 2016 |
| China | 2015 | *K. pneumoniae* (n=1) **e** | Fecal sample | NA | 1 year old | Patient with diarrhea, cough and fever | NA | No history of poultry contact | NA | 16 | Gu et al. 2016 |
| China | 2014 | *Enterobacter aerogenes* (n=1) | Vaginal secretion | Female | 37 years old | Patient with vaginal infection | NA | NA | 16 | 16 | Zeng et al. 2016 |
| China | 2014 | *Enterobacter cloacae* (n=1) | Urine | Male | 70 years old | Patient with urinary tract infection | NA | NA | >32 | >32 | Zeng et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Fecal sample | Male | 27 months old | Patient with pneumonia | NA | No history of animal contact | NA | 8 | Zhang R et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Fecal sample | Male | 19 months old | Patient with pneumonia | NA | No history of animal contact | NA | 8 | Zhang R et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Fecal sample | Female | 2 months old | Patient with fever | NA | No history of animal contact | NA | 8 | Zhang R et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Fecal sample | Male | 10 months old | Patient with acute bronchitis | NA | No history of animal contact | NA | 4 | Zhang R et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Fecal sample | Male | 22 months old | Patient with epilepsy | NA | No history of animal contact | NA | 16 | Zhang R et al. 2016 |
| China | 2015 | *E. coli* (n=3) | Fecal sample | NA | NA | Patient with diarrhea | NA | NA | Up to 16 | 32 | Ye et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Urine | Male | 50 years old | Patient with glomerulonephritis | NA | NA | 8 | 8 | Zhang XF et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Urine | Male | 48 years old | Patient with prostatitis | NA | NA | 8 | 8 | Zhang XF et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Blood | Male | 80 years old | Patient with bladder cancer | NA | NA | 64 | 64 | Zhang XF et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Urine | Male | Late 40’s | Patient with long-term urinary catheterisation and history of recurring urinary tract infection | NA | NA | NA | >2 | Yu H et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Ascites | Female | About 50 years old | Patient with intra-abdominal infection and liver abscess | NA | NA | NA | >2 | Yu H et al. 2016 |
| China | 2015 | *E. coli* (n=1) | Bile | Female | About 50 years old | Patient with cirrhosis | NA | NA | NA | >2 | Yu H et al. 2016 |
| China | 2016 | *E. coli* (n=14) | Fecal sample | NA | NA | Hospital patient | NA | NA | NA | NA | Zhong et al. 2016 |
| China | 2016 | *E. coli* (n=1) | Fecal sample | Male | 23 years old | Healthy individual | Travelled to India for 5 days | Staying >10km away from commercial animal farms | 16 | 8 | Zhong et al. 2016 |
| China | 2016 | *E. coli* (n=1) | Fecal sample | Female | 68 years old | Healthy individual | Travelled to The United States for 9 days | Staying >10km away from commercial animal farms | 16 | 16 | Zhong et al. 2016 |
| China | 2016 | *E. coli* (n=1) | Fecal sample | Female | 56 years old | Healthy individual | Travelled to The United States for 15 days | Staying >10km away from commercial animal farms | 16 | 16 | Zhong et al. 2016 |
| China | NA | *E. coli* (n=1) | Blood | Male | 10 days old | Patient with bacteremia | NA | NA | 4 | 4 | Zheng et al. 2016 |
| China | NA | *E. coli* (n=1) | Blood | Male | 56 years old | Patient with bacteremia | NA | NA | 4 | 4 | Zheng et al. 2016 |
| China | 2012 – 2015 | *S. enterica* (n=28) | NA | NA | NA | Clinical | NA | NA | NA | >2 | Cui et al. 2017 |
| China | 2014 – 2015 | *E. coli* (n=2) | NA | NA | NA | Clinical | NA | NA | NA | ≥2 | Zhang R et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Female | 44 years old | Patient with bacteremia | NA | NA | NA | ≤0.06 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 59 years old | Patient with bacteremia | NA | NA | NA | 16 | Quan et al. 2017 |
| China | 2013 | *E. coli* (n=1) | Blood | Female | 44 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2013 | *E. coli* (n=1) | Blood | Male | 46 years old | Patient with bacteremia | NA | NA | NA | 4 | Quan et al. 2017 |
| China | 2013 | *E. coli* (n=1) | Blood | Female | 40 years old | Patient with bacteremia | NA | NA | NA | 4 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Female | 52 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Female | 56 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2013 | *E. coli* (n=1) | Blood | Male | 49 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 77 years old | Patient with bacteremia | NA | NA | NA | 4 | Quan et al. 2017 |
| China | 2013 | *E. coli* (n=1) | Blood | Male | 61 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 35 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2012 | *E. coli* (n=1) | Blood | Male | 88 years old | Patient with bacteremia | NA | NA | NA | 4 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 54 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 28 years old | Patient with bacteremia | NA | NA | NA | 16 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 72 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2013 | *E. coli* (n=1) | Blood | Female | 75 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 54 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 29 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Female | 57 years old | Patient with bacteremia | NA | NA | NA | 8 | Quan et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Blood | Male | 80 years old | Patient with bacteremia | NA | NA | NA | 4 | Quan et al. 2017 |
| China | 2014 | *K. pneumoniae* (n=1) | Blood | Male | 84 years old | Patient with bacteremia | NA | NA | NA | 32 | Quan et al. 2017 |
| China | 2014 | *S. enterica* Typhimurium (n=1) **f** | Rectum | Female | 46 years old | Healthy individual | NA | NA | NA | 4 | Lu et al. 2017 |
| China | 2015 | *E. coli* (n=1) | Sputum | Male | 4 years and 3 months | Acute lymphoblastic leukemia patient with pneumonia | NA | NA | 16 | 8 | Tian et al. 2017 |
| China | 2015 | *K. pneumoniae* (n=1) | Sputum | Male | 2 years and 3 months | Acute lymphoblastic leukemia patient with pneumonia | NA | NA | 32 | 16 | Tian et al. 2017 |
| China | 2016 | *K. pneumoniae* (n=1) | Sputum | Female | 3 years and 1 month | Acute lymphoblastic leukemia patient with pneumonia | NA | NA | 16 | 16 | Tian et al. 2017 |
| China | 2016 | *K. pneumoniae* (n=1) | Sputum | Male | 4 years | Acute lymphoblastic leukemia patient with pneumonia | NA | NA | 16 | 8 | Tian et al. 2017 |
| China | 2016 | *K. pneumoniae* (n=1) | Sputum | Male | 2 years and 9 months | Acute lymphoblastic leukemia patient with pneumonia | NA | NA | 16 | 16 | Tian et al. 2017 |
| China | 2016 | *K. pneumoniae* (n=1) | Sputum | Male | 6 years and 1 month | Acute lymphoblastic leukemia patient with pneumonia | NA | NA | 16 | 8 | Tian et al. 2017 |
| China | 2014 | *E. coli* (n=1) | Drainage fluid | Female | 80 | Patient with malignancy, hypertension and pulmonary tuberculosis | NA | NA | NA | 4 – 16 | He QW et al. 2017 |
| China | 2015 | *E. coli* (n=1) | Secretion | Female | 57 | Patient with perineal infection and hypertension | NA | NA | NA | 4 – 16 | He QW et al. 2017 |
| China | 2015 | *E. coli* (n=1) **g** | Secretion | Male | 38 | Patient with hypertension, pancreatitis and diabetes | NA | NA | NA | 4 – 16 | He QW et al. 2017 |
| China | 2015 | *E. coli* (n=1) **g** | Drainage fluid | Male | 38 | Patient with hypertension, pancreatitis and diabetes | NA | NA | NA | 4 – 16 | He QW et al. 2017 |
| China | 2011 | *K. pneumoniae* (n=1) | Wound | NA | NA | NA | NA | NA | NA | 16 | Wang X et al. 2017 |
| China | 2011 | *E. coli* (n=1) | Abdominal fluid | NA | NA | NA | NA | NA | NA | 8 | Wang X et al. 2017 |
| China | 2012 | *K. pneumoniae* (n=3) | Blood | NA | NA | NA | NA | NA | NA | 64 | Wang X et al. 2017 |
| China | 2012 | *E. coli* (n=7) | Blood | NA | NA | NA | NA | NA | NA | 4 – 8 | Wang X et al. 2017 |
| China | 2013 | *E. coli* (n=9) | Blood (n=5)  Abdominal fluid (n=4) | NA | NA | NA | NA | NA | NA | 4 – 16 | Wang X et al. 2017 |
| China | 2014 | *E. coli* (n=6) | Blood | NA | NA | NA | NA | NA | NA | 4 – 8 | Wang X et al. 2017 |
| China | 2017 | *E. coli* (n=1) **h** | Abdominal abscess | Male | 43 | Hospital patient | NA | NA | NA | 8 | Liu L et al. 2017 |
| China | 2016 | *E. coli* (n=1) | Fecal sample | Male | 38 | Patient with acute liver injury, developed pneumoniae and recurrent diarrhea during hospitalization | NA | NA | NA | NA | Zheng et al. 2017 |
| China | 2016 | *E. coli* (n=16) | Fecal sample | NA | 3 months – 6 years old | Children hospital patient | NA | No history of contact with poultry | NA | 3 – 16 | Hu et al. 2017 |
| China | 2016 | *Citrobacter freundii* (n=1) | Fecal sample | NA | 3 months – 6 years old | Children hospital patient | NA | No history of contact with poultry | NA | 3 – 16 | Hu et al. 2017 |
| China | 2015 | *E. coli* (n=2) | Abdominal drainage (n=1)  Urine from cystostomy (n=1) | Female | 19 years old | Hospital patient with history of pelvic fracture, urethral disruption and pelvic organ injury treated with colostomy and cystostomy | NA | Possible contact with poultry | NA | 8 | Zhang Y et al. 2017 |
| Colombia | 2013 | *E. coli* (n=2) | Leg secretion (n=1)  Blood (n=1) | NA | NA | NA | NA | NA | NA | 4 | Saavedra et al. 2017 |
| Colombia | 2015 | *S. enterica* Typhimurium (n=2) | Fecal sample (n=1)  Urine (n=1) | NA | NA | NA | NA | NA | NA | 4 – 8 | Saavedra et al. 2017 |
| Colombia | 2016 | *E. coli* (n=6) | Urine (n=2)  Vaginal secretion (n=1)  Abdominal abscess (n=1)  Toe tissue (n=1)  NA (n=1) | NA | NA | NA | NA | NA | NA | 4 – 8 | Saavedra et al. 2017 |
| Colombia | 2016 | *K. pneumoniae* (n=1) | Blood | NA | NA | NA | NA | NA | NA | 8 | Saavedra et al. 2017 |
| Colombia | 2016 | *S. enterica* Typhimurium (n=1) | Fecal sample | NA | NA | NA | NA | NA | NA | 4 | Saavedra et al. 2017 |
| Denmark | 2014 | *S. enterica* Typhimurium (n=1) | NA | NA | NA | NA | Travelled to Thailand | NA | NA | NA | Torpdahl et al. 2017 |
| Denmark | 2014 | *S. enterica* Typhimurium (n=1) | NA | NA | NA | NA | NA | NA | NA | NA | Torpdahl et al. 2017 |
| Denmark | 2015 | *E. coli* (n=1) | Blood | Male | Elderly | Patient with bacteremia | No history of travelling abroad | NA | 4 | >4 | Hasman et al. 2015 |
| Denmark | 2015 | *S. enterica* Typhimurium (n=2) | NA | NA | NA | NA | No history of travelling abroad | NA | NA | NA | Torpdahl et al. 2017 |
| Denmark | 2009 | *S. enterica* Typhimurium (n=1) **i** | NA | NA | NA | Clinical isolate | No history of travelling abroad | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2010 | *S. enterica* O:4,5,12;H:i:- (n=1) **i** | NA | NA | NA | Clinical isolate | NA | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2011 | *S. enterica* O:4,5,12;H:i:- (n=2) **i** | NA | NA | NA | Clinical isolate | Travelled to Thailand | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2012 | *S. enterica* O:4,5,12;H:i:- (n=1) **i** | NA | NA | NA | Clinical isolate | NA | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2012 | *S. enterica* Typhimurium (n=1) **i** | NA | NA | NA | Clinical isolate | No history of travelling abroad | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2012 | *S. enterica* Typhimurium (n=1) **i** | NA | NA | NA | Clinical isolate | Travelled to Thailand | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2015 | *S. enterica* O:4,5,12;H:i:- (n=1) **i** | NA | NA | NA | Clinical isolate | Travelled to Vietnam | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2016 | *S. enterica* O:4,5,12;H:i:- (n=1) **i** | NA | NA | NA | Clinical isolate | Travelled to Thailand | NA | NA | NA | Litrup et al. 2017 |
| Denmark | 2017 | *S. enterica* O:4,5,12;H:i:- (n=1) **i** | NA | NA | NA | Clinical isolate | NA | NA | NA | NA | Litrup et al. 2017 |
| Ecuador | 2016 | *E. coli* (n=1) | Peritoneal fluid | Male | 14 years old | Patient with acute appendicitis | NA | NA | NA | 8 | Ortega-Paredes et al. 2016 |
| Egypt | 2015 | *E. coli* (n=1) | Sputum | NA | NA | Patient with bacteremia | No history of travelling abroad | NA | 16 | 16 | Elnahriry et al. 2016 |
| France | 2012 – 2013 | *K. pneumoniae* (n=1) | Fecal sample | Female | 4 years old | Patient | NA | NA | NA | 4 | Rolain et al. 2016 |
| France | 2012 – 2013 | *K. pneumoniae* (n=1) | Fecal sample | Male | 83 years old | Patient | NA | NA | NA | 8 | Rolain et al. 2016 |
| France | 2016 | *E. coli* (n=1) | Fecal sample | Male | 44 | Traffic accident patient repatriated from Portugal after 2 months ;received colistin treatment for 20 days | NA | NA | NA | 4 | Beyrouthy et al. 2017 |
| Germany | 2014 | *E. coli* (n=1) | Wound | NA | NA | Patient with wound infection | NA | NA | NA | 2**j** | Falgenhauer, Waezsada, Yao, et al. 2016 |
| Germany | 2015 | *E. coli* (n=1) | Urine | Male | ~60 years old | Patient with chronic obstructive pulmonary disease and had unintended weight loss | NA | NA | NA | 4 | Fritzenwanker et al. 2016 |
| Hungary | 2011 | *E. coli* (n=1) | Blood | NA | NA | Hemato-oncologic patient | NA | NA | NA | 4 | Juhász et al. 2017 |
| Hong Kong | 2015 – 2016 | *Enterobacter cloacae* (n=1) | Fecal sample | NA | 55 years old | Patient with acute myeloid leukemia | NA | NA | NA | 64 | Wong et al. 2016 |
| Hong Kong | 2015 – 2016 | *E. coli* (n=1) | Blood | NA | 68 years old | Patient with biliary sepsis | NA | NA | NA | 3 | Wong et al. 2016 |
| Hong Kong | 2015 – 2016 | *E. coli* (n=1) | Fecal sample | NA | 2 years old | Patient who underwent autologous bone marrow transplant | NA | NA | NA | 3 | Wong et al. 2016 |
| Hong Kong | 2015 – 2016 | *E. coli* (n=1) | Blood | NA | 57 years old | Patient with biliary sepsis | NA | NA | NA | 4 | Wong et al. 2016 |
| Hong Kong | 2015 – 2016 | *E. coli* (n=1) | Urine | NA | 80 years old | Patient with urinary tract infection | NA | NA | NA | 4 | Wong et al. 2016 |
| Italy | 2015 | *E. coli* (n=1) | Intestinal colonization | Female | 95 years old | Resident at long-term-care facilities for 8 years | NA | NA | NA | 8 | Giufrè et al. 2016 |
| Italy | 2015 | *E. coli* (n=1) | Intestinal colonization | Female | 87 years old | Resident at long-term-care facilities for 5 years | NA | NA | NA | 8 | Giufrè et al. 2016 |
| Italy | 2015 | *E. coli* (n=1) | Intestinal colonization | Female | 74 years old | Resident at long-term-care facilities for 3 months | NA | NA | NA | 8 | Giufrè et al. 2016 |
| Italy | 2013 | *E. coli* (n=1) | Urine | NA | NA | Patient at neurology ward | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2014 | *E. coli* (n=1) | Urine | NA | NA | Patient at medicine ward | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2014 | *E. coli* (n=1) | Urine | NA | NA | Outpatient | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2014 | *E. coli* (n=1) | Surgical wound | NA | NA | Patient at Intensive Care Units | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2014 | *K. pneumoniae* **k**(n=1) | Rectal swab | NA | Child | Patient receiving chemotherapy for acute lymphoblastic leukemia | NA | NA | NA | 8 | Di Pilato et al. 2016 |
| Italy | 2015 | *E. coli* (n=1) | Urine | NA | NA | Patient at neurosurgery ward | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2015 | *E. coli* (n=1) | Urine | NA | NA | Outpatient | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2015 | *E. coli* (n=1) | Urine | NA | NA | Patient at orthopedics ward | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2015 | *E. coli* (n=1) | Urine | NA | NA | Patient at medicine ward | NA | NA | NA | 8 | Cannatelli et al. 2016 |
| Italy | 2016 | *E. coli* (n=1) | Blood | Female | 70’s | Patient with bacteremia | No history of travelling abroad for 8 years | No report of close contact with farm animal | NA | 4 | Corbella et al. 2017 |
| Italy | 2016 | *E. coli* (n=1) | Blood | Female | Mid 60’s | Patient with bacteremia | No history of travelling abroad for 12 years | No report of close contact with farm animal | NA | 4 | Corbella et al. 2017 |
| Italy | 2016 | *S. enterica* **m** (n=1) | Fecal sample | NA | NA | Patient with gastroenteritis | NA | NA | NA | 4 | Carretto et al. 2018 |
| Italy | 2016 | *S. enterica* **m** (n=1) | Fecal sample | NA | NA | Patient with gastroenteritis | NA | NA | NA | 8 | Carretto et al. 2018 |
| Italy | 2017 | *E. coli* (n=1) | Blood | Female | Early 80’s | Patient with bacteremia | Never travel abroad | No report of close contact with farm animal | NA | 4 | Corbella et al. 2017 |
| Japan | 2017 | *E. coli* (n=1) | Fecal sample | Male | 18 years old | Patient with acute leukaemia | Travelled to Taiwan | Staying close to livestock | NA | 16 | Tada, Uechi, et al. 2017 |
| Kingdom of Saudi Arabia | 2012 | *E. coli* (n=1) | Blood | NA | NA | Clinical | NA | NA | NA | 16 | Sonnevend et al. 2016 |
| Laos | 2012 | *E. coli* (n=6) | Fecal sample | NA | NA | Healthy individual | NA | NA | NA | 6 – 16 | Olaitan et al. 2016 |
| Laos | 2012 | *K. pneumoniae* (n=4) | Fecal sample | NA | NA | Healthy individual | NA | NA | NA | 12 – 32 | Rolain et al. 2016 |
| Malaysia | 2013 | *E. coli* (n=1) | Urine | NA | NA | Clinical | NA | NA | NA | 8 | Yu, Ang, Chin, et al. 2016 |
| Morocco | 2014 | *E. coli* (n=2) | Rectal swab | NA | NA | Pilgrims | Travelled to Mecca | NA | NA | 3 | Leangapichart et al. 2016 |
| New Caledonia | 2014 | *E. coli* (n=1) | Ascites | Male | 42 years old | Patient at Intensive Care Unit | No history of travel abroad | No history of animal contact | NA | 4 | Robin et al. 2016 |
| New Caledonia | 2014 | *E. coli* (n=1) | Gastric fluid | NA | Newborn | Newborn at maternity department | No history of travel abroad | No history of animal contact | NA | 4 | Robin et al. 2016 |
| Norway | 2014 | *E. coli* (n=1) | NA | NA | NA | Patient with symptomatic traveler’s diarrhea | Travelled to India | NA | NA | 4 | Solheim et al. 2016 |
| Oman | 2016 | *E. coli* (n=1) | Blood | Male | 58 years old | Patient with hospital-acquired postoperative wound and blood infection | NA | NA | NA | 4 | Mohsin J et al. 2017 |
| Pakistan | 2016 | *E. coli* (n=1) | Wound | Male | 35 years old | Patient with burn wounds | NA | NA | NA | 4 | Mohsin M et al. 2016 |
| Poland | 2015 | *E. coli* (n=1) | Urine | Female | Late 50’s | Patient with urinary tract infection | No history of travelling abroad | Possible contact with farm animals as she was staying at countryside | NA | 3 | Izdebski et al. 2016 |
| Portugal | 2011 – 2012 | *S. enterica* 1,4,[5],12:i:-(n=4) | Blood, Fecal sample | NA | NA | Hospital patient | NA | NA | NA | 4 – 8 | Campos et al. 2016 |
| Portugal | 2016 | *E. coli* | Urine | Female | 70 | Patient with abdominal occlusion, treated with meropenem and colistin after surgery | NA | NA | NA | 8 | Tacão et al. 2017 |
| Singapore | 2016 | *E. coli* (n=2) | Urine | NA | NA | Clinical | NA | NA | 4 | 4 | Teo et al. 2016 |
| Singapore | 2016 | *K. pneumoniae* (n=1) | Urine | NA | NA | Clinical | NA | NA | 24 | 8 | Teo et al. 2016 |
| South Africa | 2014 | *E. coli* (n=1) | Blood | Male | 54 years old | Patient with stem cell transplant | NA | NA | NA | 4 | Coetzee et al. 2016 |
| South Africa | 2014 | *E. coli* (n=1) | Pus | Female | 48 years old | Patient with perianal abscess | NA | NA | NA | 4 | Coetzee et al. 2016 |
| South Africa | 2014 | *E. coli* (n=1) | Urine | Female | 60 years old | Patient with urinary tract infection | NA | NA | NA | 8 | Coetzee et al. 2016 |
| South Africa | 2015 | *E. coli* (n=1) | Wound | Female | 60 years old | Patient with AIDS, TB, *P. jirovecii* pneumonia | NA | NA | NA | 4 | Coetzee et al. 2016 |
| South Africa | 2015 | *E. coli* (n=1) | Urine | Female | 73 years old | Patient with urinary tract infection | NA | NA | NA | 4 | Coetzee et al. 2016 |
| South Africa | 2015 | *E. coli* (n=1) | Urine | Female | 63 years old | Patient with urinary tract infection | NA | NA | NA | 8 | Coetzee et al. 2016 |
| South Africa | 2015 | *E. coli* (n=1) | Urine | Female | 68 years old | Patient with urinary tract infection | NA | NA | NA | 4 | Coetzee et al. 2016 |
| South Africa | 2015 | *E. coli* (n=1) | Urine | Female | 36 years old | Patient with urinary tract infection | NA | NA | NA | 4 | Coetzee et al. 2016 |
| South Africa | 2016 | *E. coli* (n=1) | Urine | Female | 19 years old | Patient with urinary tract infection | NA | NA | NA | 4 | Coetzee et al. 2016 |
| South Africa | 2016 | *E. coli* (n=10) | Urine (n=9)  Superficial abdominal swab (n=1) | NA | NA | NA | NA | NA | NA | 4 – 16 | Newton-Foot et al. 2017 |
| South Africa | 2016 | *K. pneumoniae* (n=4) | Sputum (n=2)  Urine (n=2) | NA | NA | NA | NA | NA | NA | 4 – 16 | Newton-Foot et al. 2017 |
| South Africa | 2016 | *K. oxytoca* (n=1) | Superficial skin swab | NA | NA | NA | NA | NA | NA | 16 | Newton-Foot et al. 2017 |
| South Korea | 2014 – 2015 | *E. coli* | Blood | Male | 67 years old | Patient with acute cholangitis associated with pancreatic cancer | NA | NA | NA | 8 | Kim et al. 2017 |
| Spain | 2012 | *E. coli* (n=1) | Blood | NA | 6 – 97 years old | Patient with community-acquired infection | NA | NA | NA | 8 | Prim et al. 2016 |
| Spain | 2013 | *E. coli* (n=1) | Sputum | NA | 6 – 97 years old | Patient at hematology ward | NA | NA | NA | 4 | Prim et al. 2016 |
| Spain | 2013 | *E. coli* (n=1) | Sputum | NA | 6 – 97 years old | Patient at recovery room | NA | NA | NA | 4 | Prim et al. 2016 |
| Spain | 2013 | *E. coli* (n=2) | Sputum (n=1)  Blood (n=1) | NA | 6 – 97 years old | Patient with healthcare-associated infection | NA | NA | NA | 6 – 12 | Prim et al. 2016 |
| Spain | 2013 | *E. coli* (n=3) | Blood (n=2)  Urine (n=1) | NA | 6 – 97 years old | Patient with community-acquired infection | NA | NA | NA | 4 | Prim et al. 2016 |
| Spain | 2013 | *E. coli* (n=1) | Blood | NA | 6 – 97 years old | Patient at oncology ward | NA | NA | NA | 12 | Prim et al. 2016 |
| Spain | 2014 | *E. coli* (n=1) | Urine | NA | 6 – 97 years old | Patient at neurosurgery ward | NA | NA | NA | 4 | Prim et al. 2016 |
| Spain | 2014 | *E. coli* (n=2) | Urine (n=1)  Surgical wound (n=1 | NA | 6 – 97 years old | Patient with healthcare-associated infection | NA | NA | NA | 6 – 8 | Prim et al. 2016 |
| Spain | 2015 | *E. coli* (n=1) | Urine | NA | 6 – 97 years old | Patient at cardiology ward | NA | NA | NA | 4 | Prim et al. 2016 |
| Spain | 2015 | *E. coli* (n=1) | Urine | NA | 6 – 97 years old | Patient with healthcare-associated infection | NA | NA | NA | 4 | Prim et al. 2016 |
| Spain | 2015 | *E. coli* (n=1) | Urine | NA | 6 – 97 years old | Patient who was referred from nursing home | NA | NA | NA | 4 | Prim et al. 2016 |
| Spain | 2016 | *E. coli* (n=1) | Peritoneal fluid | Male | 25 years old | Patient who underwent appendicitis surgery | No history of travel abroad | No history of animal contact | NA | 4 | Ortiz de la Tabla et al. 2016 |
| Spain | 2016 | *E. coli* (n=1) | Sputum | Male | 67 years old | Patient with respiratory tract infection | NA | NA | NA | 4 | Sánchez-Benito et al. 2017 |
| Spain | 2012 – 2015 | *E. coli* (n=15) | Blood (n=5), urine (n=6), sputum (n=3), surgical wound secretion (n=1) | Female (n=7)  Male (n=8) | Mean age of 69.6 years old | Clinical | NA | NA | NA | 4 – 12 | Prim et al. 2017 |
| Sweden | 2013 | *E. coli* (n=1) | Fecal sample | NA | NA | Traveler | Travelled to Thailand | NA | NA | NA | Vading et al. 2016 |
| Switzerland | 2015 | *E. coli* (n=1) | Urine | Male | 83 years old | Patient with diverticulitis | No history of travelling abroad | NA | NA | 4 | Poirel, Kieffer, Liassine, et al. 2016 |
| Switzerland | 2015 | *E. coli* (n=1) | Fecal sample | Female | 57 years old | Traveler | Travelled to India for 14 days | NA | >4 | 12 | Bernasconi et al. 2016 |
| Switzerland | 2015 | *E. coli* (n=1) | Blood | Male | 59 years old | Patient with bacteremia | No history of travelling abroad | No history of farm animals contact | NA | 4 | Nordmann et al. 2016 |
| Switzerland | 2015 | *E. coli* (n=1) | Blood | Male | 88 years old | Patient with bacteremia | No history of travelling abroad | No history of farm animals contact | NA | 16 | Nordmann et al. 2016 |
| Switzerland | 2015 | *E. coli* (n=1) | Fecal sample | NA | NA | Traveler | Travelled to India | NA | NA | ≥8 | Donà, Bernasconi, Kasraian, et al. 2017 |
| Switzerland | 2015 | *E. coli* (n=1) | Fecal sample | NA | NA | Traveler | Travelled to India | NA | NA | ≥8 | Donà, Bernasconi, Kasraian, et al. 2017 |
| Switzerland | 2015 | *E. coli* (n=1) | Fecal sample | NA | NA | HIV-positive patient at hospital | NA | NA | NA | ≥8 | Donà, Bernasconi, Kasraian, et al. 2017 |
| Switzerland | 2016 | *E. coli* (n=1) | Fecal sample | NA | NA | Human with diarrhea | Travelled to Asia | NA | NA | 4 | Zurfluh et al. 2017 |
| Switzerland | 2016 | *E. coli* (n=1) | Fecal sample | NA | NA | Human with diarrhea | Travelled to Asia | NA | NA | 4 | Zurfluh et al. 2017 |
| Switzerland | 2016 | *E. coli* (n=1) | Urine | NA | NA | Patient with urinary tract infection | NA | NA | NA | 4 | Zurfluh et al. 2017 |
| Taiwan | 2010 | *E. coli* (n=1) | Sputum | NA | 39 – 88 years old | Hospital patient | NA | NA | NA | 6 | Kuo et al. 2016 |
| Taiwan | 2012 | *E. coli* (n=2) | Urine (n=2) | NA | 39 – 88 years old | Hospital patient | NA | NA | NA | 8 | Kuo et al. 2016 |
| Taiwan | 2014 | *E. coli* (n=11) | Ascites (n=1)  Abscess (n=2)  Blood (n=3)  Urine (n=5) | NA | 39 – 88 years old | Hospital patient | NA | NA | NA | 1.5 – 8 | Kuo et al. 2016 |
| Taiwan | NA | *E. coli* (n=1) | Urine | Female | 79 years old | Patient admitted to ICU for peritonitis with septic shock | NA | NA | NA | 4 | Lai et al. 2017 |
| Taiwan | 2014 | *S. enterica* Typhimurium (n=5) | NA | NA | NA | Clinical | NA | NA | NA | NA | Chiou et al. 2017 |
| Taiwan | 2015 | *S. enterica* Typhimurium (n=3) | NA | NA | NA | Clinical | NA | NA | NA | NA | Chiou et al. 2017 |
| Taiwan | 2015 | *S. enterica* Newport (n=1) | NA | NA | NA | Clinical | NA | NA | NA | NA | Chiou et al. 2017 |
| Taiwan | 2015 | *S. enterica* Albany (n=1) | NA | NA | NA | Clinical | NA | NA | NA | NA | Chiou et al. 2017 |
| Thailand | 2012 | *E. coli* (n=2) | Fecal sample | NA | NA | Healthy individual | NA | NA | NA | 4 – 6 | Olaitan et al. 2016 |
| Thailand | 2014 – 2015 | *E. coli* (n=1) | Urine | NA | NA | Clinical isolate | NA | NA | NA | 4 | Runcharoen et al. 2017 |
| Thailand | 2016 | *E. coli* (n=1) | Urine | Male | 63 years old | Patient with urinary tract infection | NA | NA | NA | 8 | Paveenkittiporn et al. 2016 |
| The Netherlands | 2012 – 2013 | *E. coli* (n=1) | Fecal sample | Female | 56 years old | Traveler | Travelled to Thailand, Vietnam, Cambodia, Laos | NA | NA | 4 | Arcilla et al. 2016 |
| The Netherlands | 2012 – 2013 | *E. coli* (n=1) | Fecal sample | Female | 55 years old | Traveler | Travelled to Tunisia | NA | NA | 4 | Arcilla et al. 2016 |
| The Netherlands | 2012 – 2013 | *E. coli* (n=1) | Fecal sample | Female | 25 years old | Traveler | Travelled to Peru, Bolivia, Colombia | NA | NA | 4 | Arcilla et al. 2016 |
| The Netherlands | 2012 – 2013 | *E. coli* (n=1) | Fecal sample | Male | 54 years old | Traveler | Travelled to China | NA | NA | 4 | Arcilla et al. 2016 |
| The Netherlands | 2012 – 2013 | *E. coli* (n=1) | Fecal sample | Female | 62 years old | Traveler | Travelled to China | NA | NA | 4 | Arcilla et al. 2016 |
| The Netherlands | 2012 – 2013 | *E. coli* (n=1) | Fecal sample | Male | 26 years old | Traveler | Travelled to Peru, Bolivia | NA | NA | 8 | Arcilla et al. 2016 |
| The Netherlands | 2014 -2015 | *E. coli* (n=1) | Fecal sample | NA | NA | Kidney transplant patient | NA | NA | NA | <0.25 **l** | Terveer et al. 2017 |
| The Netherlands | 2014 | *E. coli* (n=1) | Fecal sample | NA | NA | Medical center patient | NA | NA | NA | >4 | Nijhuis et al. 2016 |
| The Netherlands | 2015 | *E. coli* (n=2) | Fecal sample | NA | NA | Medical center patient | NA | NA | NA | >4 | Nijhuis et al. 2016 |
| The United States | 2014 | *E. coli* (n=1) | Urine | Male | 76 years old | Patient with urinary tract infection | No history of travelling abroad; emigrated from India 1 year ago | NA | NA | 3 | Mediavilla et al. 2016 |
| The United States | 2016 | *E. coli* (n=1) | Urine | Female | 49 years old | Patient with urinary tract infection | No history of travelling abroad | No history of farm animals contact | NA | 4 | McGann et al. 2016 |
| The United States | 2016 | *E. coli* (n=1) | Fecal sample | NA | Child | Patient with diarrhea | Travelled to Caribbean | No history of farm animals contact but had contact with pet animals | 4 | 2 | Vasquez et al. 2016 |
| The United States | 2015 | *E. coli* (n=1) | Blood | Male | 50’s | Patient with history of sickle cell anemia, cholangitis, cholecystectomy and underwent elective biliary surgery | Travelled to Dominican Republic | NA | 4 | NA | Macesic et al. 2017 |
| The United Kingdom | 2012 | *S. enterica* Typhimurium(n=1) | Fecal sample | Male | 68 years old | Patient with gastroenteritis | No history of travelling abroad | NA | NA | 4 | Doumith et al. 2016 |
| The United Kingdom | 2013 | *E. coli* (n=1) | Fecal sample | Female | 57 years old | Patient with gastroenteritis | Travelled to Egypt | NA | NA | NA | Doumith et al. 2016 |
| The United Kingdom | 2013 – 2014 | *E. coli* (n=2) | Blood | Female | 76 years old | Patient with bacteremia | No history of travelling abroad | NA | NA | 4 | Doumith et al. 2016 |
| The United Kingdom | 2014 | *S. enterica* Virchow (n=1) | Fecal sample | Female | 4 years old | Patient with gastroenteritis | Travelled to Egypt | NA | NA | 8 | Doumith et al. 2016 |
| The United Kingdom | 2014 | *S. enterica* Typhimurium (n=1) | Fecal sample | Male | 21 years old | Patient with gastroenteritis | Travelled to Malaysia, Singapore, Hong Kong | NA | NA | 8 | Doumith et al. 2016 |
| The United Kingdom | 2014 | *S. enterica* Typhimurium (n=1) | Fecal sample | Male | 57 years old | Patient with gastroenteritis | No history of travelling abroad | NA | NA | 8 | Doumith et al. 2016 |
| The United Kingdom | 2015 | *S. enterica* Typhimurium (n=1) | Fecal sample | Female | 46 years old | Patient with gastroenteritis | Travelled to Thailand, United Arab Emirates | NA | NA | 4 | Doumith et al. 2016 |
| The United Kingdom | 2015 | *S. enterica* Typhimurium (n=1) | Fecal sample | Male | 8 years old | Patient with gastroenteritis | Travelled to Malaysia | NA | NA | 8 | Doumith et al. 2016 |
| The United Kingdom | 2015 | *S. enterica* Paratyphi B var (n=1) | Fecal sample | Male | 21 years old | Patient with gastroenteritis | Travelled to Thailand | NA | NA | 8 | Doumith et al. 2016 |
| The United Kingdom | 2015 | *S. enterica* Typhimurium (n=1) | Fecal sample | Female | 18 years old | Patient with gastroenteritis | Travelled to Borneo | NA | NA | 8 | Doumith et al. 2016 |
| The United Kingdom | 2015 | *S. enterica* Typhimurium (n=1) | Fecal sample | Male | 51 years old | Patient with gastroenteritis | No history of travelling abroad | NA | NA | 8 | Doumith et al. 2016 |
| The United Kingdom | 2015 | *S. enterica* Typhimurium (n=1) | Fecal sample | Female | 26 years old | Patient with gastroenteritis | Travelled to Thailand, Cambodia | NA | NA | 8 | Doumith et al. 2016 |
| United Arab Emirate | 2013 | *E. coli* (n=1) | Blood | NA | NA | Clinical | NA | NA | NA | 16 | Sonnevend et al. 2016 |
| Vietnam | 2008 | *Shigella sonnei* (n=1) | Fecal sample | NA | Child | Patient with dysenteric diarrhea | NA | NA | NA | 0.094 **j** | Thanh et al. 2016 |
| Vietnam | 2012 – 2013 | *E. coli* (n=3) | Fecal sample | NA | NA | Farmer (chicken farm) | NA | NA | NA | 3 – 4 | Trung et al. 2017 |
| Vietnam | 2014 | *E. coli* (n=2) | Urine (n=1)  Pus (n=1) | NA | NA | Hospital patient | NA | NA | NA | 4 | Tada, Nhung, et al. 2017 |

**a** One of the isolates was detected before traveling to Mecca

**b** Isolate with *mcr-1.5*

**c** 25 *mcr-1* isolates from 20 individuals

**d** Both *mcr-1* harboring *K. pneumoniae* strains were from the same patient

**e** Both *E. coli* and *K. pneumoniae* were from the same patient

**f** Isolate with *mcr-1.6*

**g**Both *E. coli* from the same patient

**h** Isolate with *mcr-3.5*

**i** Isolate with *mcr-3*

**j** Resistance inducible *mcr-1* strain

**k** Isolate with *mcr-1.2*

**l** Non-functional *mcr-1* due to IS10R insertion

**m** Isolate with *mcr-4.2*

**Table S4:** Studies reporting co-occurrence of *mcr* with β-lactamase and carbapenemase genes.

|  |  |
| --- | --- |
| **Gene** | **Study** |
| *bla*CTX-M | Berrazeg et al. 2016; Brauer et al. 2016; Doumith et al. 2016; Elnahriry et al. 2016; Fernandes, McCulloch, et al. 2016; Fernandes, Moura, et al. 2016; Figueiredo et al. 2016; Giufrè et al. 2016; Grami et al. 2016; Kluytmans-van den bergh et al. 2016; Kuo et al. 2016; Leangapichart et al. 2016; Li A et al. 2016; Liakopoulos et al. 2016; Lim et al. 2016; Liu BT et al. 2016; McGann et al. 2016; Mohsin M et al. 2016; Ortega-Paredes et al. 2016; Paveenkittiporn et al. 2016; Payne et al. 2016; Poirel, Kieffer, Brink, et al. 2016; Rapoport et al. 2016; Robin et al. 2016; Sellera et al. 2016; Sonnevend et al. 2016; Teo et al. 2016; Unger et al. 2016; Vading et al. 2016; Yanat et al. 2016; Yang RS et al. 2016; Yang YQ et al. 2016; Yu H et al. 2016; Zeng et al. 2016; Zhang H et al. 2016; Zhang XF et al. 2016; Zhao and Zong 2016; Zheng et al. 2016; Zhong et al. 2016; Zogg et al. 2016; Zurfluh, Klumpp, et al. 2016; Zurfuh et al. 2016; Conceição-Neto et al. 2017; Donà, Bernasconi, Pires, et al. 2017; Ellem et al. 2017; Fernandes et al. 2017; Hu et al. 2017; Lima Barbieri et al. 2017; Litrup et al. 2017; Liu L et al. 2017; Liu X et al. 2017; Luo et al. 2017; Ma et al. 2017; Monte et al. 2017; Ohsaki et al. 2017; Ovejero et al. 2017; Quan et al. 2017; Roschanski et al. 2017; Runcharoen et al. 2017; Saavedra et al. 2017; Sánchez-Benito et al. 2017; Sun et al. 2017; Tian et al. 2017; Torpdahl et al. 2017; Yang YQ et al. 2017; Zheng et al. 2017; Zhou et al. 2017 |
| *bla*TEM | Anjum et al. 2016; Berrazeg et al. 2016; Brennan et al. 2016; Campos et al. 2016; Doumith et al. 2016; Duggett et al. 2016; Fritzenwanker et al. 2016; Kluytmans-van den bergh et al. 2016; Leangapichart et al. 2016; McGann et al. 2016; Nordmann et al. 2016; Paveenkittiporn et al. 2016; Poirel, Kieffer, Brink, et al. 2016; Sonnevend et al. 2016; Teo et al. 2016; Unger et al. 2016; Yang RS et al. 2016; Yu, Ang, Chin, et al. 2016; Yu H et al. 2016; Zeng et al. 2016; Zhang H et al. 2016; Zhang XF et al. 2016; Zhao et al. 2016; Zhong et al. 2016; Conceição-Neto et al. 2017; Donà, Bernasconi, Pires, et al. 2017; Hartl et al. 2017; Hu et al. 2017; Lima Barbieri et al. 2017; Litrup et al. 2017; Liu L et al. 2017; Ovejero et al. 2017; Quan et al. 2017; Roschanski et al. 2017; Saavedra et al. 2017; Tian et al. 2017; Torpdahl et al. 2017; Zheng et al. 2017; Zhou et al. 2017 |
| *bla*NDM-1 | Paveenkittiporn et al. 2016; Zheng et al. 2016; Yi et al. 2017 |
| *bla*NDM-4 | Yi et al. 2017 |
| *bla*NDM-5 | Li A et al. 2016; Mediavilla et al. 2016; Yang RS et al. 2016; Yu H et al. 2016; He T et al. 2017; Liu L et al. 2017; Quan et al. 2017; Sun et al. 2017; Zhang Y et al. 2017; Zheng et al. 2017 |
| *bla*NDM-9 | Liu BT et al. 2016; Lai et al. 2017; Yi et al. 2017 |
| *bla*KPC | Aires et al. 2017; Beyrouthy et al. 2017; Conceição-Neto et al. 2017; Di Pilato et al. 2016 |
| *bla*OXA | Beyrouthy et al. 2017; Huang et al. 2017; Pulss et al. 2017 |

**Table S5:** Studies reporting *mcr-*carrying plasmid types and chromosomally located *mcr*.

|  |  |
| --- | --- |
| **Plasmid type/chromosome** | **Study** |
| IncI2 | Hasman et al. 2015; Anjum et al. 2016; Duggett et al. 2016; Kawanishi et al. 2016; Li A et al. 2016; Liakopoulos et al. 2016; Liu BT et al. 2016; Liu YY et al. 2016; Meinersmann, Ladely, Plumblee, et al. 2016; Mohsin M et al. 2016; Mulvey et al. 2016; Perreten et al. 2016; Poirel, Kieffer, Brink, et al. 2016; Robin et al. 2016; Solheim et al. 2016; Suzuki et al. 2016; Thanh et al. 2016; Yang RS et al. 2016; Yao et al. 2016; Yu, Ang, Chong, et al. 2016; Yu H et al. 2016; Zhao and Zong 2016; Zhong et al. 2016; Cui et al. 2017; Donà, Bernasconi, Pires, et al. 2017; Ellem et al. 2017; Kim et al. 2017; Li R et al. 2017; Liu X et al. 2017; Luo et al. 2017; Mohsin J et al. 2017; Ohsaki et al. 2017; Ovejero et al. 2017; Quan et al. 2017; Snesrud et al. 2017; Tada, Uechi, et al. 2017; Torpdahl et al. 2017; Wang Q et al. 2017; Wang X et al. 2017; Yi et al. 2017; Zurfluh et al. 2017 |
| IncHI2 | Campos et al. 2016; Doumith et al. 2016; Falgenhauer, Waezsada, Yao, et al. 2016; Falgenhauer, Waezsada, Gwozdzinski, et al. 2016; Figueiredo et al. 2016; Grami et al. 2016; Haenni et al. 2016; Meinersmann, Ladely, Bono, et al. 2016; Petrillo et al. 2016; Poirel, Kieffer, Brink, et al. 2016; Tse and Yuen 2016; Unger et al. 2016; Veldman et al. 2016; Yang RS et al. 2016; Zhi et al. 2016; Zurfluh, Klumpp, et al. 2016; Borowiak, Hammerl, et al. 2017; Cui et al. 2017; Donà, Bernasconi, Pires, et al. 2017; He T et al. 2017; Li R et al. 2017; Li XP et al. 2017; Liu X et al. 2017; Luo et al. 2017; Wang Q et al. 2017; Yi et al. 2017; Yin et al. 2017; Zheng et al. 2017 |
| IncX4 | Hasman et al. 2015; Campos et al. 2016; Doumith et al. 2016; Duggett et al. 2016; Falgenhauer, Waezsada, Yao, et al. 2016; Falgenhauer, Waezsada, Gwozdzinski, et al. 2016; Li A et al. 2016; Poirel, Kieffer, Brink, et al. 2016; Veldman et al. 2016; Webb et al. 2016; Yu H et al. 2016; Zurfluh, Klumpp, et al. 2016; Aires et al. 2017; Beyrouthy et al. 2017; Conceição-Neto et al. 2017; Cui et al. 2017; Donà, Bernasconi, Kasraian, et al. 2017; Donà, Bernasconi, Pires, et al. 2017; Fernandes et al. 2017; Li R et al. 2017; Liu X et al. 2017; Macesic et al. 2017; Monte et al. 2017; Quan et al. 2017; Roschanski et al. 2017; Sánchez-Benito et al. 2017; Tacão et al. 2017; Tian et al. 2017; Torpdahl et al. 2017; Wang Q et al. 2017; Zurfluh et al. 2017 |
| IncHI1 | Yu, Ang, Chong, et al. 2016; Zurfluh, Klumpp, et al. 2016; Saavedra et al. 2017 |
| IncF | Gu et al. 2016; McGann et al. 2016 |
| IncFI | Zeng et al. 2016; Zhong et al. 2016 |
| IncFIB | Nordmann et al. 2016; Yanat et al. 2016; Zhong et al. 2016 |
| IncFII | Malhotra-Kumar, Xavier, Das, Lammens, Butaye, et al. 2016; Saavedra et al. 2017 |
| IncP | Malhotra-Kumar, Xavier, Das, Lammens, Butaye, et al. 2016; Webb et al. 2016; Zhao et al. 2016 |
| IncP-1 | Saavedra et al. 2017 |
| IncK2 | Donà, Bernasconi, Pires, et al. 2017 |
| phage-like IncY | Li R et al. 2016; Zhang C et al. 2016 |
| ColE | Borowiak, Fischer, et al. 2017; Carattoli et al. 2017 |
| chromosome | Falgenhauer, Waezsada, Gwozdzinski, et al. 2016; Unger et al. 2016; Veldman et al. 2016; Yu, Ang, Chong, et al. 2016; Yu H et al. 2016; Zurfluh, Tasara, et al. 2016; Donà, Bernasconi, Pires, et al. 2017; Luo et al. 2017; Saavedra et al. 2017; Tada, Nhung, et al. 2017; Zhou et al. 2017; Borowiak, Fischer, et al. 2017 |