

Supplemental information

Description of approach

Four isolates were collected between June and October 2012 in hospitals from two different cities, located 300 and 700 km away from Bogota, where the first Colombian *bla*_{NDM-1} was reported (Fig S1). Isolates were sent to the International Center for Medical Research and Training (CIDEIM) as part of a bacterial resistance surveillance program. Species identification was performed by Vitek-2® (bioMérieux, Marcy l'Étoile, France) and confirmed by MALDI-TOF MS on a Microflex LT instrument (Bruker Daltonics GmbH, Leipzig, Germany). Antimicrobial susceptibility testing was conducted using broth microdilution method (Sensititre panels; TREK Diagnostic systems, Westlake, OH, USA) and minimum inhibitory concentrations (MICs) were interpreted according to Clinical and Laboratory Standards Institute guidelines (3), except for tigecycline which was interpreted using the US Federal Drug Administration (FDA) criteria. Modified Hodge test (MHT), 3D bioassay using an imipenem disk, and double-disk synergy test using EDTA (DDST+EDTA), were performed as previously described (3, 4, 8).

DNA was isolated with the MasterPure Gram-positive DNA purification kit (Epicenter Biosciences) and subjected to SMRT sequencing on a PacBio RSII. Two SMRT cells of sequence data were collected per genome; sequencing resulted in ~9-10X coverage of error-corrected reads. Assembly was performed by using PacBio's HGAP assembler version 3.1. Plasmid content and *bla*_{NDM} location was corroborated using S1 nuclease / I-CeuI -PFGE and *bla*_{NDM-1} / 16S probe hybridizations (1, 6). Genes were annotated automatically using NCBI Prokaryotic Genome Annotation Pipeline (7) and manually using BLAST. Resistance genes were identified using ResFinder 2.1 (9), *in silico* MLST and plasmid typing was performed by MLST 1.8 (5) and PlasmidFinder 1.3 (2), respectively

Vitek-2® initially identified isolates as *Alcaligenes faecalis* 6200, Kpn 6234, Eco 6409 and *Acinetobacter baumannii-calcoaceticus complex* 6411. However, MALDI-TOF MS and whole genome BLAST confirmed isolate 6200 as *Acinetobacter baumannii* (Aba) and isolate 6411 as *Acinetobacter nosocomialis* (Ans).

Table S1. Antimicrobial susceptibility (MICs in mg/L) of NDM-producing clinical isolates

| Isolate | Species | MIC | | | | | | | | | | | | | | |
|---------|------------|---------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | | CSL | PTZ | FEP | FOT | TAZ | AXO | DOR | ERT | IMI | MER | AZT | AMK | CIP | POLB | TGY |
| 6200 | <i>Aba</i> | >128/64 | >128/4 | >32 | ND | >16 | ND | >64 | ND | 64 | >64 | ND | 16 | ≤0,5 | 1 | ≤0.5 |
| 6234 | <i>Kpn</i> | 64/32 | >128/4 | >32 | >16 | >16 | >16 | 1 | 4 | 2 | 1 | 32 | 64 | >8 | 0,5 | ≤0.5 |
| 6409 | <i>Eco</i> | >128/64 | >128/4 | >32 | >16 | >16 | >32 | 16 | >64 | 16 | 16 | 32 | >64 | >8 | 8 | >8 |
| 6411 | <i>Ans</i> | >128/64 | >128/4 | >32 | ND | >16 | ND | >64 | ND | >64 | >64 | 32 | 16 | 8 | 4 | 4 |

CSL: cefoperazone-sulbactam; PTZ: piperacillin/Tazobactam; FEP: cefepime; FOT:cefotaxime; TAZ: ceftazidime; AXO:ceftriaxione; DORI: doripenem; ERT:ertapenem; IMI: imipenem; MERO: meropenem; AZT:aztreonam; AMK:amikacin; CIP: ciprofloxacin; POLB:polymyxin B, TGY: tigecycline. ND: not determined

Table S2. Representative IncA/C plasmids giving significant similarity to plasmid NZ_CP010373.2

| Species | % Similarity | Comment |
|--|--------------|--|
| <i>Salmonella enterica</i> Serovar Corvallis | 83 | IncA/C Plasmid Carrying <i>bla</i> _{NDM-1} , <i>bla</i> _{CMY-16} , and <i>fosA3</i> in a <i>Salmonella enterica</i> Serovar Corvallis Strain Isolated from a Migratory Wild Bird in Germany (KR091911) |
| <i>E.coli</i> | 83 | This study |
| <i>E.coli</i> | 80 | <i>bla</i> _{KPC} -harboring IncFIA plasmid pBK32533, from <i>E. coli</i> |
| <i>Enterobacter spp.</i> | 80 | <i>bla</i> _{KPC} , <i>bla</i> _{TEM} and Metallo-beta-lactamase |
| <i>Citrobacter freundii</i> | 79 | <i>bla</i> _{VIM-4} , <i>bla</i> _{CTX-M} |
| <i>Providencia stuartii</i> | 77 | Novel 178-Kb Plasmid Carrying <i>bla</i> _{NDM-1} in a <i>Providencia stuartii</i> Strain Isolated in Afghanistan |

Table S3. Clinical features of patients infected with *bla*_{NDM-1} isolates

| Isolate | Species | City of collection | Patient Origin | Age (yr) | Sex | Infection type ^a | Co-morbidity ^b | LOS (days) | Days prior to positive culture | Source | Invasive interventions ^c | Previous hospitalizations ^d | Clinical Outcome | Travel history ^e |
|---------|------------|--------------------|----------------|----------|-----|-----------------------------|---------------------------|------------|--------------------------------|--------|-------------------------------------|--|------------------|-----------------------------|
| 6200 | <i>Aba</i> | Neiva | Caquetá | 60 | F | IAB-PNEU1-LCBI | DM, RA | 48 | 34 | Blood | SURG | Yes | Dead | NO |
| 6234 | <i>Kpn</i> | Neiva | Huila | 53 | M | ND | None | 9 | 6 | Blood | None | Yes | Alive | NO |
| 6409 | <i>Eco</i> | Pasto | Putumayo | 74 | F | PNEU1 | DM | 28 | 15 | Urine | SURG, FC | Yes | Dead | NO |
| 6411 | <i>Ans</i> | Pasto | Putumayo | 76 | M | Sepsis | None | 13 | 7 | Urine | SURG, FC, CL, INT | Yes | Dead | NO |

^a IAB: intra-abdominal infection, not specified elsewhere.; PNEU-1: Clinically-defined pneumonia; LCBI: Laboratory-confirmed bloodstream infection

^b DM: diabetes mellitus; RA : Rheumatoid arthritis

^c SURG: Surgery ; CL : Central line ; INT: Intubation; FC: Foley catheter

^d Healthcare exposures in past year

^e Travels in the past 12 months/ Close personal contact with people (e.g. relatives, co-workers) who have traveled in the past 12 month

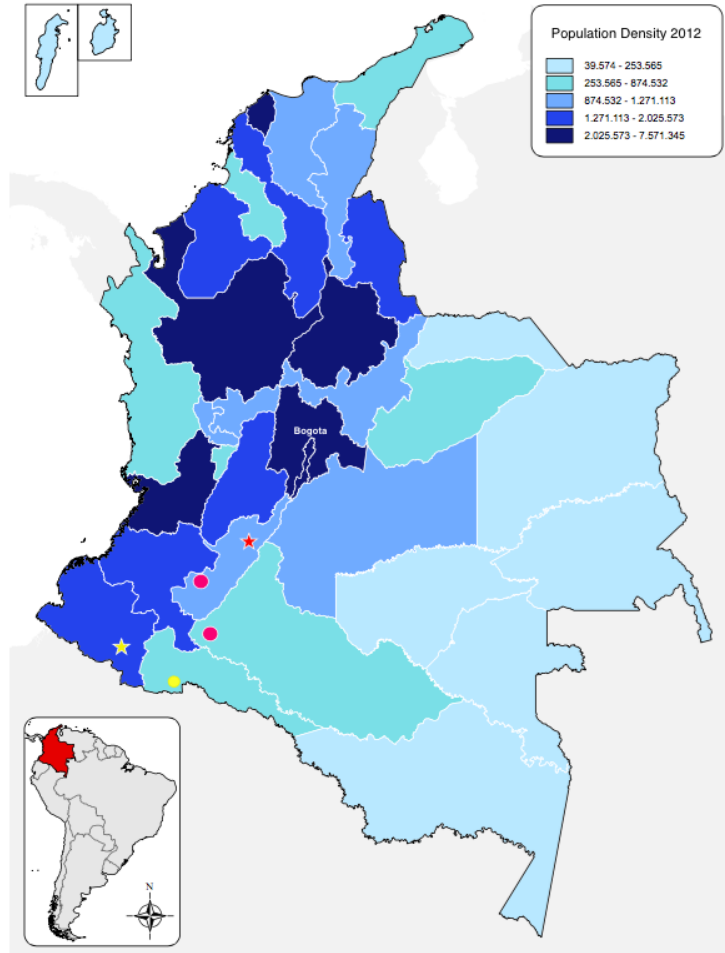


Figure S1. Map of Colombian population density. Circles indicate location of patients' origin (circle) and hospital where they were treated (star)

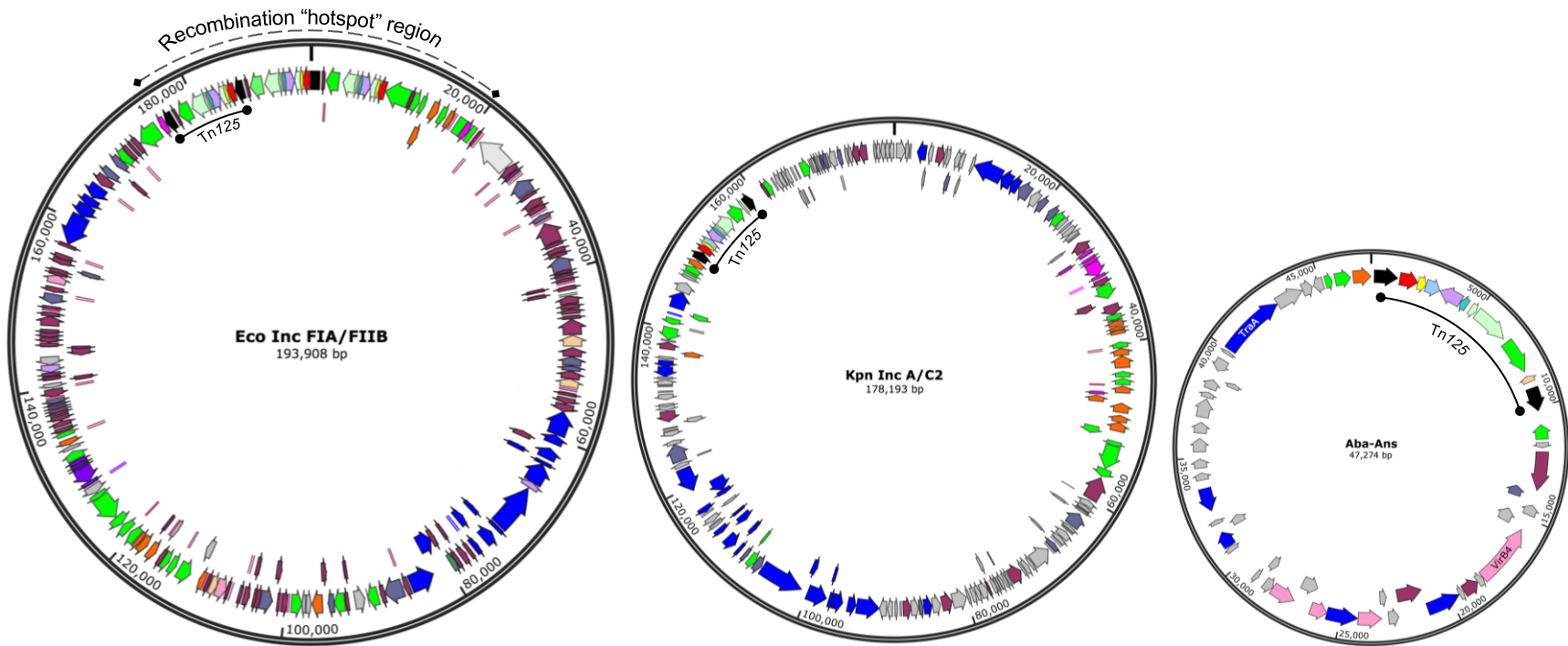


Figure S2. *bla*_{NDM-1} carrying plasmids. Selected genes are highlighted. Green, mobile genetic element-related genes; blue, genes involved in plasmid mobilization; pink, type IV secretion system; black, ISAb125; yellow, *bla*_{NDM-1}; red: *ble*_{MBL}

References

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