**Table A: Supplementary Information on Methods**

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| 1. **Categorization and analysis of potentially pathogenic bacteria**

Several steps were taken to develop a consistent dataset of potentially pathogenic bacteria during data cleaning phase (Figure 1). The steps includes; (a) removed inconsistencies in reporting polymicrobial data (i.e. polymicrobial was codes as a specific organism in the data entry form, therefore, was recorded as polymicrobial, probably the contamination specimen, similarly, pathogens recorded as mixed organisms were classified as polymicrobial and removed), (b) deleted non-bacterial culture results (i.e., *Candida* /*Yeasts species* ) and, (c) bacterial non-pathogenic bacteria (i.e., *Lactobacillus*, *Corynebacterium*, *Gardnerella* *vaginalis)*.The final dataset included 5,167 urine cultures from 27 NHs that were positive for bacteria that are are known urinary tract pathogens. The potentially pathogenic bacteria were further classified into 14 broad categories eliminating inconsistencies in naming and reporting bacteria. For instance *Streptococcus* *agalactiae* and *Streptococcus group B* categorized into a single category named Streptococcus; *Proteus* *mirabillis*, *Proteus vulgaris* and *Proteus species* into a single category Proteus *species* etc.1. **Categorizations of antimicrobials to calculate multi-drug resistance (MDR)**

Five classes of antimicrobials were derived (20, 21), they are:1. Extended-spectrum cephalosporin which included third and fourth generation cephalosporin (ceftriaxone or cefixime or cefotaxime or cefpodoxime or cefdinir or ceftazidime or cefepime)
2. Fluoroquinolones included ciprofloxacin or levofloxacin (for E*nterobacteriaceae* only ciprofloxacin was included base on the literature )
3. Aminoglycosides includes amikacin or gentamycin or tobramycin
4. Carbapenems included doripenem, imipenem, ertapenem, meropenem
5. Piperacillin or piperacillin/tazobactam.

Pathogens with intrinsic resistance to antimicrobial agent or categories were excluded before MDR was calculated. For example, *Providencia* *Rettgeri, Providencia Stuartii* are intrinsic resistance to gentamycin and tobramycin hence were deleted before MDR was calculated for *Enterobacteriaceae.*  |