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**Understanding the clinical importance of AmpC-producing *E. coli* through whole genome sequence data**

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**Background:** AmpC-producing *Escherichia coli*, especially by the production of CMY-2 may be overlooked as there has no reliable phenotypic test for confirmation as there is for ESBL producers. At the same time, the prevalence of AmpC-producing *E. coli* is generally not as high as ESBL-producing *E. coli*. Here, we described the genomic properties of AmpC-producing *E. coli* to reveal their clinical significance.

**Material/methods:** Whole genome sequence (WGS) data of 66 non-repetitive clinical AmpC-producing *E. coli* collected from South East Queensland, Australia between 2008 and 2015 which were previously analysed for the antibiotic resistance mechanisms were analysed for the virulence determinants commonly associated in with uropathogenic *E. coli*. The virulence properties were determined by annotation using Rapid Annotation using Subsystem Technology. The number of genes per sub-systems of virulence mechanisms was analysed.

**Results:** As we previously reported, the majority of the isolates were CMY-2-like producers (91%). *E. coli* harbouring *bla*<sub>DHA-1</sub> were identified (9%). All but two isolates were isolated from urine specimens. The number of identified genes relevant to adhesion, such as accessory colonization factor and mediator of hyperadherence was similar between CMY-2-like and DHA-1-producing *E. coli*. Overall, DHA-1-producing *E. coli* were had higher number of genes relevant to antibiotic resistance and toxin production than CMY-2-like-producing *E. coli*, 149 and 117 genes, respectively. Similarly, relevant

genes for iron acquisition and siderophores, i.e siderophore enterobactin and aerobactin, which are essential for the virulence of uropathogenic *E. coli* were higher amongst DHA-1- than CMY-2-like-producing *E. coli*, 83 and 53 genes, respectively. Further, the genes encoding motility especially flagellar motility were higher amongst DHA-1 than CMY-2-like producing *E. coli*, 144 and 87 genes, respectively.

**Conclusions:** The higher number of genes responsible to virulence attributes ranging from adhesion, antibiotic resistance, iron acquisition and motility amongst DHA-1-producing *E. coli* indicate a plausible explanation of the clinical importance of DHA-1-producing *E. coli* in comparison to CMY-2-like-producing *E. coli*.