

A sentinel testing survey of plasmid-mediated (transferable) colistin resistance among *Enterobacteriaceae* in tertiary-care hospital



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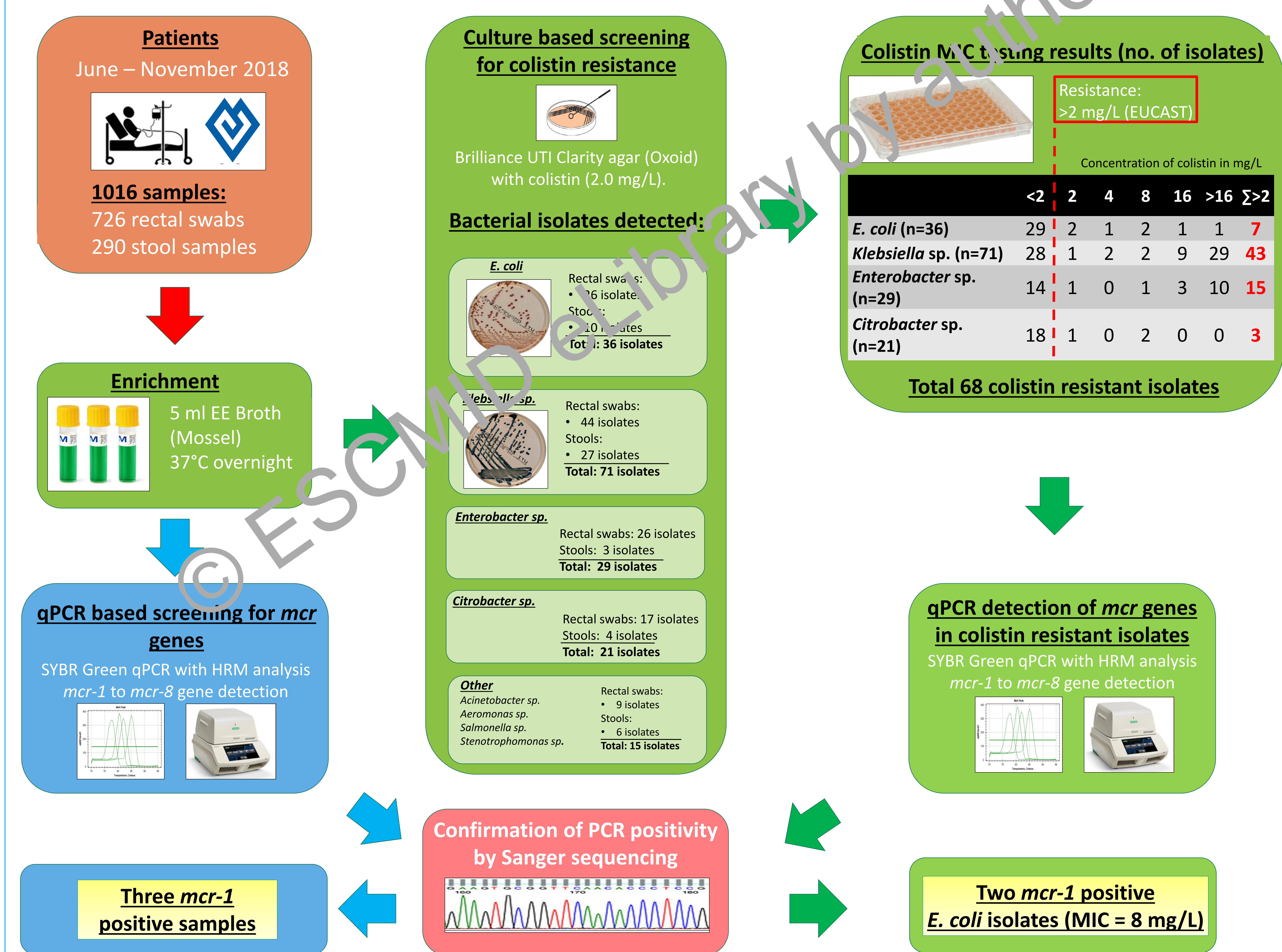
Background:

The increasing prevalence of antibiotic resistance among gram-negative bacteria lead to renewed interest in colistin. Currently, colistin is used as a last line option to treat severe infection caused by multidrug-resistant gram-negative pathogens in hospitalised patients. The emergence of the plasmid-mediated (self-transferable) colistin resistance in livestock and humans is now a public health topic of the utmost importance because its spread could lead to outbreaks of virtually untreatable infections. We aimed to perform a sentinel testing survey to gather data on the prevalence and/or spread of *Enterobacteriaceae* carrying *mcr*-mediated colistin resistance in one Czech tertiary care hospital.

Material and Methods:

Between June and November 2018, rectal swabs or faecal samples from patients hospitalized in Motol University Hospital, Prague, Czech Republic were enriched in 5ml *Enterobacteriaceae* enrichment broth (Mossel) overnight and the enriched cultures were tested for the presence of *mcr-1* to 8 genes by multiplex qPCR assays. The enriched cultures were also inoculated onto selective agar Brilliance UTI Clarity agar (Oxoid) supplemented with colistin (2.0 mg/L). Bacterial isolates of *Enterobacteriaceae* were retested for the presence of *mcr-1* to 8 genes and MIC for colistin was determined by broth microdilution method. Intrinsically resistant species were excluded from analysis.

Results:



Conclusions:

To the best of our knowledge, this is the first study on the prevalence of *mcr-1* to 8 in tertiary-care hospital settings in the Czech Republic. We identified the first occurrence of *mcr-1*-mediated colistin resistance in two Czech patients. The *mcr*-gene carriage rate in hospitalized patients was low (0.3% of all samples) compared to the carriage of colistin resistant isolates with acquired mechanism of resistance (6.5%).

Acknowledgment:

Supported by Ministry of Health of the Czech Republic, grant nr. NV18-09-00254. All rights reserved.