10th International Conference on
Infectious Diseases, Bacteriology and Antibiotics
May 24-25, 2023 | Webinar
Volume : 11

Prevalence of antibiotic resistance genes in the oral cavity and mobile genetic elements that disseminate antimicrobial resistance: A systematic review

Dr. Laura Brooks
King's College London

Statement of the Problem: Across Europe in 2015, 33110 death were attributed to antibiotic resistant bacterial infections. UK dentists are responsible for 10% of all antimicrobial prescriptions and so appropriate prescribing to limit the spread and development of antimicrobial resistance is essential. Purpose of this study: To determine the prevalence of all known antibiotic resistance genes (ARGs) in the oral cavity and review what mobile genetic elements (MGEs) are important in disseminating them. Methodology: Studies describing the prevalence of ARGs in the oral cavity and the methods of spread of antimicrobial resistance were identified in the electronic databases Embase, Medline and the Cochrane Library using 'free text' and 'MeSH' terms from January 2000 to November 2020. Other journals were hand searched. Primary and secondary screening was completing using inclusion and exclusion criteria. Findings: From 1509 articles identified, 44 met the selection criteria. The most prevalent ARG in the oral cavity was tet(M). The mode of birth and a child's environment in early life can influence which genes are obtained. Countries with higher consumption of antibiotics generally have higher numbers of ARGs. Enterococcus faecalis is a reservoir of resistance especially in root canals indicating the need to consider other approaches in dentistry like CRISPR-Cas and phage therapy to remove ARGs. Poor oral hygiene can select for more pathogenic bacteria that carry ARGs, which can transfer to pathogenic organisms. The most common MGE that transfers ARGs is the conjugative transposon Tn916. Conclusion & Significance: 50% of the studies in the review were low quality. Recommendations for future work include: use of larger sample sizes, investigation of a broader range of ARGs, improved methodologies and reporting to improve quality of genetic testing in microbiology, randomization of subject selection.

Biography

Laura completed her undergraduate dental training at King's College London in 2010 and has since worked in general dental practice in the NHS in the UK and private practice abroad in Australia and Singapore as well as completing dental core training in Maxillofacial Surgery and Restorative Dentistry. In 2016 she completed a MSc in Conservative Dentistry from the Eastman's Dental Institute, University College London and is currently working in the Community Dental Service in East London as a senior dental officer.

laura.brooks14@nhs.net

Abstract received : October 21, 2022 | Abstract accepted : October 21, 2022 | Abstract published : 29-05-2023