

SOP 16 Dental antimicrobial stewardship and Infectious disease and multidrug resistance organisms (MDRO)

Antimicrobial resistance is a major public health issue and has become a global concern. The World Health Organisation informs that about 2 million people become infected with bacteria resistant to antibiotics each year. There are estimated 25,000 deaths in Europe each year from multidrug resistant organisms. A high rate of antibiotic prescribing is associated with increasing levels of antibiotic resistance in hospital and community settings. This can lead to the need for more expensive and broader spectrum antimicrobial use to treat common infections. World experts believe it is unlikely that major new classes of antibiotics will be developed in the near future. Therefore it is necessary that existing classes of antibiotics are managed to reduce the effect of emerging resistance and it is our collective responsibility to ensure correct use of antibiotics.

Dental antimicrobial stewardship is concerned with promoting appropriate antimicrobial selection i.e. the optimal drug, dose and duration. Evidence based dental antimicrobial guidelines have been developed by the Dental Antibiotic Stewardship Working Group, which is a subgroup of the Primary Care Antimicrobial Guideline Expert Advisory Committee associated with the HSE Antimicrobial Resistance and Infection Control Team as a resource to dentists. The dental guidelines facilitate antimicrobial prescription in primary dental care in order to minimise patient adverse events and minimise antimicrobial agent resistance. The guidelines provide advice, taking account of best available evidence. Widespread circulation of the dental guidelines was undertaken by the Dental Council and National Oral Health Office.

Antibiotics are prescribed by dentists for treatment, as an adjunct to treatment and for the prevention of infection. Indications for the use of systemic antibiotics in dentistry are limited, as most dental conditions are best managed by local measures. IPC practices are an important part of an effective response to antimicrobial resistance. Preventing infections reduces the need for antimicrobials and the opportunity for resistance to develop. Vaccination can also reduce antimicrobial resistance through preventing infectious diseases.

16.1 Principles of Antimicrobial Treatment:

Before prescribing antimicrobials clinicians should also consider the following:

- Consider local measures which may obviate the need for an antimicrobial therapeutic agent and prescribe an antibiotic only when there is likely to be a clear clinical benefit.
- Refer to HSE Dental Antibiotic Guidelines
<https://www.hse.ie/eng/services/list/2/gp/antibiotic-prescribing>

- Previous antimicrobial treatment which has been prescribed for the current and previous infections.
- The allergy status of the patient.
- Concurrent medication that the patient is taking.
- Patient's medical history.
- Weigh the patient if appropriate to do so (under weight or over weight for age band).
- It is important to recognise that antibiotics should be administered effectively; the effective ingredient at the correct concentration at the appropriate frequency for the correct duration i.e. avoid under dosing or overdosing -
 - Under dosing has been shown to be associated with increasing resistance. This is especially true of the Macrolides classes e.g. (erythromycins).
 - Overdosing may lead to toxicity issues.
- As antibiotics are used to reduce existing infection, follow up should be arranged for each patient to ensure that infections have resolved and that necessary treatment is completed to resolve the source of infection and to reduce the potential for reinfection and second antibiotics.
- Clinicians should also make patients aware of what they will be taking, why they are being given a prescription, how to identify adverse reactions and who to contact in case of difficulty.

16.2 Infectious disease and multidrug resistance organisms (MDRO)

16.2.1 Carbapenemase Producing Enterobacterales (CPE)

- *CPEs are several Gram-negative bacterial species that can colonise the gut including Klebsiella pneumoniae, Escherichia coli, Enterobacter aerogenes, Enterobacter cloacae complex and Klebsiella oxytoca. CPE bacteria are resistant to carbapenem and often-other classes of antibiotics. Bloodstream infections caused by CPEs have an associated mortality of approximately 40%.*
- *CPE sheds in faeces, traces of which are often invisible*
- *Spreads from person to person via faecal oral route*
- *Can be transferred by hands and then to other surfaces by touch*
- *Transferred from unclean hands or contaminated surfaces/food/ utensils to the mouth*

CPE Exposure: Has been identified in a healthcare facility, more likely in-patient in an acute hospital location with a person shedding CPE or an environment contaminated with CPE. Multiple recent outbreaks of infection caused by CPEs in many countries have been linked directly with contaminated wash hand basin and sink drain outlets in hospitals. This is particularly important with units in which the tap water impacts the drain outlet.

CPE Contact: Assessed by IPC Practitioner/Public Health Doctor as having had significant exposure and likely to be at higher risk than most people of carrying CPE because of that exposure

It is appropriate to treat patients carrying CPE in the dental surgery.

There should be consistent application of Standard Precautions to reduce risk of transmission:

- Hand Hygiene done properly at the right time.
- PPE- Gloves, aprons, masks, goggles/visors - when in contact with body fluids.
- Clean environment.
- Clean equipment between uses.
- Management of sharps.
- Management of laundry and waste.

Further guidance available here:

<https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/hcai/resources/acute-hospital-cpe-toolkit/guidance-for-community-healthcare-workers-caring-for-people-colonised-or-infected-with-antimicrobial-resistant-organisms-including-cpe.pdf>

16.2.2 Methicillin Resistant *Staphylococcus aureus* (MRSA)

- It is appropriate to treat patients carrying the MRSA organism in the dental surgery.
- There is no requirement to separate the patient from other people in the waiting room.
- MRSA is spread by direct and indirect contact so in theory there is a chance that a staff member can acquire MRSA onto their skin or uniform following close contact with the patient.
- Standard precautions and a plastic apron should be used to protect uniform from contamination. If a patient is colonized with MRSA wearing of an apron can be risk assessed.
- The most fundamental element of managing the risk of spread of microorganisms is the consistent application of Standard Precautions in all healthcare settings and with all people all of the time.
- Further guidance on outpatient day care for persons colonised with Anti-Microbial Resistant Organisms (AMRO) is available with following link:
http://www.hpsc.ie/az/microbiologyantimicrobialresistance/strategyforthecontrolofantimicrobialresistanceinirelandsari/carbapenemresistantenterobacteriaceae/rguidanceandpublications/Hospital%20Out%20Patient%20and%20Day%20Care%20for%20people%20with%20AMRO%20or%20CPE_15Sept2018.pdf

16.2.3 Creutzfeldt-Jakob disease CJD and Transmissible spongiform encephalopathy TSEs

- Seek the guidance of a specialist consultant microbiologist or Infectious Disease Physician prior to commencing clinical treatment.
- Further information is available at <https://www.hse.ie/eng/health/az/b/bse/causes-of-creutzfeldt-jakob-disease.html>

16.2.4 Measles, mumps and tuberculosis

- Infection with measles, mumps and tuberculosis (TB) can occur by airborne transmission of respiratory secretions. In addition, TB has been transmitted as a result of dental treatment
- Patients suspected with suffering from any of these illnesses should have their dental treatment deferred until they are no longer infectious.
- In an emergency situation transmission-based precautions must be used. Seek the guidance of a specialist consultant microbiologist or Infectious Disease Physician prior to commencing clinical treatment.

16.2.5 Herpes Simplex (cold sore)

- Patients who have a history of recurrent herpetic lesions should be advised to contact their oral health care provider if they have a herpetic lesion present before their appointment.
- Rescheduling of the appointment prevents the inconvenience of dismissing the patient should they attend with a lesion.
- No elective treatment should be performed and treatment should be limited to relief of pain/infection.

16.2.6 Patients with fever of uncertain origins

Patients with history of fever (of uncertain origin) above 38 degrees centigrade and have travelled outside of Europe need to be medically assessed prior to dental treatment.

- A patient with a fever or history of a fever and arrived from an Ebola affected area within 21 days of onset of symptoms can be referred for further assessment in hospital, without undertaking a clinical examination. A “talk, don’t touch” approach is recommended.

Further information and patient leaflets available here;

<https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/hcai/>