SECTION 11.1
EXTENDED SPECTRUM BETA LACTAMASE (ESBL)

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**Introduction**

Enterobacteriaceae are a group of gram negative bacteria that commonly live in the bowel and include *E.coli* and *Klebsiella pneumonia*. *E.coli* are very common bacteria that normally live harmlessly in the gut and can cause infections, most commonly urinary tract infections (UTI’s). Most urinary tract infections get better without treatment, or are easily treated with antibiotics. However, UTI’s can progress to cause more serious infections such as septicemia bloodstream infection.

ESBL’s (Extended-Spectrum Beta-Lactamases) are enzymes produced by some types of bacteria, including some strains of *E. coli*, which make these bacteria resistant to most beta-lactam antibiotics (such as penicillins and cephalosporins). ESBL-producing *E. coli* and other bacteria may also be resistant to other classes of antibiotics. They are therefore more resistant to antibiotics and so the infections that they cause are harder to treat. In the last number of years ESBL’s have been detected with increasing frequency in residents admitted to Irish hospitals and in nursing homes.

**Risk Groups**

As referred to in the introduction to management of multi drug resistant organisms (MDRO’s). section 10.8.

**Signs and Symptoms**

The majority of residents/clients colonised with ESBL’s do not have any signs or symptoms present. When residents/clients have an infection caused by an ESBL producing organism signs and symptoms will vary depending on where the infection is present.

**Mode of Transmission**

The gastrointestinal tract is the most likely site for asymptomatic colonisation with ESBL producing bacteria and can spread from

- person to person directly or indirectly via faecal contamination of hands and objects which are then introduced into the mouth,
- the hands of patients, visitors and healthcare workers after contact with an infected person if the hands aren’t cleaned properly.

**Infection Prevention and Control Measures**

- Standard Precaution must be used when caring for all clients regardless of known or unknown status in respect of ESBL’s.
- Antimicrobial resistance is an evolving process and advice should be sought from the local Infection Prevention and Control Nurse in relation to the infection control management of any resident colonised or infection with a MDRO. In long term care facilities adherence to Standard Precautions is recommended for the care of all those colonised with ESBLs and other MDROs. The need for Contact Precautions will be advised on by the Infection Prevention and Control Nurse.

**Hand Hygiene**

- Good hand hygiene as per the WHO Moments for Hand Hygiene reduces the risk of spread of any multi drug resistant organism including ESBL’s. Alcohol hand gel is recommended for use on visibly clean hands.
- Residents should be facilitated to carry out hand hygiene after using the toilet and before meals.
**Cleaning and Decontamination of Equipment**
Routine cleaning with detergent and warm water is sufficient. If items are soiled with blood or bodily fluids clean and decontaminate in accordance with the manufacturers instructions, immediately after use and before use on another resident/client- For the majority of items clean using a neutral detergent and water and disinfect using a hypochlorite 1,000 parts per million (ppm) e.g. Klorsept/Milton, alternatively use a one step product -combined detergent and hypochlorite 1,000 ppm e.g. Chlor clean. Rinse and dry the device.

**Cleaning and Decontamination of the Environment**
Good routine environmental cleaning helps reduce the spread of all multi drug resistant organisms including ESBL’s. The need for environmental disinfection will be advised upon by the local Infection Prevention and Control Nurse.

**Placement**
- Residents colonised with ESBL’s should not be declined admission to residential and community facilities including day services.
- Residents colonised with ESBL’s should not be placed adjacent to residents with devices such as urinary catheters and/or wounds
- All residents with diarrhoea should be cared for in a single room with en-suite facilities where available.

**Additional Precautions**
- Devices such as urinary catheters should be removed where possible.
- It maybe necessary to adhere to Contact Precautions where a resident has infection which is caused by ESBL. The need for contact precautions should be advised upon by the local Infection Prevention and Control Nurse.

**Infection Prevention and Control in the Home Setting**
- In the home setting no special precautions are required. Usual personal hygiene and general home hygiene is sufficient. Clients should be reminded of the importance of good hand hygiene.
- All healthcare workers providing care in the home must adhere to Standard Precautions as detailed in Section 3
- Patients information leaflets for ESBL’s are available on www.hpsc.ie

**Diagnosis**
ESBLs will be identified on clinical samples such as urine specimens.

**Treatment**
Clinical judgement is required as to whether an ESBL producing organism is causing infection. In many instance antibiotics will not be required. Specialist advice from the Consultant Microbiologist should be sought where treatment is indicated as options will be limited. Decolonisation regimes for ESBL’s are not advised.

**Transportation/Resident Movement**
Standard Precautions apply to the transportation or movement of residents with an ESBLs If a resident with an ESBL needs to be transported by ambulance, his/her status should also be communicated at the time of booking so appropriate arrangements can be made. A risk assessment of the resident/client to be transferred and the other resident/client being transferred needs to be carried out.
**Communication**

Information regarding ESBL status should be documented on the patient transfer form and communicated verbally to the receiving unit prior to transfer. Infection Prevention and Control Nurses should be contacted for further advice.

**Antibiotic Use**

Antibiotics must be prescribed only when needed, in the right dose, for the right duration, to reduce the chances of bacteria becoming resistant.

**References and Bibliography**

Health Protection Surveillance Centre. (2011) DRAFT Guidelines for Control and Prevention of Multi-drug resistant organisms (MDRO) excluding MRSA in the healthcare setting.

Health Protection Surveillance Centre ESBL Factsheet

http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=3036