HICMR
HEALTHCARE INFECTION CONTROL MANAGEMENT RESOURCES

HICMR INFORMATION SHEET: OCTOBER 2009

EXTENDED SPECTRUM BETA LACTAMASE (ESBL) PRODUCING ORGANISMS

1. What are ESBLs?

- ESBL's (extended spectrum beta lactamases) are enzymes that may be produced by Gram negative bacteria. They were first reported in 1983.
- These bacteria have become resistant to beta-lactam antibiotics, by their ability to produce an enzyme (beta-lactamase) which can break down the antibiotics, (eg. penicillins and cephalosporins).
- ESBL producing organisms not only have the ability to break down beta-lactam antibiotics but they are also able to transfer these resistant enzymes to other microorganisms via plasmids.
- The bacteria may also be resistant to other antibiotics such as aminoglycosides, (eg. Gentamycin, tobramycin and quinolones such as ciprofloxacin).
- The most common ESBL producing organisms include
  - Klebsiella spp
  - Enterobacter spp
  - Acinetobacter spp
  - Escherichia coli.

2. How Are They Spread?

- ESBL producing organisms usually colonise the bowel without causing signs of infection.
- They are capable of causing infections either locally (eg. wounds, UTI), or systemically (eg. bacteraemia / septicaemia).
- They are spread by the faecal oral route and by contact via the hands of healthcare workers (HCWs), contaminated items or equipment.

3. What Are The Risk Factors?

Patients at most risk of ESBLs are those who have:

- Been in an Intensive Care Unit.
- A long term illness or are immunocompromised, eg. premature babies
- Been on many different types of antibiotics.
- Had Surgical procedures
- An indwelling urinary catheter/Nasogastric tube.
- Had an organ transplant.
- Frequent/long term antibiotic therapy.

4. How Are ESBLs Diagnosed?

- Detection of ESBL producing organisms is by Microbiology Laboratory. Surveillance noting increasing rates of treatment failure with extended- spectrum cephalosporins.

5. How Can HCWs Prevent Transmission?

- To prevent the spread of these organisms Additional Precautions (Contact Precautions) are recommended including:
  - Patients should be isolated in a single room or cohorted with other patients colonised or infected with the same ESBL producing organism.
  - Hand hygiene (HH) with soap and water or an alcohol based handrub (ABHR) prior to and after attending to patients is essential, as per the HHA *Five Moments Of Hand Hygiene*.
  - Gowns and gloves should be worn for direct patient contact, and masks/goggles as per standard precautions is essential.
  - Parents and visitors should be educated in the appropriate precautions to be taken.
  - For more detailed information regarding management refer HICMR Policy *Multi-resistant Organisms (MROs), including MRSA and VRE.*
- It is important that patients are aware that they need to advise the doctors and nursing staff of their ESBL history on subsequent visits. They may need to be isolated again and further swabs taken for clearance. An alert mechanism in the patient's history should be used wherever available.
- Routine reprocessing of equipment and cleaning of equipment/environment should be employed.
- Judicious use of antibiotics by physicians should be encouraged including Pharmacy/Microbiology input into restricting broad-spectrum antibiotics.

Refer HICMR Policies: *Standard Precautions and Additional Precautions.*