



Essex Health Protection Unit

Further advice on any of the areas discussed or copies of this sheet may be obtained from the unit:

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Factsheet on ESBLs

What does ESBL mean?

ESBL stands for extended spectrum beta (β) lactamase. Beta lactamases are enzymes produced by many species of bacteria which destroy one or more antibiotics. It is one of the ways in which bacteria develop resistance. ESBLs are unusual in that as the name suggests they break down an exceptionally wide variety of antibiotics. This can cause problems when treating infected patients, as doctors do not usually use the few remaining effective antibiotics as a first choice. This can complicate and/or delay appropriate treatment.

Although people sometimes talk about ESBLs, strictly speaking they should say which bacterial species has the ESBL, for example ESBL-producing *E coli*.

Where do these ESBL producing bacteria come from?

We are not exactly sure. It seems that the genes for ESBL production arose in one particular bacterial strain by natural mutation and then spread to many others, especially *E coli*. This may have happened first in animals or humans.

How are they spread?

There is some evidence suggesting they can be found in the faeces of farm animals as well as some humans. This means that it is possible that contamination of food, e.g. raw meat, by bacteria from animal faeces has led to infections in humans.

It is also possible that these bacteria are passed from person to person on contaminated hands (of patients or health care workers) or by poor practice in urinary catheter care.

In addition the genes coding for the production of ESBLs can be passed between bacterial species, so it is not just the spread of a single strain of bacterium which matters but the spread of genes between strains as well.

Spread is made easier if the bacteria normally present in the gut (and which help protect against invasion by other strains) are killed by taking antibiotics. Use of

some newer antibiotics appears to predispose patients to infection with ESBL-producing bacteria which may explain why this has become an issue now.

Who gets ESBL producing bacteria?

The majority of those with an ESBL-producing strain are over 65 years old and female. The most common specimen with an ESBL-producing bacterium is urine; often these patients have had multiple courses of antibiotics for repeated infections.

It is possible that the ESBL-producing bacteria are acquired months or even years before they cause infection. They live harmlessly in the gut until the patient becomes ill and requires antibiotics.

How can we control spread?

Effective control measures are less well understood than for other types of antibiotic resistant bacterium, for example MRSA.

Until we know more about how to control these bacteria, Essex HPU suggest that:

- Care homes and hospitals should ensure that hand washing and other infection control procedures are rigorously enforced
- Individuals known to be colonised should not share a room with someone with a urinary catheter
- The use of antibiotics is minimised to help to reduce spread.

In some circumstances patients with ESBL-producing bacteria will be isolated whilst in hospital. This is not usually practical in the community.

Can a person be cleared of an ESBL-producing strain?

Sometimes the strain will be lost naturally.

In those with serious illnesses, ESBL-producing strains may be present for months or even years. Use of antibiotics probably does not help; antibiotics can treat infections but do not necessarily eliminate the bacteria from the body especially if there are some in the gut.

Should the nursing home refuse admission to these patients?

No, there is no evidence that this would help reduce spread. It is just as likely that affected patients will be admitted to the home before the ESBL-producing strain is identified.

Good infection control practices should be rigorously enforced at all times for all patients.

