


# EXTENDED SPECTRUM BETA LACTAMASE (ESBL) *E. coli*

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## Introduction

*Extended-spectrum beta-lactamase (ESBLs) are enzymes (proteins produced by living organisms); they are most commonly produced by the bacteria E. coli and Klebsiella, normally found in the bowel. E. coli is a common bacteria, and most strains live harmlessly in the gut; however, other serotypes of E. coli can cause infections in humans, particularly urinary tract infections (UTIs). These infections can sometimes progress to cause more serious infections such as blood poisoning, which can be life threatening. ESBL-producing strains of the bacteria are more resistant to antibiotics, which makes the infections harder to treat; moreover, ESBLs have the ability to transfer their resistance to the same or other bacterial species in the bowel. In many instances, only two oral antibiotics and a very limited group of intravenous antibiotics remain effective. Risk factors and the types of persons most at risk include the following:*

- ? *Elderly people*
- ? *Frequent admissions to hospital*
- ? *Long-term or frequent antibiotic therapy*
- ? *Urinary catheterisation*
- ? *People with poor immunity against infection*
- ? *People living in nursing or individual homes.*

*It is spread by*

- ✗ *Poor hand washing (spread from hand to mouth)*
- ✗ *Poor personal hygiene*
- ✗ *Direct contact with infected urine*
- ✗ *Indirect contact with contaminated surfaces.*

Confirmation of ESBL is by microbiological sample (e.g. urine, stool) taken from the site of infection. If the specimen result is positive then staff need to assess if the site is colonised or infected.

## Colonisation

If there are no clinical signs of infection and no presenting symptoms then standard precautions should be followed. If the individual has colonisation in the urine then separate toilet facilities should be provided.

## Infection








Presenting clinical signs of infection can include

- ⚠ *Common urinary symptoms, e.g. frequency, urgency, incontinence*
- ⚠ *Delayed wound healing, redness, pus in the wound*
- ⚠ *Productive cough in chest infections*
- ⚠ *Agitation or confusion*
- ⚠ *Pain.*
- ⚠ *This can progress to blood poisoning (“bacteraemia”).*

## Procedure

If clinical signs of infection are present then follow the flow charts (see appendices 1, 2 & 3). Where ESBL infection has been confirmed, treatment with antibiotics should be commenced according to microbiological sensitivities. General management includes the following:

- ⚠ *Individuals should have a designated toilet or commode for their use only*

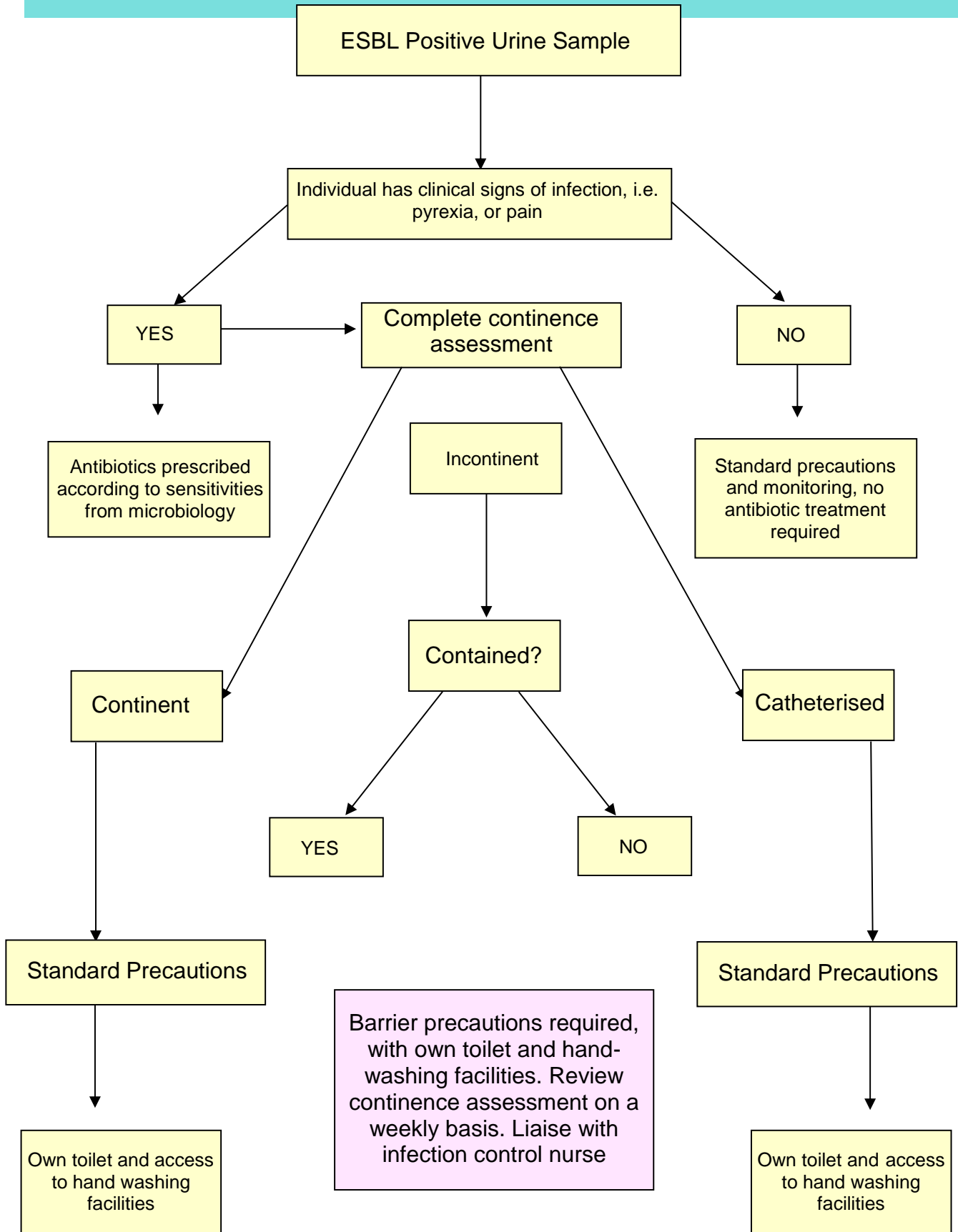
-  Washing and drying facilities should be available
-  Hands should be washed and dried, for example after using the toilet and before eating meals
-  Maintain good personal hygiene
-  Visitors should be educated in regards to hand washing
-  Provision of separate clinical waste and laundry facilities
-  Barrier precautions will depend on the individual's risk factors present
-  Provision of PPE, i.e. gloves and aprons.

*Staff should inform the infection control nurse of any cases of ESBL. The appropriate people should be notified if any such individual has clinic or hospital visits, or is transferred or discharged.*

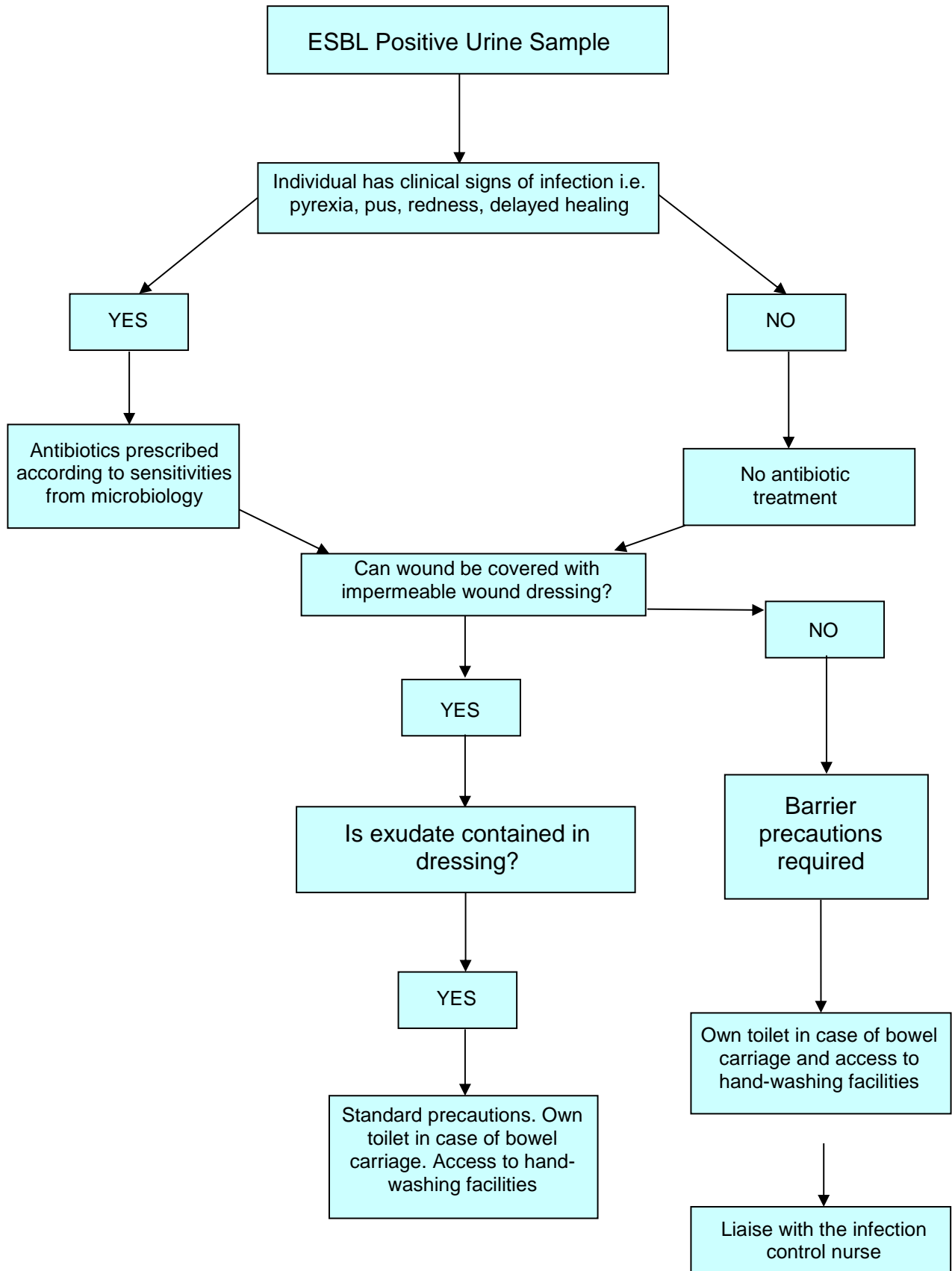
#### ***Further Guidance***

***NICE guidelines [CG139] Published date: March 2012 Infection: Prevention and control of healthcare-associated infections in primary and community care***

**ESBL**  
**Assessment of Patient with Extended-spectrum Beta-lactamase (ESBL)**  
**Positive Urine Sample**



**ESBL**  
**Assessment of Patient with Extended-spectrum Beta-lactamase (ESBL)**  
**Positive Wound Sample**



## APPENDIX 3

### ESBL

#### Assessment of Patient with Positive Extended Spectrum Beta Lactamase (ESBL) Sputum Sample

