Reducing Gram negative bacteraemia cases

Dr Jyothi Rao

Dee May IPC Specialist

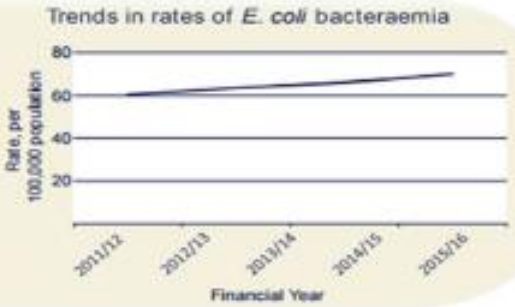
- In May 2017 Government announced an ambitious plan to halve health care associated Gram negative bacteraemia by 2021
- Initially to achieve 10% reduction in E. coli BSIs during 2017/18
- Focus is on reducing E. coli bacteraemia which cause 55% of Gram negative bacteraemia infections
- E. coli BSIs have increased in number year on year (20% increase in last 5 years)
- As approximately three-quarters of E. coli BSIs occur before people are admitted to hospital, reduction requires a whole health economy approach.

Benefits of reducing GNBSIs

- Improved patient safety through reduced infection rates, mortality, length of stay and appropriate antimicrobial prescribing
- Improved patient experience through the prevention of avoidable infections and reduced length of inpatient stay
- Improved population health through reduced antimicrobial resistance
- Potentially between £900-£2400 per patient saved for each *E.coli* BSI prevented (data from European study and NHS reference costs)

Overall rate

70 people out of every 100,000 will acquire an *E. coli* bacteraemia



Risk greater among elderly

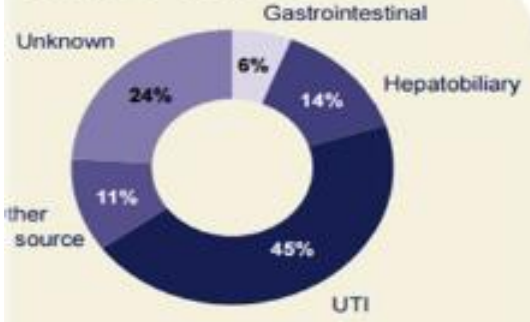
Adult male rate: 50 adult males out of every 100,000 (age 45-64)

Adult female rate: 51 adult females out of every 100,000 (age 45-64)

Elderly male rate: 824 elderly males out of every 100,000 (age ≥85)

Elderly female rate: 568 elderly females out of every 100,000 (age ≥85)

Most common source of infection

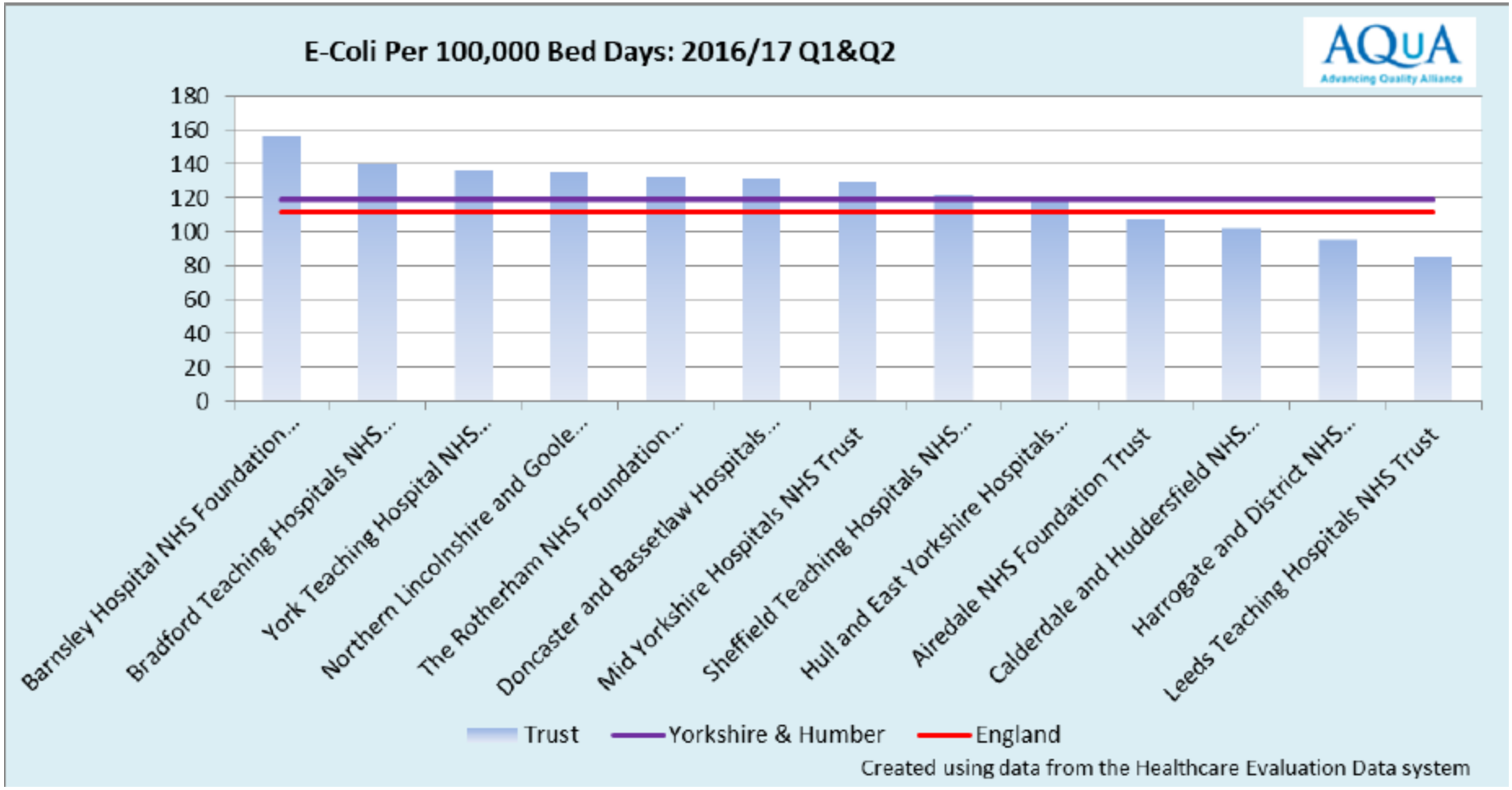


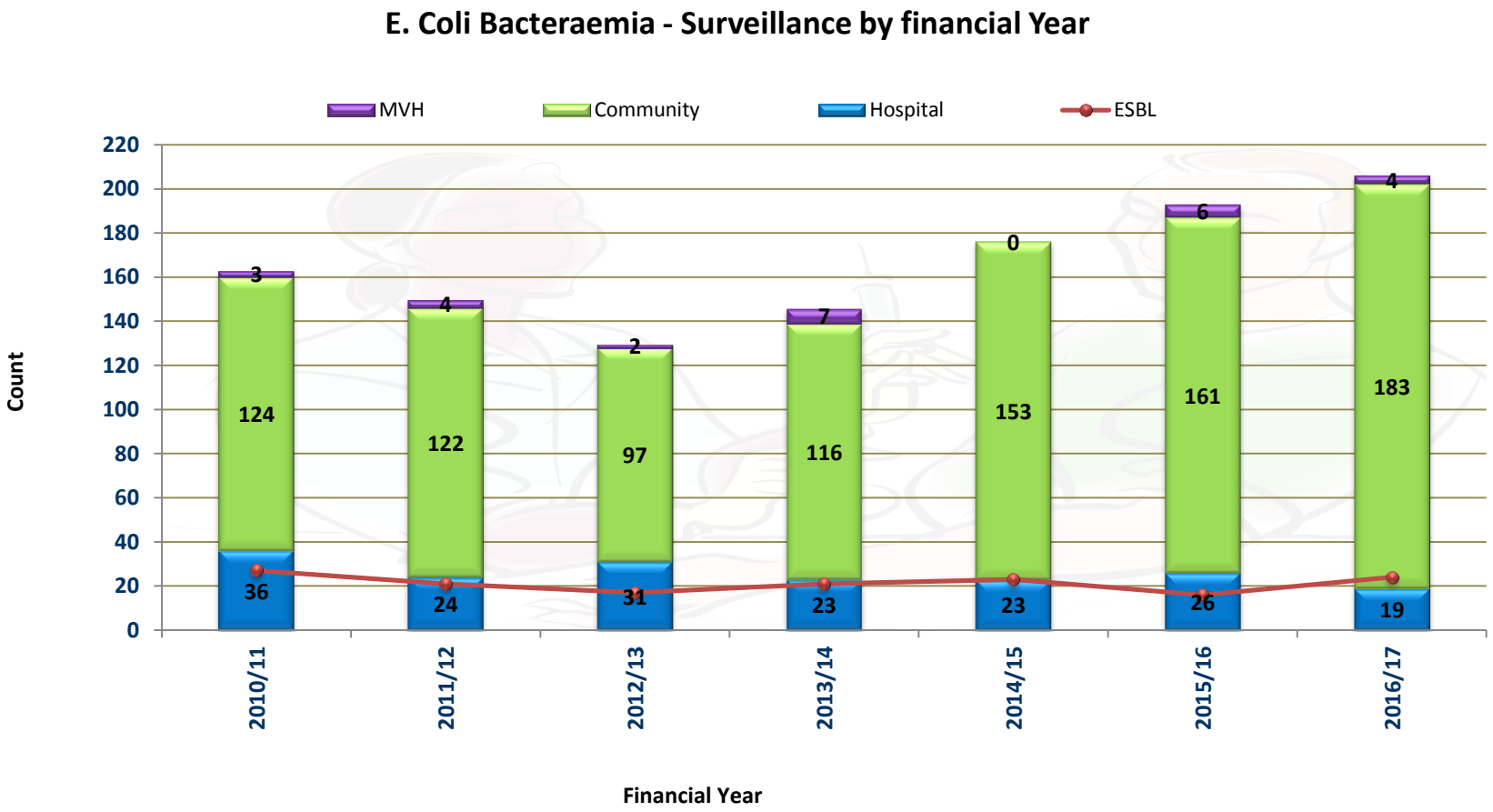
Most cases are community onset

73% <2 days

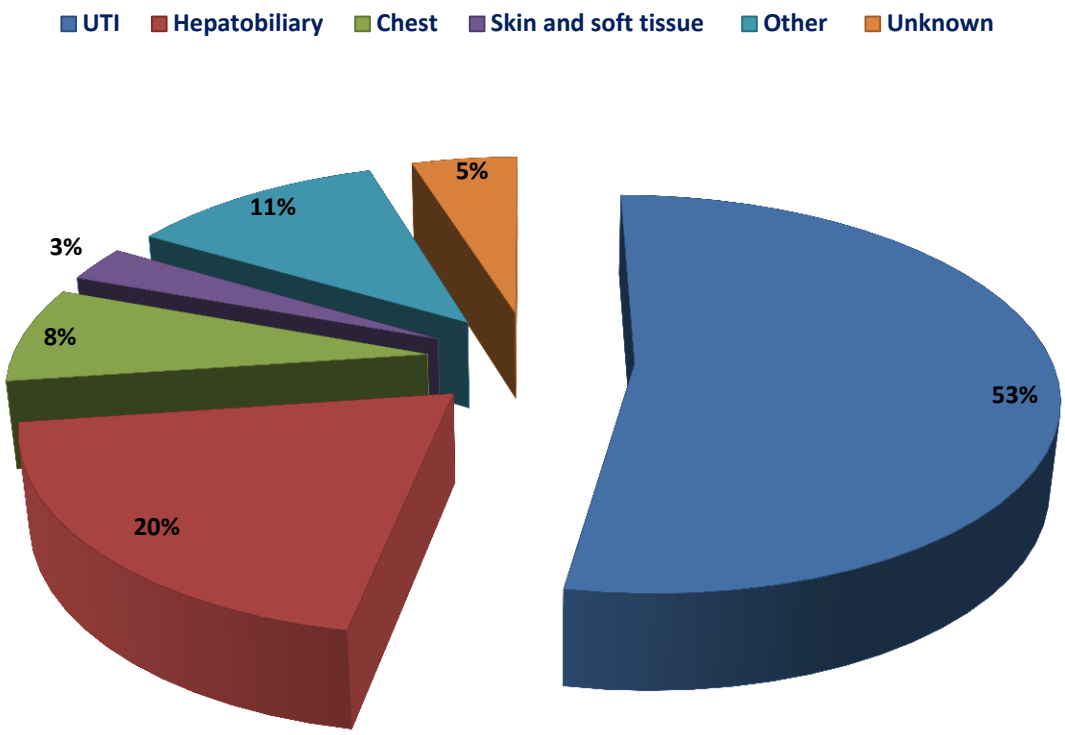
27% ≥2 days

For full report, please see https://www.gov.uk/government/statistics/mrsa-mssa-and-e-coli-bacteraemia-and-c-difficile-infection-annual-epidemiological-commentary


E-Coli Per 100,000 Bed Days: 2016/17 Q1&Q2
AQuA
Advancing Quality Alliance
180
160
140
120
100
80
60
40
20
0
Barnsley Hospital NHS Foundation...
Bradford Teaching Hospitals NHS...
York Teaching Hospital NHS...
Northern Lincolnshire and Goole...
The Rotherham NHS Foundation...
Doncaster and Bassetlaw Hospitals...
Mid Yorkshire Hospitals NHS Trust
Sheffield Teaching Hospitals NHS...
Hull and East Yorkshire Hospitals...
Airedale NHS Foundation Trust
Calderdale and Huddersfield NHS...
Harrogate and District NHS...
Leeds Teaching Hospitals NHS Trust
Trust
Yorkshire & Humber
England
Created using data from the Healthcare Evaluation Data system


E. Coli Bacteraemia - Surveillance by financial Year
MVH
Community
Hospital
ESBL
Count
220
200
180
160
140
120
100
80
60
40
20
0
3
4
2
7
0
6
4
124
122
97
116
153
161
183
36
24
31
23
23
26
19
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
Financial Year

Most common source of infection 2017/18



Risk factors for Gram negative bacteraemia

- Urinary catheterisation (insertion, in situ with or without manipulation, or removal)
- Indwelling vascular access devices (insertion, in situ, or removal)
- Other devices (insertion, in situ with or without manipulation, or removal)
- Invasive procedures (eg endoscopic retrograde cholangio-pancreatography (ERCP), prostate biopsy, surgery including, but not restricted to, gastrointestinal tract surgery)
- Neutropenia (<500/L at time of bacteraemia)
- Antimicrobial therapy within the previous 28 days
- Hospital admission within the previous 28 days

Actions to reduce Gram negative bacteraemia

- Local whole health economy discussion and agreement re reduction plan;
- Develop Improvement Plan to reduce GNBSI by 50% (by 2021) and E. coli BSIs initially by 10% or more during 2017/18;
- Review sample of patients (suggestion of 30 cases) with *E.coli* BSIs to identify common themes and subsequently priority areas for action;
- Develop improvement plan based on review of sample cases

Results to date (1)

- Random sample of 30 cases identified:
  - BHNFT 7; SWYFT 4; Primary care 19
- Hospital records reviewed for all GP cases (19); RCAs undertaken for Trust cases (11);
- Nursing Home residents - 6
- Catheterised patients - 8
- Post ERCP-1
- Post TURP- 2

Results to date (2)
Known / suspected source

- Urosepsis 11
- Hepato-biliary 7
- Chest sepsis 3
- Genital tract 3 (all 1/7 post-prostatic surgical procedure)
- Unsure 6
  - Chest / hepatobiliary 2
  - Chest / urosepsis 2
  - Urosepsis / skin 1
  - Not known source 1

What do we need from you?

- Support from GP practices in accessing relevant patient information for 28 days preceding positive result;
- There are 10 practices with 19 patients;
- Pro-forma has been devised together with guidance on requirements;

Future Actions

- Given results to date targeting detection and management of urinary tract infections (and including urinary catheter management) should have significant impact on reducing the total number of E. coli bacteraemia cases locally;