Healthcare associated Gram-negative bloodstream infections in England

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In May 2016, the Government announced its ambition to halve healthcare associated GNBSIs by 2021.

This was in response to the final report of the global facing independent review of Antimicrobial Resistance (AMR) led by Lord O’Neill.

GNBSI believed to have contributed to approximately 5,500 NHS patient deaths in 2015.
Context

![Graph showing trends for MRSA BSI, E. coli BSI, and C. difficile from 2007/08 to 2015/16. The graph indicates a decline in MRSA BSI and C. difficile cases, with an increase in E. coli BSI cases.]
Context

MRSA bacteraemia

- January - March 2017: 1.7 out of every 100,000 people
- January - March 2018: 1.7 out of every 100,000 people

C. difficile infection

- January - March 2017: 22 out of every 100,000 people
- January - March 2018: 22 out of every 100,000 people

E. coli bacteraemia

- January - March 2017: 71 out of every 100,000 people
- January - March 2018: 69 out of every 100,000 people
Epidemiology of *E.coli* bacteraemia in England: results of an enhanced sentinel surveillance programme

J. Abernethy a, b, R. Guy a, E.A. Sheridan a, c, S. Hopkins d, e, M. Kiernan f, M.H. Wilcox g, A.P. Johnson a, R. Hope a, ▲, △

the E. coli bacteraemia sentinel surveillance group

Show more

https://doi.org/10.1016/j.jhin.2016.12.008
Source of *E. coli* Bloodstream Infections

Prior treatment for UTI is the largest independent risk factor

Abernethy JHI 2017
## Key healthcare events

<table>
<thead>
<tr>
<th>Key events related to BSI</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotics (4 weeks)</td>
<td>32.4</td>
</tr>
<tr>
<td>Urinary catheter in situ, inserted, removed, manipulated (7 days)</td>
<td>21.0</td>
</tr>
<tr>
<td>Other devices in situ or removed (4 weeks)</td>
<td>7.3</td>
</tr>
<tr>
<td>Other procedures (4 weeks)</td>
<td>12.4</td>
</tr>
</tbody>
</table>
Healthcare associated GNBSI

This is not an exhaustive list but should be used as a basis to classify Gram-negative BSIs as healthcare associated:

- indwelling vascular access devices (insertion, in situ, or removal)
- urinary catheterisation (insertion, in situ with or without manipulation, or removal)
- other devices (insertion, in situ with or without manipulation, or removal)
- invasive procedures (e.g. ERCP, prostate biopsy, surgery including, but not restricted to, gastrointestinal tract surgery)
- neutropenia (<500μ/L at time of bacteraemia)
- antimicrobial therapy within the previous 28 days
- hospital admission within the previous 28 days.
E. coli BSI geographical split

2016/17
The 30 highest and lowest rate CCGs

2017/18
The 30 highest rate CCGs
E. coli bacteremia
England 2017/18

Overall rate
74 people out of every 100,000 will acquire an E. coli bacteremia.

Trends in rates of E. coli bacteremia:
- Rates have increased from 2013 to 2017.

Risk greater among elderly

<table>
<thead>
<tr>
<th>Group</th>
<th>Rate per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult males</td>
<td>53</td>
</tr>
<tr>
<td>Adult females</td>
<td>54</td>
</tr>
<tr>
<td>Elderly males</td>
<td>901</td>
</tr>
<tr>
<td>Elderly females</td>
<td>616</td>
</tr>
</tbody>
</table>

Most common source of infection

- UTI: 49%
- Hepatobiliary: 16%
- Gastrointestinal: 7%
- Respiratory tract: 6%
- Other: 7%
- Unknown: 15%

Most cases are community onset

- 74% <2 days
- 26% ≥2 days

For full report, please see:

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Suggested actions to reduce *E.coli* BSIs 2017:

CCG to lead a health economy approach to reducing *E. coli* BSI, and ensure:

- All partner organisations **review their approach** to reducing *E. coli* BSIs
- **Understand your own local data**
- Patients with *E. coli* BSIs are reviewed to determine whether there are **common themes** in cases which could help you identify priority areas for action
- An **improvement plan** is developed based on these assessments
- Progress is reviewed by **monitoring local surveillance data**, comparing findings with subsequent case reviews.
Developing national actions

- Delivery of health and social care is complex
- Interventions that may suit one area of England will not automatically translate to another.
- We know that increasing knowledge and awareness of rising rates of GNBSIs is rarely enough to trigger successful and sustained behavioural change.
- Barriers to behaviour change are complex and include such as competing motivations, lack of resources, prevailing practices and social
- Designing resources with those that will use them in practice makes them more valuable, effective and more likely to be utilised in the long term.

National GNBSI timeline

- **November 2016**
  - SoS launches GNBSI ambition - Lord O’Neil AMR report
  - Ruth announced as national DIPC

- **2017**
  - Quality Premium and CQUIN announced
  - GNBSI Improvement resource published
  - System letter re CCG-led action plans
  - Economic modelling tool published
  - Secretary of State – One Year On event

- **2018**
  - National webinar on early successes
  - UTI collaboratives
  - DIPC executive development courses
  - Masterclass for board executives event
  - STP DIPC pilot sites developing
  - Support offer to CCGs / STPs and Cancer Centres

- **2019 Publications**
  - Standard infection control precautions: national hand hygiene and PPE policy
  - Urinary catheter tools
  - Gram-negative BSI system overview tool
  - NICE / PHE Antimicrobial prescribing guidelines
  - Interventions targeting the sources of Gram-negative bloodstream infections
Interventions

Taking ANTIBIOTICS when you don’t need them puts you and your family at risk

Standard precautions: national hand hygiene / PPE policy

IPC themes from Well Led

Guidance
Health matters: preventing infections and reducing antimicrobial resistance
Published 13 November 2017

Implementation

Hy5

TARGET

To Dip
or
Not to Dip?

I-Hydrate resources

Welcome to our I-Hydrate resources page, where you'll find our downloadable resource pack and supporting videos.

Download the resource pack

Watch our videos

The resource pack

The I-Hydrate resource pack is broken down into four sections followed by a series of appendices.

Section 1: Hydration and the care home environment

This section explores dehydration and why older people are particularly vulnerable to this problem. We consider the care home environment itself and how the structure of care may adversely affect the amount of fluid residents drink.

Section 2: Improving practice and Plan-Do-Study-Act cycles

We look at factors which need to be considered when planning changes in how care is delivered, and some useful methods for introducing and testing new approaches.

Section 3: Strategies to improve hydration

This section describes strategies which were developed during the I-Hydrate project. It explains the aim of each strategy, what resources are needed to carry them out and some of the factors that are important to consider in getting the strategies to work in practice.

Section 4: Training your staff

Good Hydration!
2019/20 CQUIN

**Prevention of Ill Health**
- Antimicrobial Resistance – Lower Urinary Tract Infections in Older People & Antibiotic Prophylaxis in Colorectal Surgery
- Staff Flu Vaccinations
- Alcohol and Tobacco – Screening & Brief Advice

**Mental Health**
- Improved Discharge Follow Up
- Improved Data Quality and Reporting – Data Quality Maturity Index & Interventions
- IAPT – Use of Anxiety Disorder Specific Measures

**Patient Safety**
- Three High Impact Actions to Prevent Hospital Falls
- Community Inserted PICC Lines Secured Using a SecurAcath Device

**Best Practice Pathways**
- Stroke 6 Month Reviews
- Ambulance Patient Data at Scene – Assurance & Demonstration
- Same Day Emergency Care – Pulmonary Embolus/ Tachycardia/ Community Acquired Pneumonia
• ‘Today, up to 50,000 lives are lost each year to antibiotic-resistant infections in Europe and the US. Globally, at least 700,000 die each year of drug resistance in illnesses such as bacterial infections, malaria, HIV/AIDS or tuberculosis.

• ‘estimates (are) that by 2050, 10 million lives a year are at risk along with a cumulative economic loss of US $100 trillion worldwide. (O’Neill)

• Drug-Resistant Infections: A Threat to Our Economic Future (World Bank),
  • drug-resistant infections have the potential to cause economic damage similar to – and likely worse than – that inflicted by the 2008 financial crisis, with the worst impact on the poorest countries and people.
  • In its worst-case scenario, the world would lose 3.8 per cent of its annual gross domestic product (GDP) by 2050.
  • low-income countries would experience larger drops in economic growth than wealthy countries, so global poverty and economic inequality would increase.

• ‘…we have a relative degree of certainty that these catastrophic outcomes will occur without radical interventions or motivations’
STP / ICS role?
The UK’s vision for AMR by 2040 and five-year national action plan - DHSC

By 2040, our vision is of a world in which antimicrobial resistance (AMR) is effectively contained, controlled and mitigated.

**Measuring Success in the first five years**

**MEASURING SUCCESS**

Target: to reduce the incidence of a specified set of drug resistant infections in humans in the UK by 10% by 2025, and halve the number of healthcare associated Gram-negative bloodstream infections.

**MEASURING SUCCESS**

Target: to reduce UK antimicrobial use in humans by 15% by 2024, including:
- a 25% reduction in antibiotic use in the community from the 2013 baseline.
- a 10% reduction in use of ‘reserve’ and ‘watch’ antibiotics in hospitals from the 2017 baseline.

**MEASURING SUCCESS**

Target: to reduce UK antibiotic use in food-producing animals by 25% between 2016 and 2020, and define new objectives for individual animal sectors by 2021.

**MEASURING SUCCESS**

Target: to be able to report on the percentage of prescriptions supported by use of a diagnostics test or decision support tool by 2024, with improvement targets set by 2025.
Summary

• Develop and build on systemic delivery of AMS and IPC.
• Embed ‘Golden threads’ strategically and operationally
• Understand quality improvement and behavioural science
• Do better what we know works, esp. fundamentals
• Share it
• Identify gaps – hepatobiliary, HAP, CAP
• Continue to horizon scan