

Analysis Method Notice

The rate of laboratory confirmed *E.coli* bacteraemia cases per 100,000 of the HB population

This notice describes an Analysis Method that has been developed for use in the production of published national outcome indicators, performance measures and/or currencies, which are derived directly from NHS Wales data.

The Analysis Method has been reviewed by the Analysis Methodologies Group and its output submitted to the Welsh Information Standards Board (WISB) for potential accreditation.

*It should be noted that, where the data flow on which the analysis is being undertaken has not been reviewed by WISB (see 'Status of WISB Data Standards Assurance' below), accreditation of the analysis method **cannot** be interpreted as an approval of the underlying data standards or the quality of the data used.*

It is recognised that formal review and/or assurance of the data flow may have been undertaken by other bodies, where those data are being formally published; for example, as 'Official Statistics'. In such circumstances, users of this method are advised to contact the relevant organisations should they require further information on the underlying quality of the specified data source.

For further details about the group, including Terms of Reference and membership, please visit the following website:

<http://howis.wales.nhs.uk/sites3/page.cfm?orgid=742&pid=56696>

WISB Reference: ISRN 2018 / 002

Please address enquiries about this Analysis Method the NHS Wales Informatics Service Data Standards Team.

E-mail: data.standards@wales.nhs.uk / Tel: 029 2050 2539

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| WISB Analysis Method Appraisal Assessment | Accredited This Analysis Method has been appraised by WISB and is felt to: <ul style="list-style-type: none"> • Meet the specified indicator requirement, in that it is suitable for its calculation / derivation; • Is reproducible by organisations, where appropriate. |
| WISB Analysis Method Appraisal Outcome(s) | |

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| Status of Data Standards Assurance | WISB Reviewed The data used in this Analysis Method are based on data item standards that have been through the Information Standards Assurance Process. |
| WISB Decision | Approved |
| Data Standards Assurance Outcome(s) | |

Indicator

The rate of laboratory confirmed *E.coli* bacteraemia cases per 100,000 of the HB population

Target:

2017/18 reduction expectations are HB specific as follows:

Abertawe Bro Morgannwg UHB, Betsi Cadwaladr UHB, Cwm Taf UHB and Hywel Dda UHB - a rate of no more than 67 cases per 100,000 of the HB population.

Aneurin Bevan UHB - a rate of no more than 61 cases per 100,000 of the HB population.

Cardiff and Vale UHB - a rate of no more than 60 cases per 100,000 of the HB population.

Powys Teaching HB and Velindre NHS Trust do not have specific reduction expectations due to the small number of cases per month and Velindre NHS Trust does not have a HB population, but they are both included in the overall Wales numerator data.

Rationale / Context

E.coli (*Escherichia coli*) is a gram negative bacteria that normally lives in the large bowel of humans and animals. It can cause a range of infections in humans but is the bacteria most commonly causing urinary tract infection (UTI) in hospital and community patients. *E.coli* is also the most commonly isolated bacteria causing bloodstream (bacteraemia) infection across Wales. Bowel or bladder transfer allows bacteria to spread round the body causing infections away from the original source and can result in sepsis, septic shock and death. Those patients with a urinary catheter in place and the elderly are more vulnerable. The risk increasing with age.

From the healthcare service point of view, patients who get a bacteraemia caused by *E.coli* need to be hospitalised for treatment. Due to the high numbers of infection caused by the bacteria across Wales it has an impact on hospital and/or community healthcare services. Costs to the health service include diagnosis, treatment and extended length of stay. These infections result in increased pressure on Infection Prevention & Control Services, and can impact on cancellation of operations/admissions but importantly increased morbidity/mortality and patient harm. The increasing resistance of *E.coli* bacteria in urine to first line antibiotics is of concern as patients with resistant bacteraemia often require the use of extended antibiotic therapy with more expensive drugs.

Data Source(s)

DataStore (via the Welsh Healthcare Associated Infection Programme, Public Health Wales)

ONS Mid-Year Population Estimates

Definitions:**Definitional Guidance:****Data Items:**

n/a

Terms:

Detailed Specification

Data from each of the laboratory information systems (LIMS) across Wales is automatically copied over once a day into DataStore, a Public Health Wales data warehouse system.

The *E.coli* bacteraemia test results are extracted from DataStore daily and transferred to a bespoke database for Healthcare Associated Infections data. There is additional manual data entry into the database of samples from locations in Powys Teaching HB processed in microbiology laboratories in England. These are provided by in the infection control team in Powys via a monthly email

E.coli bacteraemia data is extracted using the following criteria:

- *E.coli* was identified from a blood culture sample.
- The sample was not taken from a patient in a private hospital, a privately run dialysis unit or post-mortem.

Duplicate records are flagged within the database (known as 'de-duplication') and are excluded from calculations. For *E.coli* bacteraemia this is carried out on the basis of 14 days i.e. any positive test occurring within 14 days of another positive *E.coli* bacteraemia test from the same patient is excluded.

HB staff are given the opportunity to audit their data, identifying quality assurance samples, other sample types processed in blood culture bottles, duplicates that have not been identified because they have gone into the laboratory system with 2 different patient identifiers etc. HB staff can either do this on an on-going basis or provide all required changes at the end of the financial year. Because of these differing audit processes all data is marked as provisional until Public Health Wales produce end of financial year figures in May.

The measure is expressed as a rate per 100,000 population as follows:

$$\text{Rate per 100,000 population} = \frac{\text{Numerator}}{\text{Denominator}} \times 100,000$$

Calculation:

Numerator

Cumulative number of *E.coli* positive blood culture samples from patients from primary and secondary care NHS locations within Wales (Abertawe Bro Morgannwg UHB, Aneurin Bevan UHB, Betsi Cadwaladr UHB, Cardiff and Vale UHB, Cwm Taf UHB, Hywel Dda UHB, Powys Teaching HB and Velindre NHS Trust) with a specimen date for the current financial year.

Denominator

Mid year population estimates for numbers of persons resident in each HB.

Reporting Format / Frequency

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| Reporting Frequency | Monthly |
| Time Delay of Reported Data? | <p>Approximately 7 calendar days after month end. A reporting scheduled is supplied by PHW each year detailing exact dates reports will be available.</p> <p>DataStore downloads to the HCAI database daily at 7am. The <i>E.coli</i> bacteraemia report is produced on the data available approximately 3 working days prior to the scheduled report</p> |

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| | date. All data is provisional until approximately two months after the end of the financial year. |
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Discussion Points / Areas for Future Development

This section details any areas the Analysis Methodologies Group felt needed further consideration / review by the 'owner' of the method.

Appendix A – Additional Information

n/a

Appendix B – SQL Code (where applicable)

n/a