



## Healthcare Associated Infections 2019 Annual Report

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# Foreword

We are in the midst of a global pandemic and therefore the challenges on both front line services and those working to reduce antimicrobial resistance (AMR) and healthcare associated infections (HCAIs) have been shifted away from previously prioritised delivery programmes to support the national response to the COVID-19 pandemic. This increased COVID-19 related activity delayed publication of this report from the original publication date of May. However, we were keen to ensure the annual report on 2019 activity was published and therefore, we have produced a streamlined version, which has also been redesigned to a more accessible infographic format.

Healthcare associated infections (HCAIs) continue to represent a threat to patient safety in NHSScotland and to safe care, wherever that is delivered. This annual report reflects the work undertaken on HCAI prevention and tackling AMR in NHSScotland during 2019. Genuine progress has been made to reduce HCAI and contain AMR in Scotland over the past few years. In order to continue, and build on that progress, National Services Scotland (NSS) received a high-level commission from the Cabinet Secretary for Health and Sport, via Scottish Government, asking NSS to consider how we might develop a dedicated Centre of Excellence (CoE). The Centre's five-year vision is: "To be an internationally recognised Centre of Excellence for reducing infection and other risks in the healthcare built environment". As part of this work, Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland will provide clinical leadership to the CoE to focus on reducing infection and other risks in the healthcare built environment. The overall aim is to assure the public, patients and the service that the healthcare environment is safe and free from avoidable infection and other risks in the built environment, with effective structures and processes in place, which are monitored, to ensure risk is minimised.

The intelligence obtained in the support of outbreaks, incidents, and surveillance systems is used to develop a knowledge base to better prevent, prepare for, and control outbreaks, reduce nosocomial infections, and contain AMR. Evidence based infection prevention and control practice is essential in ensuring patient safety. ARHAI Scotland will continue to work with NHS boards and local stakeholders to ensure the intelligence gathered during 2020 will be translated into clinical practice and that interventions are informed by the evidence base.

In January 2019, the United Kingdom (UK) Government published a five-year national action plan '**Tackling antimicrobial resistance 2019–2024**' as well as a vision for AMR in 20 years '**Contained and controlled: The UK's 20-year vision for antimicrobial resistance**'. The five-year national action plan focuses on three key aims to tackle AMR: reducing the burden of infection, optimising

the use of antimicrobials, and developing new diagnostics, therapies, vaccines and interventions. The Scottish One Health Antimicrobial Use and Antimicrobial Resistance (SONAAR) programme, one of the programmes within ARHAI Scotland, publishes further detailed data and intelligence to support the broad ambitions of the action plan. The SONAAR report, which includes data from 2019, will be published in November. Last year's report can be accessed here: <http://hps.scot.nhs.uk/publications/sonaar2018>. ARHAI Scotland will support and implement components of the action plans, ensuring Scotland is better equipped to control AMR now and in the future.

# Executive Summary

## Gram-negative bacteraemia

Gram-negative bacteria continue to be a recognised threat to health worldwide. During 2019, there were 4,767 cases of *Escherichia coli* Bacteraemia (ECB) in Scotland with a rate of 87.7 per 100,000 population. Rates have remained stable since 2015. These infections were predominately from a community origin with a rate of 43.7 cases per 100,000 population in 2019. Between 2018 and 2019, antimicrobial resistance (AMR) of ECB isolates has remained stable, other than resistance to co-amoxiclav which has increased. *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* bacteraemia rates have also remained stable since 2015. As part of the (UK) Government published five-year national action plan, a target of a 25% reduction of healthcare associated Gram-negative bacteraemias by 2021/2022 with a 50% reduction by 2023/2024 was set.

## Urinary tract infections

Urinary tract infections (UTI) are amongst the most commonly encountered infections in healthcare. The majority of UTIs in Scotland are caused by *E. coli*. In 2019, there were 154,809 *E. coli* urinary isolates reported. In addition, findings from the ECB enhanced surveillance dataset indicate that nearly a third (30.6%) of these bloodstream infections had a lower urinary tract infection as their primary infection.

Using a population health approach, Scottish UTI Network (SUTIN) has continued to promote shared learning and targeted UTI reduction strategies across health and social care. The National Hydration adult and children's Think2DrinkH2O campaigns, and the National Catheter Passport are examples of this collaborative approach to reducing UTI and catheter associated UTI (CAUTI). This in turn supports reduction of ECB and prudent antimicrobial prescribing.

## Carbapenemase-producing organisms

The number of carbapenemase-producing organisms (CPOs) overall remains low, however in Scotland a total of 127 CPO were reported in 2019. Incidence of CPO isolates increased from 1.1 per 100,000 population in 2015 to 2.3 per 100,000 population in 2019. This increase may be temporally associated with improved awareness of CPO, continued carbapenemase-producing Enterobacterales (CPE) screening in Scotland, and the launch of the Scottish AMR Satellite Reference service. In April 2018, the MRSA screening uptake monitoring tool was extended

to include CPE. In 2019, 84% of audited patients underwent a clinical risk assessment for CPE colonisation or infection, as per national CPE screening policy. These data continue to be monitored by ARHAI Scotland and feedback is provided to boards on a quarterly basis.

## ***Clostridioides difficile* infection**

*Clostridioides difficile* Infection (CDI) is an important healthcare associated infection (HCAI) which causes diarrhoea and contributes to a significant burden of morbidity and mortality. Prevention of CDI is therefore essential and an important patient safety issue. During 2019, 1,059 cases of CDI in patients aged 15 years and older were reported in Scotland. There was a decreasing year on year trend in the incidence rates between 2015-2019. Much of the decline in CDI can be attributed to a decrease in healthcare associated CDI, though a significant burden exists which is community-associated. In 2019, the incidence rate of healthcare associated CDI was 13.3 per 100,000 bed days, while the incidence rate of community associated CDI was 4.7 per 100,000 population. Further work is being undertaken to identify additional interventions to reduce CDI rates in both hospitals and community settings. There was a decreasing trend in the proportion of people dying of any cause within 30-days of CDI diagnosis between 2014 and 2018 (2019 data not available). ARHAI Scotland will continue to investigate factors associated with improved survival among CDI patients.

## ***Staphylococcus aureus* bacteraemia**

*Staphylococcus aureus* bacteraemia (SAB), is a serious systemic form of infection which leads to increased morbidity and mortality. During 2019, 1,499 cases of SAB were reported in Scotland, with 3.1% reported as meticillin resistant *S. aureus* (MRSA) bacteraemias and 96.9% as meticillin sensitive *S. aureus* (MSSA) bacteraemias. There was a decreasing year on year trend in both overall SAB and in MRSA between 2015-2019, however the incidence rate of MSSA has not changed over this time period.

In 2019, the incidence rate of healthcare associated SAB was 16.2 per 100,000 bed days, while the incidence rate of community associated SAB was 9.4 per 100,000 population. The main entry point for healthcare associated cases was relating to a device whereas skin and soft tissue infection were the main entry point for community associated cases. In 2019, 87% of patients audited underwent a clinical risk assessment in line with national MRSA screening policy. This remains below the 90% key performance indicator.

## **Surgical site infection**

Surgical site infection (SSI) can have serious consequences for patients including increased pain, longer recovery periods, loss of earnings, suffering, additional surgical intervention, and in some cases, result in death. In 2019, the overall incidence of surgical site infection (SSI) following caesarean section procedures was 1.2%, a decrease from the previous year, and for hip arthroplasty surgery was 0.6%, which remained unchanged from 2018. In 2019, an evaluation of the caesarean section SSI and hip arthroplasty SSI surveillance programmes was undertaken. The objective of the evaluation study was to identify the strengths, weaknesses and opportunities, and to ensure outputs can be used to inform clinical decisions. The recommendations from the evaluation will inform future developments for SSI surveillance.

## **Healthcare associated infection in intensive care units**

The incidence of HCAI in intensive care units (ICU) during 2019 was 2.1%, a decrease from 2.6% in 2018. ARHAI Scotland continue to work in partnership with the Scottish Intensive Care Society Audit Group (SICSAG) to reduce HCAI in the critical care setting. In 2019, an evaluation of the surveillance system was conducted to establish whether the objectives of the system were being met and to engage with stakeholders to assess attributes of the surveillance system. The recommendations from the evaluation will inform future developments for HCAI in ICU surveillance.

## **Prevention of healthcare associated bloodborne viruses**

Bloodborne virus (BBV) transmission can occur, in the health and care setting, after exposure of staff or patients to infected blood or body fluids. Healthcare workers (HCWs) are at greatest risk of acquiring BBV infection following sharps related injuries. An annual surveillance programme has been established to monitor these exposure events which facilitates work to reduce their occurrence and promotes uptake of safer sharps devices. The programme has established that, in 2018, the rate of sharps injuries per 100 whole time equivalent (WTE) in HCWs employed in Scotland, was 1.90. Of the occupational exposures reported between January 2018 and December 2018 (2019 data not available), that were sustained from a BBV infected source, less than 35% were known to involve a safer sharps device. Uptake of safer sharps devices has increased significantly from 37% in 2013 to 84% in 2018 with increasing uptake (though smaller volumes) of non-sharp alternative devices. ARHAI Scotland also works with local health protection teams to support the public health response following identification

of BBV infected HCWs, with five risk assessments undertaken in 2018. All of them were referred to the UK Advisory Panel for Healthcare Workers Infected with Bloodborne Viruses (UKAP), who did not recommend a patient notification exercise (PNE).

## **Healthcare outbreaks and incidents**

ARHAI Scotland support local Infection Prevention and Control and Health Protection Teams to prevent, prepare for, and manage outbreaks and incidents, as well as share lessons learned throughout Scotland. In the last year, 213 outbreaks and incidents were reported compared to 170 in the previous year. Colonisation and respiratory infections accounted for more than half of those reported in 2019.

## **Norovirus outbreaks**

From October 2018 to July 2019 there were a total of 60 wards closed and an additional 96 bays closed, giving a total of 156 closures. Bay closures can assist NHS boards in reducing service impact without compromising patient safety during norovirus season.

In 2019 the 'Stay at home' campaign was re-launched in partnership with Health Scotland, providing information to the public on preventing the spread of norovirus. An educational video 'Norovirus Explained' was also developed to deliver the key messages across various social media platforms. The campaign aimed to reduce the impact and burden that norovirus creates on individuals and health and care services as much as possible.

## **Development of guidance**

ARHAI Scotland continues to collaborate with local Infection Prevention and Control and Health Protection Teams in the development and review of guidance documents for the prevention and control of infection across all care settings. The National Infection Prevention and Control Manual (NIPCM) literature review process ensures practice recommendations remain applicable and evidence based.

During 2019, the methodology for literature reviews was redeveloped with the aim being to reduce reviewer bias and improve the overall quality of the reviews and the recommendations made. The NIPCM: Methodology includes two methodologies; a single-person methodology and a two-person methodology. The Aerosol Generating Procedures (AGPs) literature review was subsequently published and was the first literature review to be conducted using the revised two-person methodology. Going forward all future reviews will be completed using the two-person methodology.



In 2019, the steering and consensus groups from the National Policies, Guidance and Outbreaks, and Infection Control in the Built Environment and Decontamination programmes were amalgamated to form the National Infection Prevention and Control steering and consensus groups. This ensures infection prevention and control issues surrounding the built environment and decontamination are incorporated into policies and guidance. This will include development of a fourth chapter of the NIPCM which will consider infection prevention and control within the built environment.

## **Infection control in the built environment and decontamination**

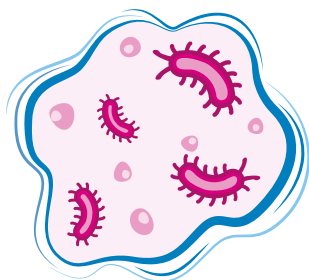
The Infection Control in the Built Environment and Decontamination (ICBED) programme provides expert advice related to the public health, infection control, clinical and scientific aspects of the built environment and decontamination. The built environment work stream of the programme covers all HCAI aspects of the physical healthcare environment including ventilation, water and environmental cleanliness. Activity during 2019 included two aide-memoires that were published within Chapter 3 of the NIPCM to provide best practice recommendations to be implemented in the event of a healthcare water-associated or healthcare ventilation-associated infection incident/outbreak and a survey of current water testing practices within NHSScotland acute healthcare facilities.

## **Care home antimicrobial resistance and healthcare associated infection**

The Care Home Antimicrobial Resistance and Healthcare Associated Infection (CARHAI) health protection programme delivers a co-ordinated approach across community health and care sectors to prevent infections; containing AMR; strengthening infection prevention and control practice (IPC) and improving staff IPC knowledge and understanding. Achievements so far include producing an IPC inspection tool, conducting a survey on IPC in volunteer care homes for adults and establishing a national care home Short Life Working Group (SLWG). The SUTIN network, established in 2015, is now encompassed within the CARHAI programme. Activity during 2019 included the launch of the children's hydration campaign 'Think2drinkH2O' and evaluation of adult hydration campaigns.

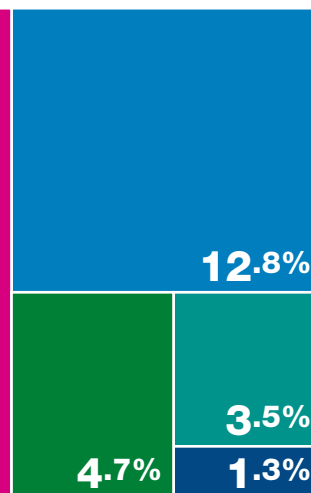
# Gram-negative bacteraemia

Gram-negative bacteria are an important cause of serious infections in healthcare and community settings.



In 2019, there were **6,135** Gram-negative bacteraemia, due to the **5 most commonly reported pathogens** in healthcare and community settings

*E. coli* is the **most common cause** of Gram-negative bacteraemia



- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Klebsiella oxytoca*
- *Acinetobacter* spp.

## *E. coli* bacteraemia (ECB) enhanced data

In 2019, there were **4,767** *E. coli* bacteraemia in healthcare and community settings

↔ Compared to **4,738** in 2018

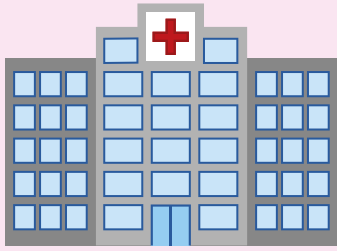
The incidence of ECB was **87.7** per 100,000 population

↔ The rate has remained **stable** over the **last 5 years**



**REVISION, November 2020:** Revisions to the data and text were made on this page. This included a revision to the total number of Gram-negative bacteraemia due to the five most commonly reported pathogens in healthcare and community settings, and the percentages for organisms in the treemap. These changes are to reflect an update in the number of *Klebsiella oxytoca* bacteraemia reported in 2019.

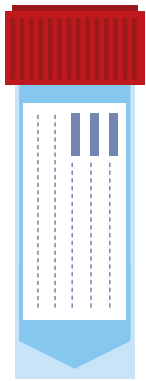
When the **origin** of the **ECB** infection was known the **rate** was



**Healthcare associated**  
**39.3** per 100,000 bed days



**Community associated**  
**43.7** per 100,000 population



**30.6%** of **ECB** infections were due to **lower urinary tract infections (UTIs)** as their **primary** infection

There was a **2.9%** year-on-year **decrease** in **all cause mortality** due to **ECB** between **2014** and **2018**

## 2019 Funnel plot analysis

**NHS Lanarkshire** was **above** the **95% confidence interval upper limit** for **healthcare associated ECB**

**NHS Ayrshire and Arran, NHS Borders, NHS Dumfries and Galloway, NHS Forth Valley** and **NHS Western Isles** were **above** the **95% confidence interval upper limit** for **community ECB**

## ECB antimicrobial resistance

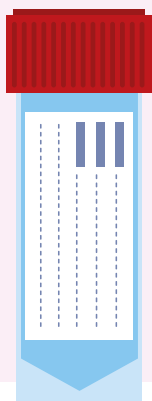
↔ Since last year, antimicrobial resistance has remained **stable**

↑ Other than **resistance to co-amoxiclav** which has **increased**

# Urinary tract infections

Urinary tract infections (UTIs) and catheter-associated UTIs (CAUTIs) are a concern in acute and non-acute hospitals, care homes and care at home. UTI are the most common HCAI in acute and non-acute hospitals.

An important aspect of reducing the incidence of Gram-negative bacteraemia is the prevention and management of primary infections, including UTIs



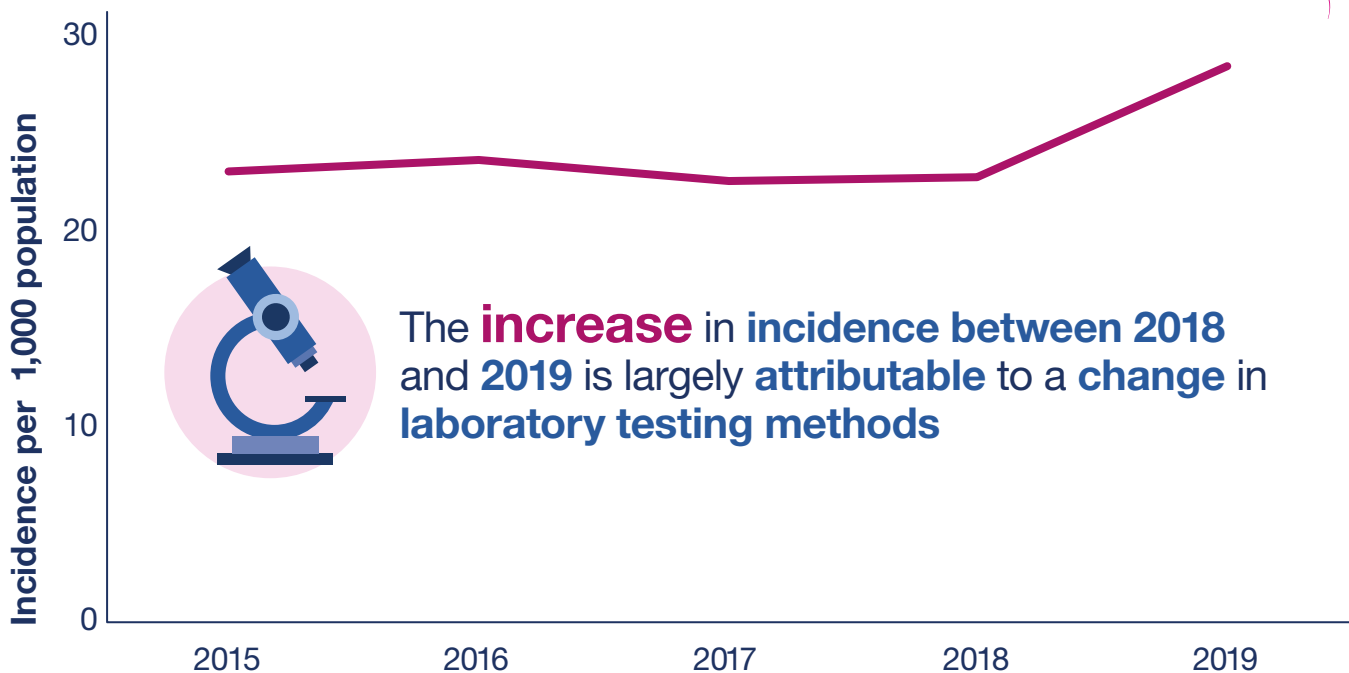
In 2019, *E. coli* was the **most common** cause of UTI

There were **154,809** cases of UTI associated *E. coli*

An incidence of **28.5** per 1,000 population



There was a **4.3%** year-on-year **increase** in UTI caused by *E. coli* over the last 5 years



The **increase** in incidence between 2018 and 2019 is largely **attributable** to a **change** in laboratory testing methods



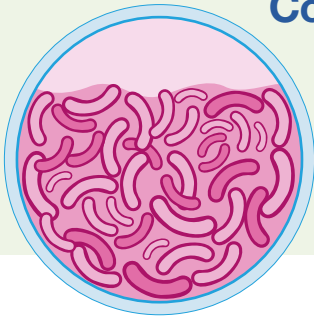
Antimicrobial resistance in *E. coli* urinary isolates has remained **stable** over the last 5 years

# Carbapenemase-producing organisms

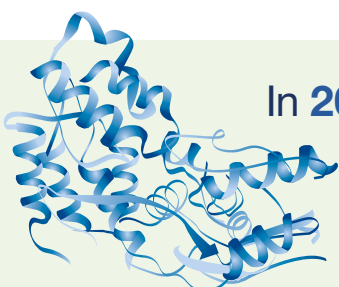
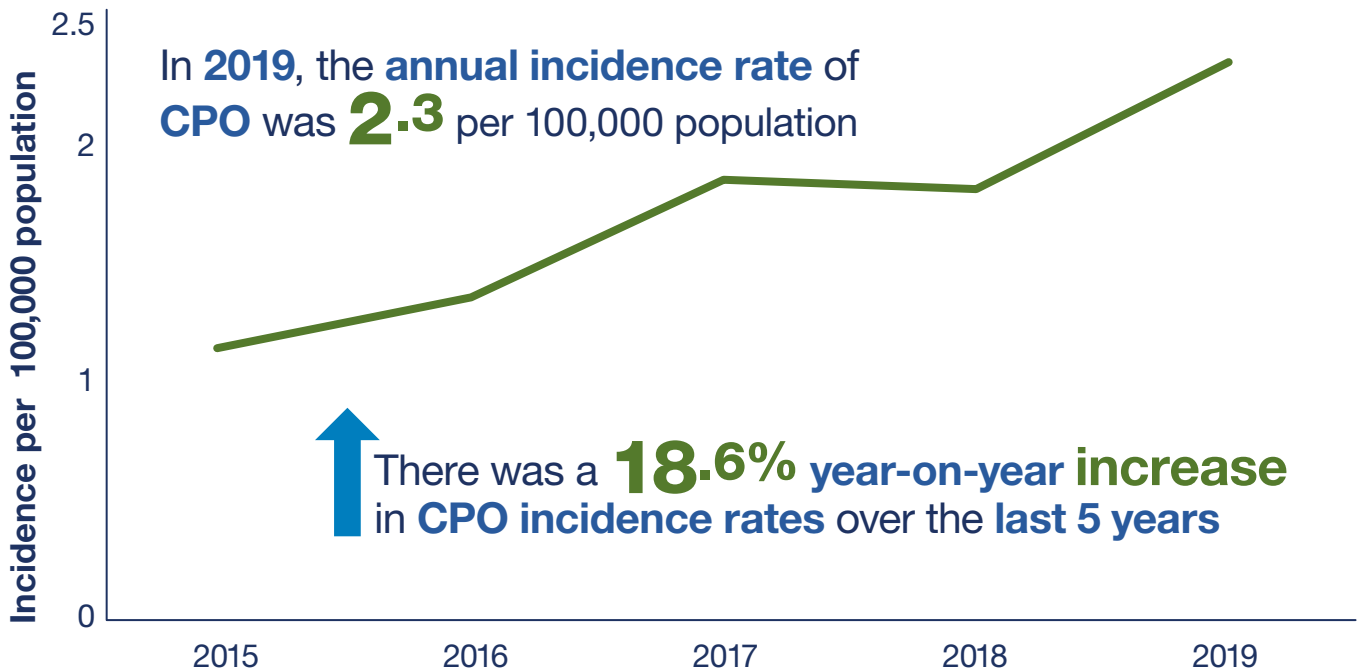
Carbapenems are very broad-spectrum antibiotics which are used almost exclusively in the hospital setting for the treatment of suspected or confirmed multi-drug resistant Gram-negative infections. Enzymes produced by carbapenemase-producing organisms (CPOs) can inactivate carbapenem antibiotics, leaving few therapeutic options for treatment of CPO infections.

In 2019, there were **127** CPOs

Compared to **98** CPOs in 2018



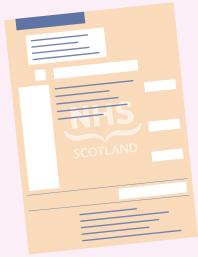
Of those identified in 2019, **81.1%** were carbapenemase-producing Enterobacteriales (CPE)



In 2019, the **most frequently isolated** enzymes were **OXA-48** like enzymes, **NDM**, **OXA-23 + OXA-51** and **VIM**

## Prescribing

Carbapenem antibiotics are used for the treatment of infections caused by multi-drug resistant organisms and/or in people with co-morbidities.

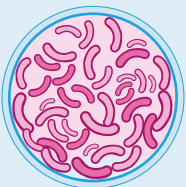


Antimicrobial stewardship is the implementation of a programme of coordinated activities to optimise antibiotic prescribing to improve patient outcomes, reduce antibiotic resistance, and decrease the spread of infections caused by multi-drug resistant organisms.

A key component of the antimicrobial stewardship programme, coordinated by the Scottish Antimicrobial Prescribing Group (SAPG), is the optimisation of use of carbapenems and other very broad spectrum antibiotics.



## Screening



Screening for multi-drug resistant organisms on admission to hospital is a key intervention to reduce the opportunities for infections to develop and spread in healthcare.

A two-step clinical risk assessment (CRA) based screening policy to identify and manage patients considered to be at high risk of carbapenemase-producing Enterobacterales (CPE) colonisation or infection, has been in place in acute hospitals in Scotland since 2013.



In 2019, 84% of audited patients underwent a clinical risk assessment for CPE colonisation or infection, as per national CPE screening policy. These data continue to be monitored by ARHAI Scotland and feedback is provided to boards on a quarterly basis.

# Clostridioides difficile infection

*Clostridioides difficile* infection (CDI) is an important healthcare associated infection, which usually causes diarrhoea and contributes to a significant burden of morbidity and mortality. There is also a substantial burden which is community associated.

In 2019, there were **1,059** cases of CDI in patients aged 15 years and older

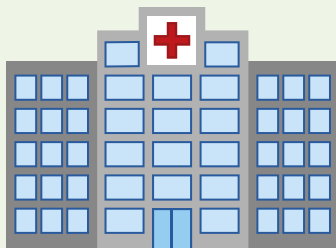
↓ Compared to **1,313** cases in 2018

The annual incidence rate was **19.5** per 100,000 population

↓ Compared to **24.1** per 100,000 population in 2018

↓ There was a **9.6%** year-on-year decrease in overall CDI rates in patients aged 15 years and older over the last 5 years

In 2019, the cases and rates of CDI were

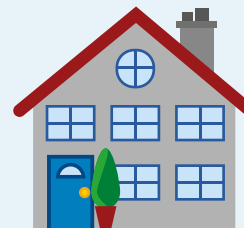


Healthcare associated CDI

**806** cases

Annual incidence rate

**13.3** per 100,000 bed days

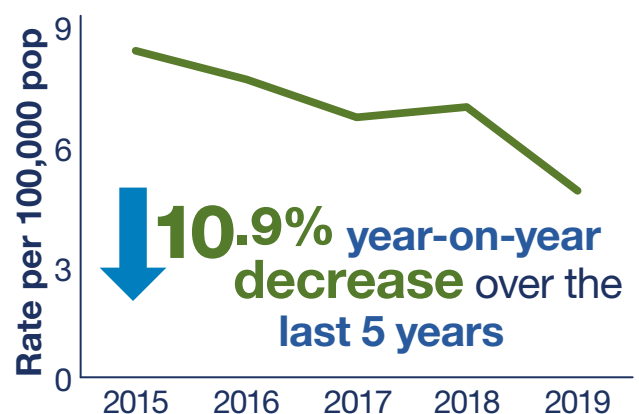
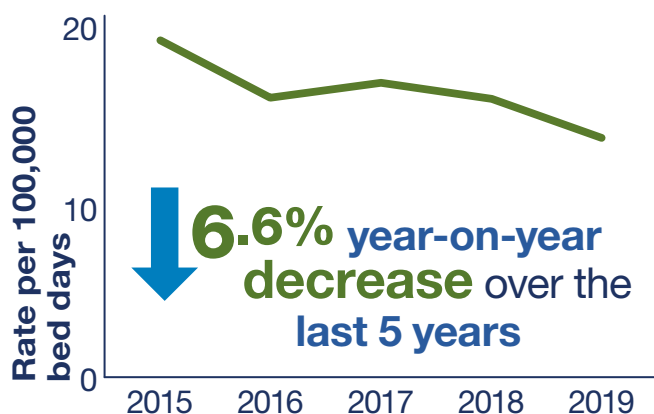


Community associated CDI

**253** cases

Annual incidence rate

**4.7** per 100,000 population



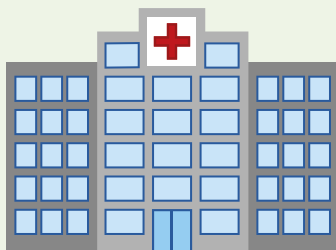
## 2019 Funnel plot analysis

NHS Greater Glasgow and Clyde was **above** the 95% confidence interval upper limit for healthcare associated CDI

**No** NHS boards were **above** the 95% confidence interval upper limit for community associated CDI

### Mortality rates

In 2018, the 30 day all cause mortality rates were



Healthcare associated CDI

**12.7%** mortality

**7.5%** year-on-year **decrease**  
between 2014 and 2018



Community associated CDI

**6.6%** mortality

There was **no change**  
observed between 2014 and 2018

### Ribotyping

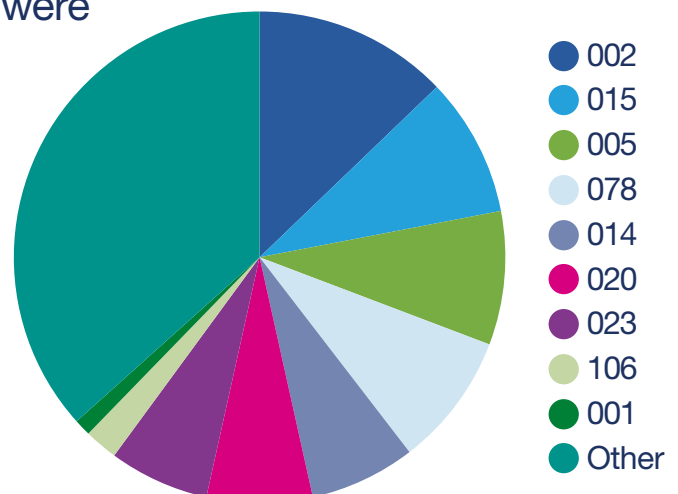
In 2019, the **most common isolates** (found in a representative sample) were

**12.8%** ribotype 002

**9.2%** ribotype 015

**8.8%** ribotype 078

**8.8%** ribotype 005



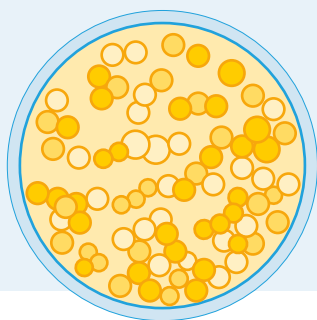


# Staphylococcus aureus bacteraemia

*Staphylococcus aureus* bacteria colonise the nasal cavity of about a quarter of the healthy population. When *S. aureus* breaches the body's defence systems it can cause a range of illnesses from minor skin infections to serious systemic infections such as bacteraemia.

In 2019, there were **1,499**  
*S. aureus* bacteraemia (SAB) cases

A rate of **27.6** cases per 100,000 population



There was a **1.7% decrease**  
in overall SAB rates in the last 5 years

**96.9%** (n=1453)

of all SAB cases were

**Methicillin-sensitive *Staphylococcus aureus* (MSSA)**



↔ Rates have remained **stable** over the last 5 years

**3.1%** (n=46)

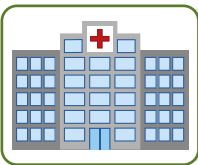
of all SAB cases were

**Methicillin-resistant *Staphylococcus aureus* (MRSA)**



↓ Rates have **decreased** over the last 5 years

In 2019,



**65.9%** (n=988) of SAB were **Healthcare associated**



**34.1%** (n=511) of SAB were **Community associated**

## 2019 Funnel plot analysis

NHS Greater Glasgow and Clyde and NHS Lanarkshire were **above** the 95% confidence interval upper limit for healthcare associated SAB

**No** NHS boards were **above** the 95% confidence interval upper limit for community associated SAB

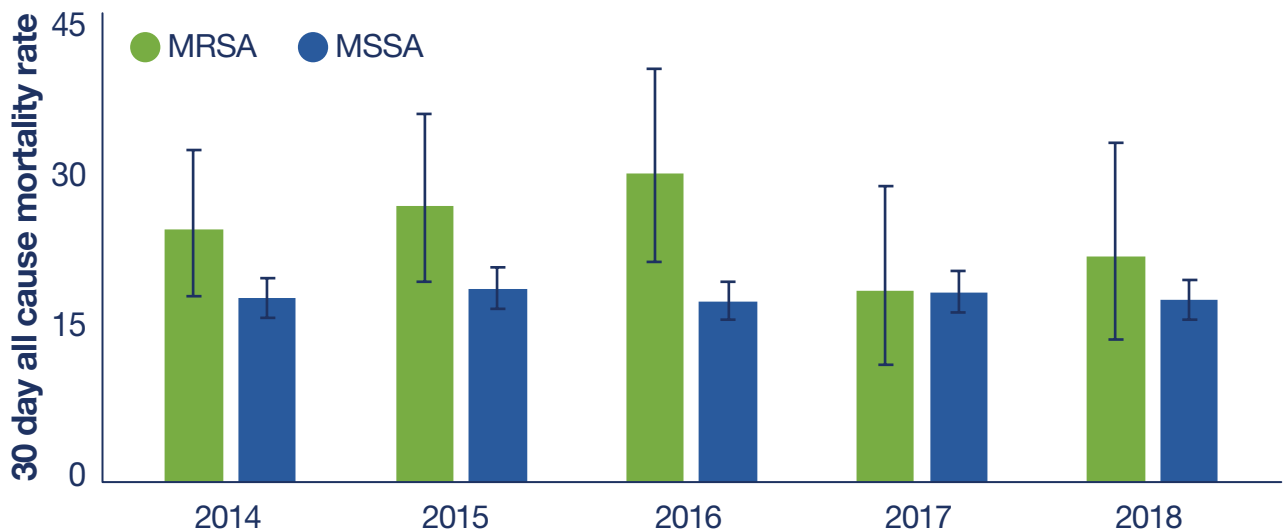
## Mortality rates

In 2018, the 30 day all cause SAB mortality rates were

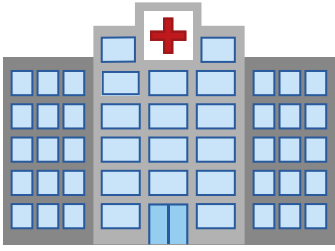
**22.4% MRSA**   **18.8% MSSA**

There was **no difference** between them

↔ **SAB mortality rates** have remained **stable** over the last 5 years



## Enhanced data

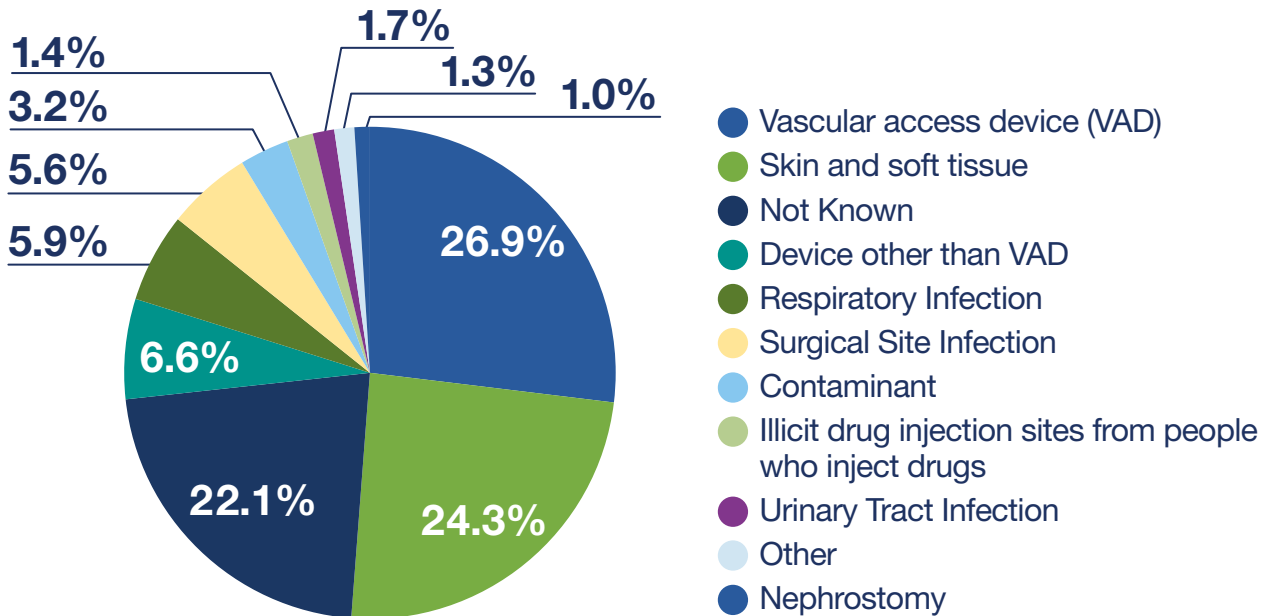


The **3 most common** entry points for **Healthcare associated SAB** in 2019 were

**26.9%** Vascular access device

**24.3%** Skin and soft tissues

**22.1%** Not known

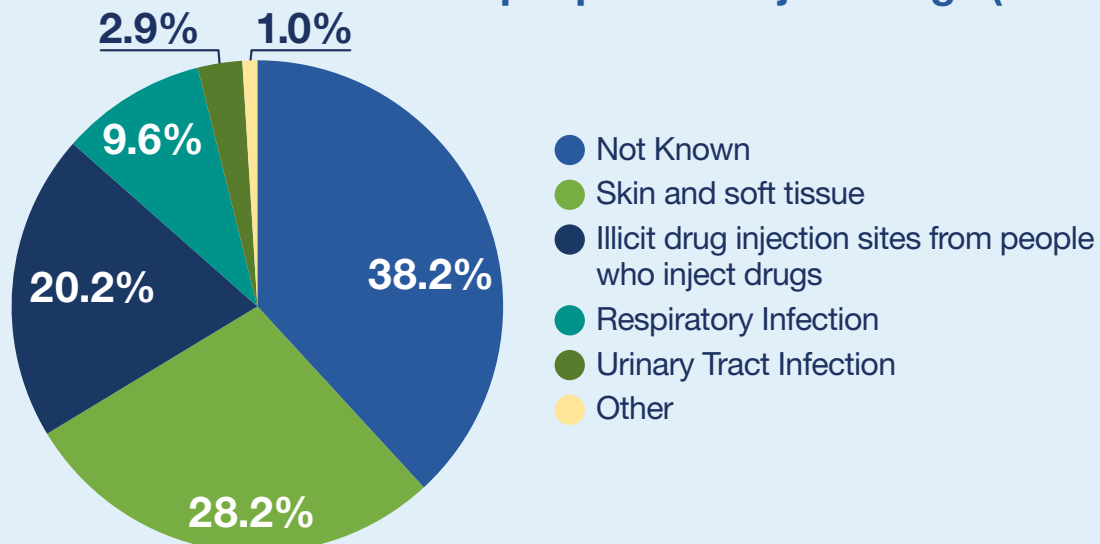


The **3 most common** entry points for **Community associated SAB** in 2019 were

**38.2%** Not known

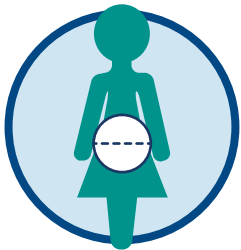
**28.2%** Skin and soft tissues

**20.2%** Illicit drug injection sites from people who inject drugs (PWID)



# Surgical site infection

Surgical site infection (SSI) is one of the most common healthcare associated infections (HCAs), estimated to account for 16.5% of inpatient HCAI within NHSScotland. SSIs can cause excess morbidity and mortality and can double the cost of treatment, mainly due to an increase in the length of stay in hospital.



## Caesarean sections reported through surveillance in Scotland in 2019

**193** SSI were reported from **16,689** procedures

Overall SSI incidence (including the post-discharge surveillance (PDS) period to day 10) was **1.2%**

↓ SSI incidence has **decreased** compared to 2018

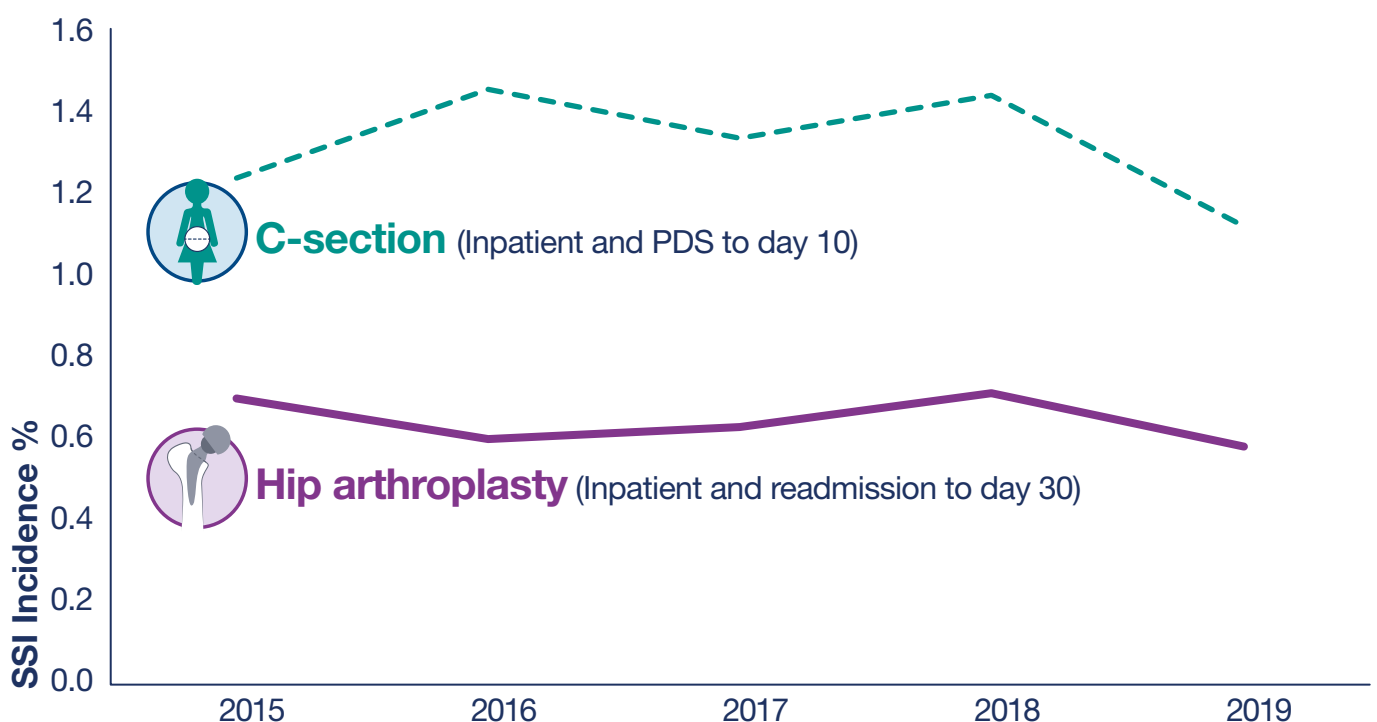


**15.0%** (n=29)

Caesarean section SSI were diagnosed during the inpatient stay

**85.0%** (n=164)

were diagnosed following discharge from hospital





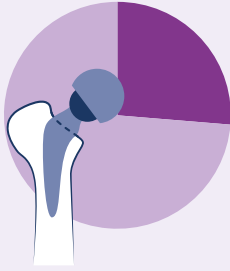
Hip arthroplasty performed in **Scotland** in **2019**

**52** SSI were reported from **8,669** procedures

Overall SSI incidence was **0.6%**



SSI incidences have been **stable** over the **last 5 years**



**26.9%** (n=14)

Hip arthroplasty SSI were diagnosed during the inpatient stay

**73.1%** (n=38)

were identified on readmission to hospital in the **30 days** following the procedure

## 2019 Funnel plot analysis

NHS Fife and NHS Grampian were **above** the **95%** confidence interval upper limit for caesarean section SSI

**No** NHS boards were **above** the **95%** confidence interval upper limit for hip arthroplasty SSI

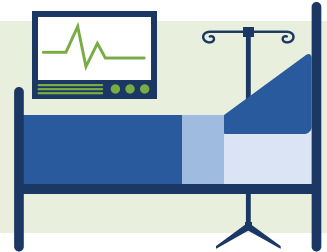
In **2019**, an evaluation of the caesarean section SSI and hip arthroplasty SSI surveillance programmes was conducted. The recommendations from the evaluation will inform future developments for SSI surveillance.



# Healthcare associated infection in intensive care units

Prevalence of healthcare associated infection (HCAI) in intensive care units (ICU) is higher than in other areas within the acute setting. This patient group is at increased risk of infection, therefore HCAI in ICU is a priority for surveillance.

Data were collected from **9,389** admissions and in total **203** infections were reported from **193** patients



The incidence of HCAI in ICU was **2.1%** in 2019

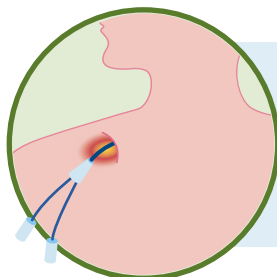
Of those



**51.7%**  
were pneumonia



**43.4%**  
were bloodstream infections (BSI)



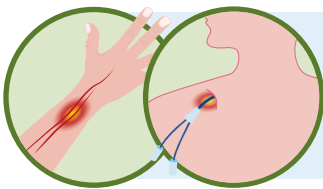
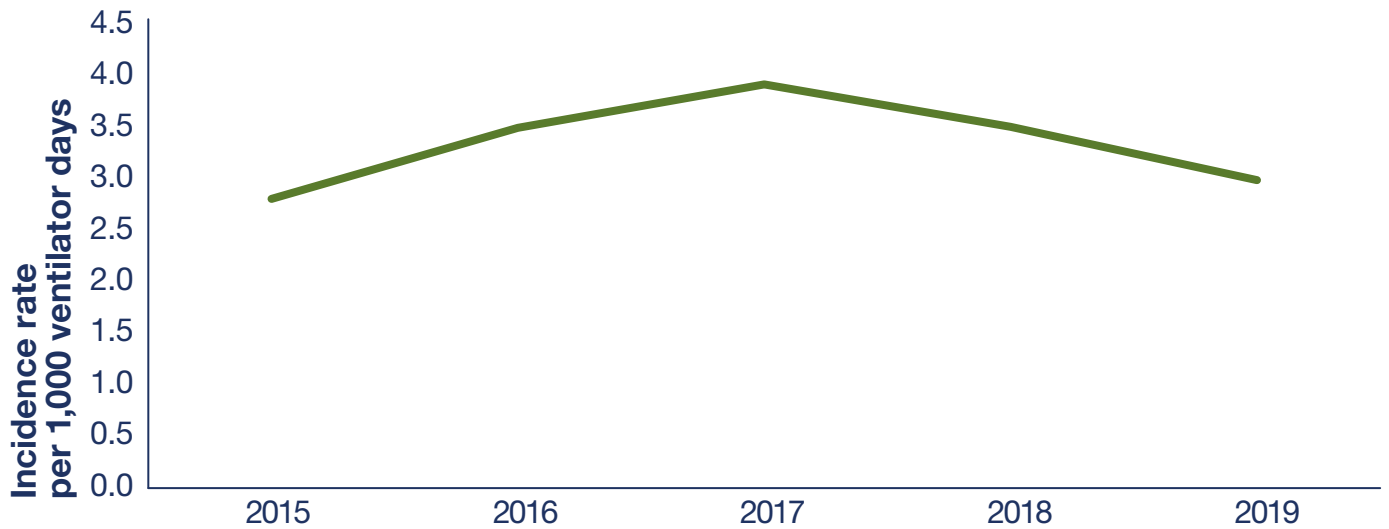
**4.9%**  
were central venous catheter related infections



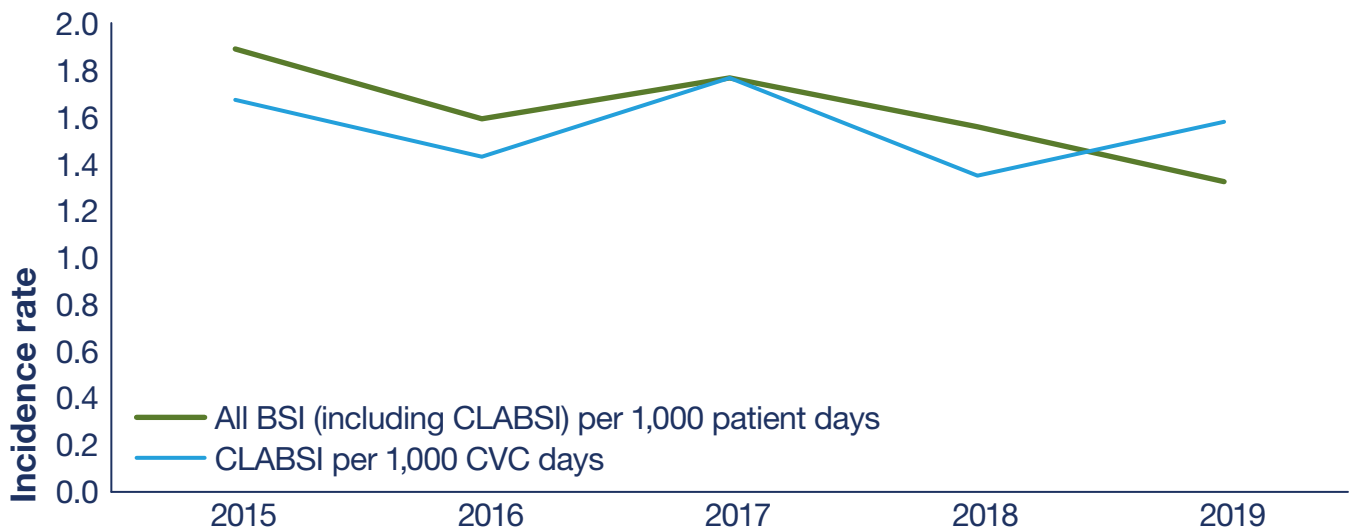
There was a **decrease** in the incidence of HCAI in ICU from **2.6%** in 2018 to **2.1%** in 2019



## Incidence rate of ventilator associated pneumonia from 2015 to 2019



## Incidence rates of bloodstream infections (BSI) and Central line-associated BSI (CLABSI) from 2015 to 2019



In **2019**, an **evaluation of HCAI in ICU surveillance** was conducted. The **recommendations** from the **evaluation** will **inform future developments** for **ICU surveillance**.



More information on the activities, interventions and outcomes for critically ill patients who were treated in Scotland in 2019 can be found in the **Scottish Intensive Care Society Audit Group (SICSAG) Annual Report**.

# Prevention of healthcare associated bloodborne viruses

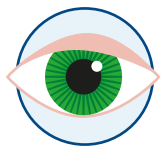
In the health and care setting transmission of BBVs can occur after exposure of staff to infected patient blood or body fluids (and vice versa) or between patients following infection control breaches.

In 2018, there were a total of **2,305** healthcare worker occupational exposures



**88.2%** (n=2032) of all healthcare worker occupational exposures occurred via a sharps device

Other routes of exposure were



**7.9%** (n=183) **Mucocutaneous**



**3.3%** (n=77) **Other** (e.g. bites, scratches)



**0.4%** (n=10) **Non-intact skin exposure**



**0.1%** (n=3) **Unknown**



The sharps exposure rate per 100 WTE in 2015 was **2.09** compared to **1.90** in 2018



**61%** of all healthcare worker occupational exposures occurred during a clinical procedure



**58%** of nurses were injured after the procedure



Compared to **15%** of doctors



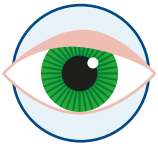


In 2018, there were **71** significant occupational exposures  
**0** seroconversions were reported



**64.8%** (n=46)  
of all significant occupational exposures were  
sharps device related

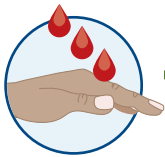
Other routes of exposure were



**26.8%** (n=19)  
**Mucocutaneous**



**4.2%** (n=3)  
**Other** (e.g. bites, scratches)

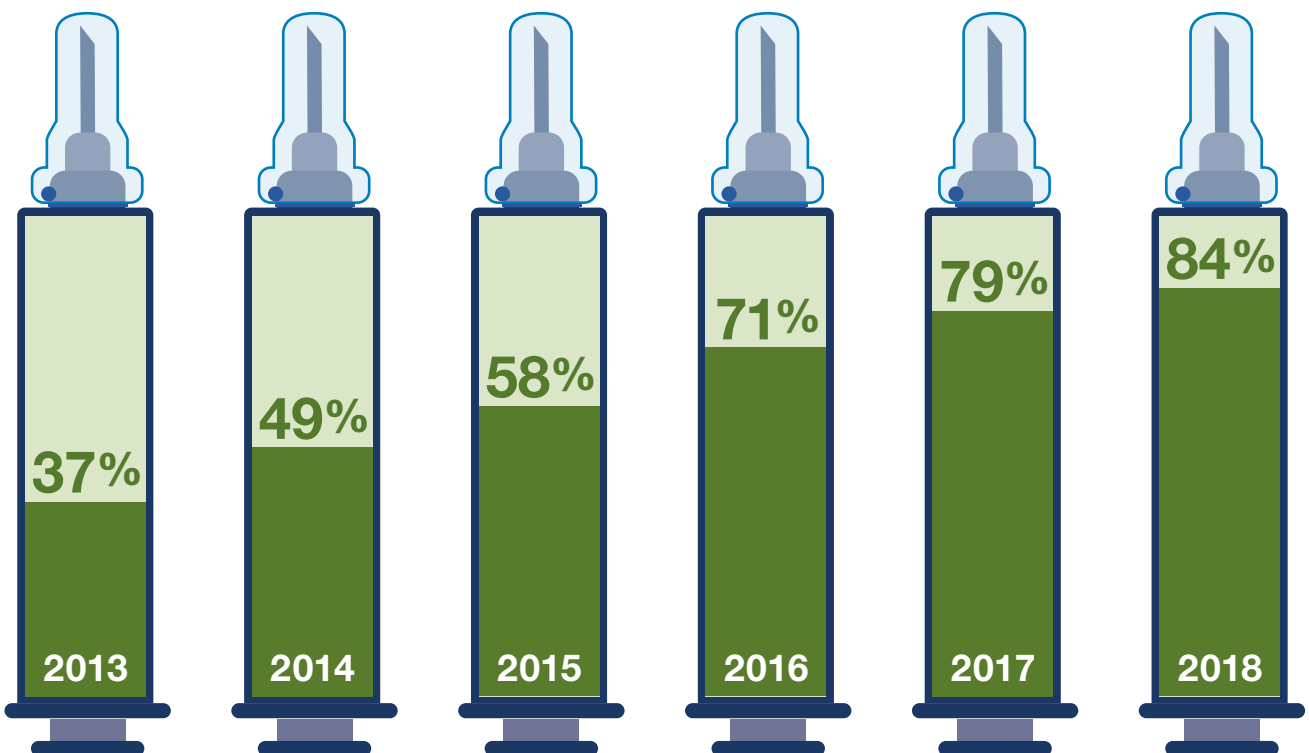


**4.2%** (n=3)  
**Non-intact skin exposure**



**0.0%** (n=0)  
**Unknown**

↑ Safety device uptake has **increased 47%**  
from **37%** in 2013 to **84%** in 2018



# Healthcare outbreaks and incidents

Healthcare outbreaks are reported to ARHAI Scotland for expert advice and/or as part of the healthcare incidence assessment tool (HIIAT).

In 2019, there were **213** healthcare infection incidents and outbreaks

Incidents and outbreaks reported as HIIATs are categorised as red, amber or green. Of the total number of reports, there were

27 Red

20 Amber

165 Green

1 Not done

Of the total number of incidents and outbreaks in 2019



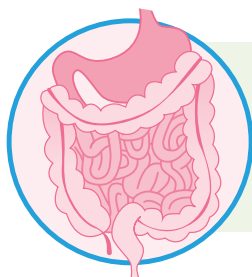
**36.2%**  
were respiratory



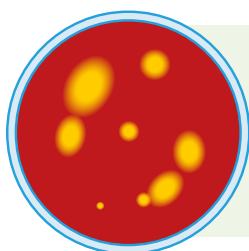
of those  
**40.3%**  
were influenza virus



**93.5%**  
of all influenza were type A



**10.3%** were gastrointestinal  
↓ A decrease of **7.9%** compared to 2018



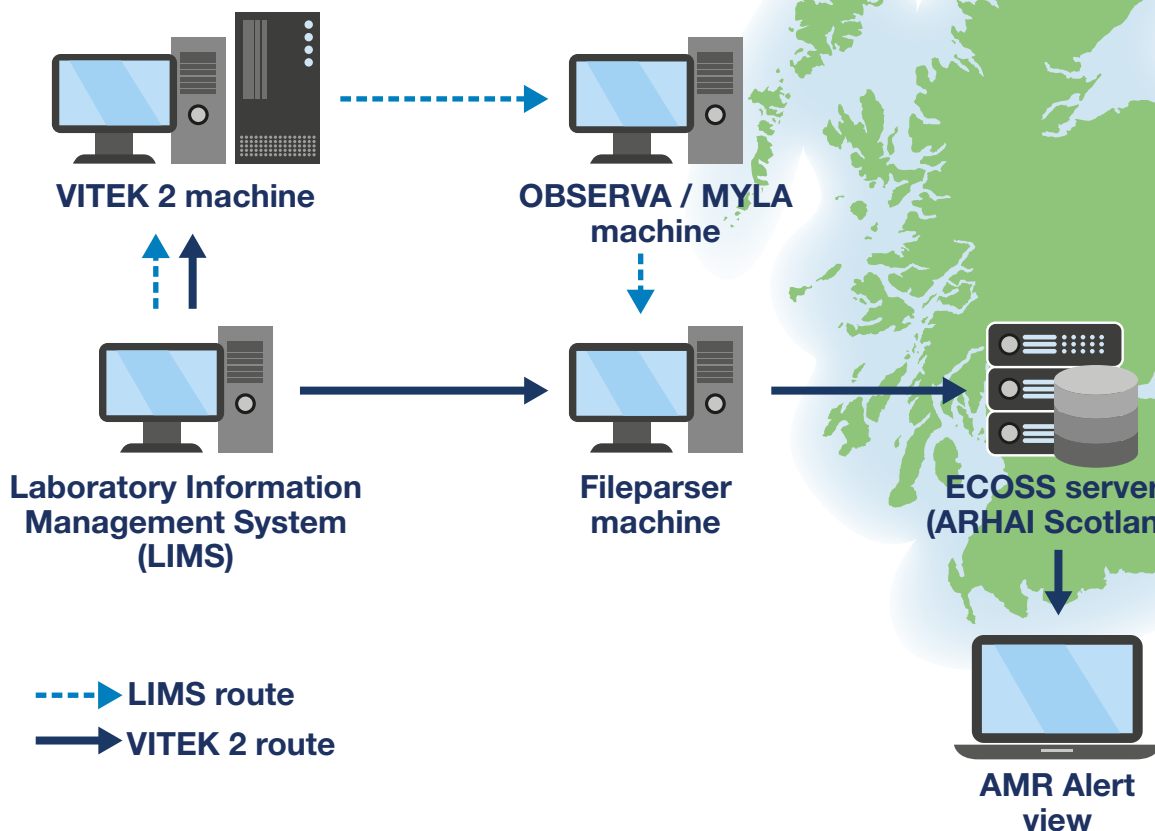
of those  
**54.5%** were *Clostridioides difficile*  
↓ A decrease of **10%** compared to 2018

# The ARHAI Scotland antimicrobial resistance alerts early warning system

National monitoring of exceptional phenotypes enables a timely scientific and public health response to potential emerging AMR issues.

Detection of emerging antimicrobial resistance is critical to contain the development and spread of resistance at a national, regional and local level.

Allows ARHAI Scotland to gather intelligence relating to national trends and to communicate any identified issues with other public health bodies, as necessary.



The exceptional phenotype list is published in the **National Infection Prevention and Control Manual**  
[www.nipcm.hps.scot.nhs.uk/](http://www.nipcm.hps.scot.nhs.uk/)



# Norovirus outbreaks

Norovirus spreads very easily and there is a risk of outbreaks in any place where there are shared living spaces such as in hospitals.

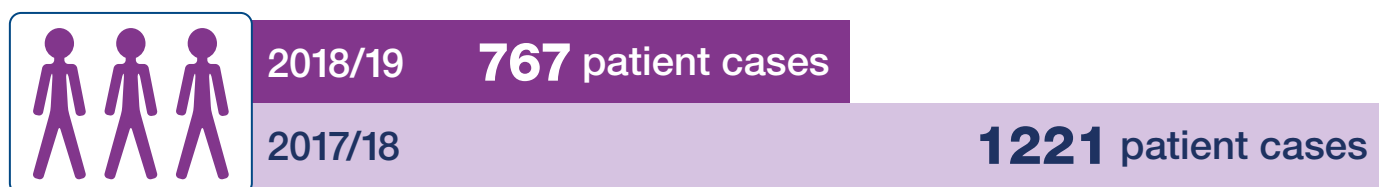
NHS Scotland boards reported **156** closures due to norovirus in season 2018/19

↓ A decrease of **31.3%** from **227** in season 2017/18



There were **767** suspected or confirmed patient cases of norovirus in season 2018/19

↓ A decrease of **37.2%** from **1221** in season 2017/18



In 2019 the 'Stay at Home' campaign was re-launched by HPS in partnership with Health Scotland. This provided information to the public on preventing the spread of norovirus and aimed to reduce the overall impact and burden of norovirus on individuals and health and care settings. Social media was also used to deliver key messages, which included tweets and an educational YouTube video 'Norovirus Explained' available at: <https://www.hps.scot.nhs.uk/a-to-z-of-topics/norovirus/>

# Development of guidance

## National Infection Prevention and Control Manual

The National Infection Prevention and Control Manual (NIPCM) (<http://www.nipcm.scot.nhs.uk/>) continues to evolve from its inaugural chapter, Chapter 1: Standard Infection Control Precautions (SICPs) in 2012, followed by Chapter 2: Transmission Based Precautions (TBPs) in 2013/2014; Chapter 3: Healthcare Infection, Incidents, Outbreaks and Data Exceedance in 2017 and the Addendum for Infection Prevention and Control within Neonatal Settings (NNU) in 2018.

During 2019 the methodology for literature reviews was redeveloped to include a two-person methodology with the aim to reduce reviewer bias and improve overall quality. The Aerosol Generating Procedures (AGPs) literature review was the first to be conducted using the revised two-person methodology.

In 2019 the steering and consensus groups from the National Policies, Guidance and Outbreaks, and Infection Control in the Built Environment and Decontamination programmes amalgamated to form the National Infection Prevention and Control steering and consensus groups. This ensures that infection prevention and control (IPC) issues surrounding the built environment and decontamination are incorporated into future policies and guidance. This also underpins the decision to develop a fourth chapter of the NIPCM which will consider IPC for the built environment.

## National Infection Prevention and Control Manual Website development

The **A-Z of Pathogens** contains current national and international guidance and is a reference guide for pathogen specific information providing; a summary of the infectious agent/disease, incubation period, infectivity, transmission route, notifiable status, guidance and supporting materials.

To ensure that the A-Z content remains current, quarterly reviews of the published scientific literature and guidance are undertaken.

## Healthcare Associated Infection Compendium

The **HAI Compendium** is a directory of guidance and supporting materials produced by Scottish, UK and international organisations/stakeholders on IPC practice, antimicrobial resistance and the built environment. Content for the HAI Compendium is updated on a monthly basis by searching scientific alerts, newsletters and websites.

A new category 'Animals in care settings' was created in 2019 following the publication of 'Animals in care settings: Infection prevention and control guidance'.

## Hand hygiene and alcohol based hand rub

ARHAI Scotland, supported 5 May World Health Organization (WHO) 'SAVE LIVES: Clean your hands campaign' and the 2019 call to action was 'Clean care for all - it's in your hands'. Awareness was raised of the key campaign messages to a wide audience by using social media and website content.

During 2019, promoted the WHO IPC global survey to NHS boards. Survey results could be used locally for hand hygiene and IPC improvement.

The interactive dashboard on the NSS Discovery platform continues to display alcohol based hand rub sales via National Distribution Centre (NDC) and allows NHS boards to access their data on demand and compare it to national figures.

## Information leaflets

A new leaflet 'Group A streptococcal infection (GAS) – information for healthcare workers' was published in March 2019. Our leaflets are reviewed regularly to ensure that they remain current and during 2019 the following were reviewed and reissued:

- *Clostridioides difficile* infection – information for residents and visitors of care homes
- Healthcare Associated Infections (HAI): Information for the public
- Vancomycin-resistant enterococci (VRE): Information for healthcare workers/patients
- Washing clothes at home: information for people in hospital or care home and their relatives.

## Respiratory protective equipment

The Scotland-wide Respiratory Protective Equipment (RPE) expert advisory group continues to support the development of guidance and provide expert opinion on RPE.

During November and December 2019, HPS conducted the annual RPE survey to gather intelligence on usage across NHSScotland. Responses received from 13 territorial boards and two special boards (Scottish Ambulance Service and National Waiting Times Centre) showed similar availability and preferences for RPE to those received in previous years.

## Future work

It is intended that all NIPCM literature reviews will be updated using the two-person methodology by end 2021.

Development of Chapter 4 of the NIPCM which will include comprehensive evidence-based IPC guidance for frontline staff regarding the built environment, including decontamination.

# Infection control in the built environment and decontamination

The Infection Control in the Built Environment and Decontamination (ICBED) programme provides expert advice related to the public health, infection control, clinical and scientific aspects of the built environment and decontamination. The programme works in collaboration with Health Facilities Scotland (HFS) to deliver the NHSScotland decontamination and built environment agenda which is clinically led and technically informed. The ICBED programme continues to review existing and emerging technologies and infection control strategies for management of the healthcare built environment, decontamination of the patient environment and patient related equipment; this ensures that literature reviews remain extant and that their recommendations are fit for purpose.

## The built environment

The built environment work stream of the programme covers all HCAI aspects of the physical healthcare environment including ventilation, water and environmental cleanliness. A planned programme of review of existing guidance, scientific literature and emerging evidence was commenced in early 2019 to ensure the current evidence base relating to the built environment is maintained.

Work continued throughout the year reviewing existing guidance, scientific literature and emerging evidence regarding water systems in healthcare settings. Two aide-memoires were published within Chapter 3 of the NIPCM to provide best practice recommendations to be implemented in the event of a healthcare water-associated or healthcare ventilation-associated infection incident/outbreak; **Prevention and management of healthcare water-associated infection incident/outbreaks**, and **Prevention and management of healthcare ventilation-associated infection incidents/outbreaks**.

As a consequence of an increase in board support a number of planned work activities including updating the scientific literature reviews for existing and emerging technologies for environmental decontamination were rescheduled for the 2020-2021 programme.



## NHSScotland national water survey

A survey of current water testing practices within NHSScotland acute healthcare facilities was carried out. This survey was aligned to the recommendations from the report produced by HPS in 2018; '**Summary of Incident and Findings of the NHS Greater Glasgow and Clyde: Queen Elizabeth University Hospital/Royal Hospital for Children water contamination incident and recommendations for NHSScotland**'. The final water survey report is due to be published in 2020.

## Future work

There are a number of projects planned for the ICBED programme including a review of HCAI aspects of guidance relating to the healthcare built environment. These work outputs will inform development of Chapter 4 of the NIPCM.

Planned work for 2020/21 will also include:

- Updated scientific literature reviews for existing and emerging technologies for environmental decontamination for; microfibre, electrolysed water, hydrogen peroxide vapour and steam technologies. These scheduled updates ensure that the evidence bases for these reviews remain extant and that their recommendations are fit for purpose.

# Care home antimicrobial resistance and healthcare associated infection

The CARHAI health protection programme provides a co-ordinated approach to preventing infections; containing antimicrobial resistance (AMR); strengthening infection prevention and control practice (IPC) and improving staff IPC knowledge and understanding.

The programme underpins **The Scottish Government Health and Social Care Delivery Plan** and the **NHS NSS Strategy** by supporting better outcomes for people using health and social care services. An IPC community health network has been commenced with care providers, service users and 3rd sector partners.

Activity during 2019 included:

- working with the Care Inspectorate to produce an IPC inspection tool
- conducting a survey in volunteer care homes for adults – showing that there had been limited use, knowledge and understanding of national IPC resources in these settings.
- establishing a national care home Short Life Working Group (SLWG) to coordinate the delivery of the **HALT (2017) Report** recommendations and to collaboratively implement the national care home IPC programme.

## The Scottish Urinary Tract Infection Programme

Scottish Urinary Tract Infection (SUTIN) was established in 2015 with the aim of achieving a cohesive approach for all UTI reduction work in Scotland. The network is now encompassed within the CARHAI programme and it continues to include representatives from a wide range of organisations across health and social care settings with a shared interest in UTI reduction.

Activity during 2019 included:

- the launch of the children's hydration campaign '**Think2drinkH2O**'.
- **evaluation of adult hydration campaigns** by surveying community pharmacist and healthcare and community staff, questioning the use of materials developed for each phase of the campaign.
- during 2019 an evaluation of the National Catheter Passport (NCP) using a qualitative research approach was conducted, supported by the Vale of Leven Scholarship. Recommendations from the evaluation will inform a future review of the NCP and support the further implementation of the NCP across health and social care settings.



# List of abbreviations and acronyms

<b>AGP</b>	Aerosol Generating Procedures
<b>AMR</b>	Antimicrobial Resistance
<b>ARHAI</b>	Antimicrobial Resistance and Healthcare Associated Infections
<b>BBV</b>	Bloodborne Virus
<b>BSI</b>	Bloodstream Infection
<b>CARHAI</b>	Care Home Antimicrobial Resistance and Healthcare Associated Infection
<b>CAUTI</b>	Catheter Associated Urinary Tract Infection
<b>CDI</b>	<i>Clostridioides difficile</i> Infection
<b>CoE</b>	Centre of Excellence
<b>CLABSI</b>	Central Line Associated Blood Stream Infection
<b>CRA</b>	Clinical Risk Assessment
<b>CPE</b>	Carbapenemase-Producing Enterobacterales
<b>CPO</b>	Carbapenemase-Producing Organism
<b>ECB</b>	<i>Escherichia coli</i> Bacteraemia
<b>ECOSS</b>	Electronic Communication of Surveillance in Scotland
<b>GAS</b>	Group A streptococcal infection
<b>HBV</b>	Hepatitis B Virus
<b>HCAI</b>	Healthcare Associated Infection
<b>HCV</b>	Hepatitis C Virus
<b>HCW</b>	Healthcare Worker
<b>HFS</b>	Health Facilities Scotland
<b>HIIAT</b>	Healthcare Infection Incident Assessment Tool
<b>HIV</b>	Human Immunodeficiency Virus
<b>HMUD</b>	Hospital Medicines Utilisation Database
<b>HPS</b>	Health Protection Scotland
<b>HTM</b>	Health Technical Memoranda
<b>ICBED</b>	Infection Control in the Built Environment and Decontamination
<b>ICU</b>	Intensive Care Unit
<b>IPC</b>	Infection Prevention and Control
<b>ISD</b>	Information Services Division
<b>MRSA</b>	Meticillin Resistant <i>Staphylococcus aureus</i>
<b>MSSA</b>	Meticillin Sensitive <i>Staphylococcus aureus</i>
<b>NCP</b>	National Catheter Passport
<b>NDC</b>	National Distribution Centre
<b>NDM</b>	New Delhi Metallo-Beta-lactamase

<b>NHS</b>	National Health Service
<b>NIPCM</b>	National Infection Prevention and Control Manual
<b>NNU</b>	Neonatal Unit
<b>NRS</b>	National Records of Scotland
<b>NSS</b>	National Services Scotland
<b>OBDs</b>	Occupied Bed Days
<b>PDS</b>	Post Discharge Surveillance
<b>PHE</b>	Public Health England
<b>PIS</b>	Prescribing Information System
<b>PNE</b>	Patient Notification Exercise
<b>PWID</b>	People Who Inject Drugs
<b>OXA</b>	Oxacillinase
<b>RPE</b>	Respiratory Protective Equipment
<b>SAB</b>	<i>Staphylococcus aureus</i> Bacteraemia
<b>SAPG</b>	Scottish Antimicrobial Prescribing Group
<b>SICPs</b>	Standard Infection Control Precautions
<b>SICSAG</b>	Scottish Intensive Care Society Audit Group
<b>SLWG</b>	Short Life Working Group
<b>SMR</b>	Scottish Morbidity Records
<b>SONAAR</b>	Scottish One Health Antimicrobial Use and Antimicrobial Resistance
<b>SHTM</b>	Scottish Health Technical Memoranda
<b>SSI</b>	Surgical Site Infection
<b>SSIRS</b>	Surgical Site Infection Reporting System
<b>SUTIN</b>	Scottish Urinary Tract Infection Network
<b>TBPs</b>	Transmission Based Precautions
<b>TOBDs</b>	Total Occupied Bed Days
<b>UKAP</b>	UK Advisory Panel for Healthcare Workers Infected with Bloodborne Viruses
<b>UTI</b>	Urinary Tract Infection
<b>VAD</b>	Vascular Access Device
<b>VRE</b>	Vancomycin-resistant enterococci
<b>VAP</b>	Ventilator Associated Pneumonia
<b>VIM</b>	Verona integron–encoded metallo-Beta-lactamases
<b>WHO</b>	World Health Organisation
<b>WTE</b>	Whole Time Equivalent

# Appendix 1 – Publication Metadata

Metadata Indicator	Description
<b>Publication title</b>	Healthcare Associated Infection. 2019 Annual Report.
<b>Description</b>	This release provides information on healthcare associated infection in Scotland for the period January to December 2019.
<b>Theme</b>	Healthcare Associated Infections in Scotland
<b>Topic</b>	Healthcare Associated Infection Infection Prevention and Control
<b>Format</b>	Online resource (PDF)
<b>Data source(s)</b>	<p><b>Gram-negative Bacteraemia:</b> Case data source: Electronic Communication of Surveillance in Scotland (ECOSS) Enhanced Surveillance Web Tool</p> <p>Healthcare associated denominator: Total occupied bed days: Information Services Division ISD(S)1</p> <p>Community associated denominator: National Records of Scotland (NRS) population estimates</p> <p><b>Urinary Tract Infection:</b> ECOSS (Electronic Communication of Surveillance in Scotland)</p> <p><b>Carbapenemase-Producing Organisms:</b> ECOSS, Antimicrobial Resistance and Healthcare Associated Infections (AMRHAI) Reference Unit Public Health England (PHE) and the Scottish AMR Satellite Laboratory.</p> <p>Antibiotic use in acute hospitals numerator: Hospital Medicines Utilisation Database (HMUD) ISD. Includes only hospitals labelled as 'General Hospitals (mainly acute)' in HMUD.</p> <p>Antibiotic use in acute hospitals denominator: Acute hospital occupied bed days (OBDs): Information Services Division (ISD). Sum of OBDs for all hospitals in numerator.</p> <p><b>Clostridioides difficile Infection:</b> Case data source: Electronic Communication of Surveillance in Scotland (ECOSS)</p> <p>Data linkage source: SMR01 General / Acute Inpatient and Day Case: Information Services Division</p> <p>Healthcare associated denominator: Total occupied bed days: Information Services Division ISD(S)1</p> <p>Community associated denominator: National Records of Scotland (NRS) population estimates</p> <p>Antibiotic use in primary care numerator: Prescribing Information System (PIS)</p>

Metadata Indicator	Description
	<p>Antibiotic use in primary care denominator: National Records of Scotland (NRS) population estimates</p> <p>Antibiotic use in acute hospitals numerator: Hospital Medicines Utilisation Database (HMUD) ISD. Includes only hospitals labelled as 'General Hospitals (mainly acute)' in HMUD.</p> <p>Antibiotic use in acute hospitals denominator: Acute hospital occupied bed days (OBDs): Information Services Division (ISD). Sum of OBDs for all hospitals in numerator.</p> <p><b>Staphylococcus aureus Infection:</b> Case data source: Electronic Communication of Surveillance in Scotland (ECOSS) Enhanced Surveillance Web Tool</p> <p>Healthcare associated denominator: Total occupied bed days: Information Services Division ISD(S)1</p> <p>Community associated denominator: National Records of Scotland (NRS) population estimates</p> <p><b>Surgical Site Infection:</b> Case data source: Surgical Site Infection Reporting System (SSIRS)</p> <p>Number of procedures denominator: Surgical Site Infection Reporting System (SSIRS)</p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b> Source of data are Scottish Intensive Care Society Audit Group</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b></p> <ol style="list-style-type: none"> <li>1) Voluntary anonymous returns from Occupational Health services and Health and Safety leads in health and applicable special boards in NHSScotland.</li> <li>2) NHS National Procurement.</li> </ol> <p><b>Healthcare Outbreaks and Incidents:</b> Healthcare infection incidents reported to NSS.</p> <p><b>Norovirus Outbreaks:</b> Norovirus Outbreaks reported to NSS.</p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<p><b>Date that data are acquired</b></p>	<p><b>Gram-negative Bacteraemia:</b> 10/03/2020 (with the exception of <i>Escherichia coli</i> bacteraemia)</p> <p><b><i>Escherichia coli</i> Bacteraemia:</b> 02/03/2020</p>

Metadata Indicator	Description
	<p><b>Urinary Tract Infection:</b> 21/02/2020</p> <p><b>Carbapenemase-Producing Organisms:</b> 20/02/2020</p> <p><b><i>Clostridioides difficile</i> Infection:</b> 22/01/2020</p> <p><b><i>Staphylococcus aureus</i> Infection:</b> 27/02/2020</p> <p><b>Surgical Site Infection:</b> 24/02/2020</p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b> 22/07/2020</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> 23/01/2020</p> <p><b>Healthcare Outbreaks and Incidents:</b> 30/01/2020</p> <p><b>Norovirus Outbreaks:</b> 30/01/2020</p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<b>Release date</b>	22 September 2020
<b>Frequency</b>	Annual
<b>Timeframe of data and timeliness</b>	<p>The latest iteration of data are to 31 December 2019, therefore nine months in arrears.</p> <p><b>For the following chapters 2018 data has been reported as 2019 was not available:</b></p> <p><b><i>Escherichia coli</i> Bacteraemia:</b> 2019 mortality data was not available.</p> <p><b><i>Clostridioides difficile</i> Infection:</b> 2019 mortality data was not available.</p> <p><b><i>Staphylococcus aureus</i> Infection:</b> 2019 mortality data was not available.</p> <p><b>Norovirus:</b> Norovirus season extends from October through to April therefore data in this report is for October 2018 to April 2019. The data reported on a weekly basis by boards and the reporting method has capacity to be retrospective due to only being reported when the bay/ward has reopened. Therefore, the data should not be used for benchmarking or comparison but only for NHS boards assessment for risk and outbreak preparedness.</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> Based on historical practice, occupational exposure data was collected up until mid-2019, however, a decision was made to switch to presenting data in</p>

Metadata Indicator	Description
	annual increments. The next annual report will contain complete data for 2019. BBV seroconversion data only being available 6 months post the last day of exposure. While NP data is available up to the end of 2019, for comparison with sharps injury data this is only reported to the end of 2018.
<b>Continuity of data</b>	<p><b>Gram-negative Bacteraemia:</b> None</p> <p><b>Urinary Tract Infection:</b> N/A</p> <p><b>Carbapenemase-Producing Organisms:</b> None</p> <p><b><i>Clostridioides difficile</i> Infection:</b> None</p> <p><b><i>Staphylococcus aureus</i> Infection:</b> None</p> <p><b>Surgical Site Infection:</b> None</p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b> None</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> None</p> <p><b>Healthcare Outbreaks and Incidents:</b> None</p> <p><b>Norovirus Outbreaks:</b> None</p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<b>Revisions statement</b>	<p><b>REVISION, November 2020:</b> Revisions to the data and text were made on page 8. This included a revision to the total number of Gram-negative bacteraemia due to the five most commonly reported pathogens in healthcare and community settings, and the percentages for organisms in the treemap. These changes are to reflect an update in the number of <i>Klebsiella oxytoca</i> bacteraemia reported in 2019.</p>
<b>Revisions relevant to this publication</b>	<p><b>Gram-negative Bacteraemia:</b></p> <p><i>Escherichia coli</i> bacteraemia:</p> <p>Details provided in quarterly publication  <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Urinary Tract Infection:</b> N/A</p>



Metadata Indicator	Description
	<p><b>Carbapenemase-Producing Organisms:</b> None</p> <p><b><i>Clostridioides difficile</i> Infection:</b>  Details provided in quarterly publication  <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b><i>Staphylococcus aureus</i> Infection:</b>  Details provided in quarterly publication  <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Surgical Site Infection:</b>  Details provided in quarterly publication  <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b>  Details provided in annual publication <a href="https://www.hps.scot.nhs.uk/a-to-z-of-topics/surveillance-of-hai-in-intensive-care-units/">https://www.hps.scot.nhs.uk/a-to-z-of-topics/surveillance-of-hai-in-intensive-care-units/</a></p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> There are no revisions to historical data. Commodity specialists identify and classify all sharps instruments available for purchase via National Procurement. New sharps devices including new safety versions and non-sharp alternative products will be added by the National Procurement Product Specialist and incorporated into the data as applicable.</p> <p><b>Healthcare Outbreaks and Incidents:</b> In April 2016 the mandatory reporting of non-norovirus HIIAT greens was introduced, therefore this dataset has an additional three months of mandatory HIIAT green reporting.</p> <p><b>Norovirus Outbreaks:</b> From 01 October 2017 the reporting process for norovirus ward and bay closures changed from Monday point prevalence to reporting on all bay and ward closures during the week.</p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<b>Concepts and definitions</b>	<p><b>Statistical significance:</b>  Please note an increase or decrease stated in this report Where the text refers to a statistically change, and where a trend is referred to as stable,</p>

Metadata Indicator	Description
	<p>or there has been no change, this means that there has been no significant increase or decrease.</p> <p><b>Gram-negative Bacteraemia:</b> Gram-negative organisms including Enterobacterales, (comprising amongst others <i>Escherichia coli</i>, <i>Klebsiella oxytoca</i>, and <i>Klebsiella pneumoniae</i>), and non-fermenters, (comprising amongst others <i>Pseudomonas aeruginosa</i>, and <i>Acinetobacter spp.</i>), cause serious infections including bacteraemia, pneumonia, meningitis, and surgical site infections (SSIs).</p> <p>Gram-negative bacteraemia is a public health and clinical concern because of:</p> <ul style="list-style-type: none"> <li>• the severity of infection, commonly occurring among vulnerable patients often at the extremes of life and/or with comorbidities,</li> <li>• the large number of cases of Gram-negative bacteraemias each year, and high prevalence of Gram-negative infections,</li> <li>• the association with receiving healthcare in community and healthcare settings.,</li> <li>• their ability to become resistant to multiple classes of antibiotics, limiting treatment options.</li> </ul> <p>All antimicrobial susceptibility data published in this report were aligned with the following definition:</p> <p>A new case of bacteraemia is a patient from whom an organism has been isolated from the patient’s blood, and who has not previously had the same organism isolated from blood within a 14-day period (i.e. 14 days from date last positive sample obtained).</p> <p>% Non-susceptible= non-susceptible (resistant or intermediate) isolates divided by the total number of isolates tested *100.</p> <p><b><i>Escherichia coli</i> bacteraemia:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Urinary Tract Infection:</b> An important aspect of reducing the incidence of Gram-negative bacteraemia is the prevention and management of primary infections, including urinary tract infections (UTIs). As prescribing for UTIs is usually empirical, it is essential that resistance to commonly used antibiotics is monitored and reported to inform prescribing policy. The majority of UTIs in Scotland are caused by <i>E. coli</i>. All antimicrobial susceptibility data published in this report were aligned with the following definition:</p> <ul style="list-style-type: none"> <li>• A new case of bacteraemia is a patient from whom an organism has been isolated from the patient’s blood, and who has not previously had the same organism isolated from blood within a 14 day period (i.e. 14 days from date last positive sample obtained).</li> </ul> <p>% Non-susceptible= non-susceptible (resistant or intermediate) isolates divided by the total number of isolates tested *100.</p>

Metadata Indicator	Description
	<p><b>Carbapenemase-Producing Organisms:</b> Carbapenems are broad spectrum antibiotics that are generally used in hospitals for the treatment of suspected or confirmed multidrug resistant Gram-negative infections. They are often one of the few antibiotics left for treatment of these resistant infections. Important hospital acquired infection (HAI)/Healthcare Associated Infection (HCAI) -related Gram-negative organisms are; Enterobacterales, (comprising amongst others <i>E. coli</i>, <i>K. oxytoca</i>, and <i>K. pneumoniae</i>), and non-fermenters, (comprising amongst others <i>P. aeruginosa</i>, and <i>Acinetobacter</i> spp.).</p> <p>The emergence and spread of Gram-negative organisms which have acquired the ability to produce carbapenemase enzymes that inactivate carbapenem antibiotics, known as carbapenemase-producing organisms (CPOs), is increasingly concerning. CPOs have been reported globally with increased intercontinental travel and exposure to healthcare abroad contributing to their spread.</p> <p>The genes that code for carbapenemase enzymes spread between and within bacterial species via plasmids or transposons, and are commonly associated with other resistance determinants; this means that bacteria resistant to carbapenems are invariably resistant to most other broad spectrum antibiotics, leaving little in the way of treatment options. CPOs produce beta-lactamase enzymes which inactivate carbapenems and other beta-lactam antibiotics such as the penicillin and cephalosporin classes of antibiotics.</p> <p>Although the overall occurrence of carbapenem resistance in bacteraemia and UTIs is estimated to be low in Scotland but has been increasing over recent years. A national enhanced surveillance program for carbapenem resistance, with a focus on Gram-negative bacteria expressing acquired carbapenemases, was setup to improve understanding of the current situation across Scotland.</p> <p>Probable case - A case is any person in Scotland with Gram-negative bacteria isolated from a clinical or screening specimen, where resistance is suspected to be caused by the expression of an acquired carbapenemase.</p> <p>Confirmed case- A case is any person in Scotland with Gram-negative bacteria isolated from a clinical or screening specimen, where resistance is suspected to be caused by the expression of an acquired carbapenemase and with a reference laboratory confirmation of a CPO.</p> <p>CPE CRA screening uptake - The national policy for CPE screening on admission to hospital states all acute admissions must undergo a clinical risk assessment followed by a swab screen to test for CPE. At present, the degree of implementation of the mandatory policy across boards is not known as screening uptake is not currently measured. The data reported is from the pilot data collection and calculates uptake of application of CRA as a percentage, from an audit sample of patient admissions (within the pilot dates).</p>

Metadata Indicator	Description
	<p><b><i>Clostridioides difficile</i> Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p>Antibiotic use information in primary care presented as the number of items which represents the number of times an antibiotic appears on prescription.</p> <p>Antibiotic use information in acute hospitals is presented as the number of defined daily doses  <a href="https://www.whocc.no/ddd/definition_and_general_considera/">https://www.whocc.no/ddd/definition_and_general_considera/</a></p> <p><b><i>Staphylococcus aureus</i> Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Surgical Site Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b> The surveillance data are collected in accordance with the European Centre for Disease Prevention and Control protocol for HAI Surveillance in ICU. Ventilator Associated Pneumonia: Patients who are ventilated are at increased risk of developing a VAP. CVC related infection/Bloodstream infections: Patients in intensive care often have a CVC <i>in situ</i> and are at increased risk of developing a CVC related infection, including bacteraemia.</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> Safer sharp device - A medical sharp device which has been designed to incorporate a feature or mechanism that minimises and/or prevents the risk of accidental injury. Other terms include (but are not limited to) safety devices, safety-engineered devices and safer needle devices.</p> <p>Sharps Injuries - An injury caused by a sharp instrument or object such as a needle or scalpel, cutting or puncturing the skin. Other terms include percutaneous injury.</p> <p>Significant Occupational Exposure - A percutaneous, mucocutaneous exposure or non-intact skin (abrasions, cuts, eczema) exposure to blood/other body fluids from a source that is known (or later found to be) positive for a bloodborne virus infection.</p> <p><b>Healthcare Outbreaks and Incidents:</b> Healthcare infection incidents reported to NSS.</p> <p>Healthcare associated infection incidents are defined within chapter 3 of the National Infection Prevention and Control Manual as:</p> <p>An exceptional infection episode: A single case of any serious illness which has major implications for others (patients, staff and/or visitors), the organisation or wider public health e.g. infectious diseases of high consequence such as VHF or XDR-TB.</p>

Metadata Indicator	Description
	<p>A healthcare associated infection outbreak: Two or more linked cases with the same infectious agent associated with the same healthcare setting over a specified time period; or A higher than expected number of cases of HAI in a given healthcare area over a specified time period.</p> <p>A healthcare infection exposure incident: Exposure of patients, staff, public to a possible infectious agent as a result of a healthcare system failure or a near miss e.g. ventilation, water or decontamination incidents.</p> <p>A healthcare infection data exceedance: A greater than expected rate of infection compared with the usual background rate for that healthcare location <a href="http://www.nipcm.scot.nhs.uk/chapter-3-healthcare-infection-incidents-outbreaks-and-data-exceedance/">http://www.nipcm.scot.nhs.uk/chapter-3-healthcare-infection-incidents-outbreaks-and-data-exceedance/</a></p> <p><b>Norovirus Outbreaks:</b> Outbreaks of norovirus are defined as two or more linked cases associated with the same healthcare setting over a specified time period.</p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b></p> <p>The built environment covers all aspects of the healthcare environment including healthcare premises, ventilation, water, physical layout/requirements, decontamination (reusable medical devices, equipment and environment). There is a wide variety of current technical guidance which applies to the built environment including Scottish Health Technical Memoranda (SHTM), Health Technical Memoranda (HTM) and Facilities/Health Planning notes. These guidance documents cover the engineering, control and technical aspects of the built environment, however the ICBED remit is to apply the Infection Prevention (clinical elements) to support the technical documents.</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<p><b>Relevance and key uses of the statistics</b></p>	<p><b>Gram-negative Bacteraemia:</b> The outputs of the surveillance programme are intended to support the NHS boards in controlling and reducing the burden of Gram-negative bacteraemia.</p> <p><b><i>Escherichia coli</i> Bacteraemia:</b></p> <p>Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Urinary Tract Infection:</b> The outputs of the surveillance programme are intended to support the NHS boards in controlling and reducing the burden of <i>E. coli</i> urinary tract infections.</p> <p><b>Carbapenemase-Producing Organisms:</b> Output from the surveillance system is intended to support units in reducing and preventing CPOs. The</p>

Metadata Indicator	Description
	<p>data are intended to be used locally for improvement and the data are also used nationally to measure trends at this level and to benchmark against other European countries.</p> <p>Output from the CPE screening pilot data collection was primarily collected to test the feasibility amending the MRSA screening KPI collection protocol. The uptake figure may give an indication of uptake, but this must be interpreted with caution, as the pilot covered only one annual quarter, and does not represent national uptake. The pilot will inform the development of a national data collection, and following roll out will allow a better assessment of the implementation of the CPE screening policy.</p> <p><b><i>Clostridioides difficile</i> Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b><i>Staphylococcus aureus</i> Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Surgical Site Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b> Output from the surveillance system is intended to support units in reducing HAI and preventing HCAI. The data are intended to be used locally for improvement and the data are also used nationally to measure trends at this level and to benchmark against other European countries.</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> The data will facilitate compliance with H&amp;S legislation and reduce BBV infection risk events and infections occurring as a consequence of healthcare interventions through i) monitoring the incidence of occupational exposures, among HCWs and changes over time ii) monitoring exposure outcomes and an assessment of the impact of interventions such as post exposure prophylaxis (HIV and HBV) or disease treatment (HCV) iii) monitoring the circumstances surrounding occupational exposures, including the use of safer sharps devices iv) evaluating the impact of safer sharps devices on sharps injuries and v) informing local and national prevention strategies to reduce the number of sharps injuries sustained, and thus reduce the risk of contracting a bloodborne virus (BBV) occupationally.</p> <p><b>Healthcare Outbreaks and Incidents:</b> To identify risks or trends in the organisms, types of infection, procedures, patients, or medical specialities associated with healthcare infection incidents to inform the production of guidance, tools or policy to assist in preparing for, preventing, detecting and managing healthcare infection incidents.</p>

Metadata Indicator	Description
	<p><b>Norovirus Outbreaks:</b> Norovirus Outbreak data are used to provide more robust data on norovirus outbreaks thus assisting preparedness for future seasons.</p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p> <p><b>Key to NHS boards</b></p> <p>AA = Ayrshire &amp; Arran  BR = Borders  DG = Dumfries &amp; Galloway  FV = Forth Valley  FF = Fife  GR = Grampian  GGC = Greater Glasgow &amp; Clyde  HG = Highland  LN = Lanarkshire  LO = Lothian  NWTC = National Waiting Times Centre  OR = Orkney  SH = Shetland  TY = Tayside  WI = Western Isles</p>
<b>Accuracy</b>	<p><b>Gram-negative Bacteraemia:</b> Gram-negative bacteraemia data are the product of the Electronic Communication of Surveillance in Scotland (ECOSS). Participating laboratories routinely report all identifications of organisms, infection or microbiological intoxication and where possible the antimicrobial resistance data unless they are known to be of no clinical or public health importance. The collected data are used for the identification of single cases of severe disease, outbreaks, antimicrobial resistance patterns and longer term trends in the incidence of laboratory reported infections, enhanced surveillance, health protection, analytical and statistical use.</p> <p><b>Escherichia coli Bacteraemia:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Urinary Tract Infection:</b> Gram-negative urinary isolate data are the product of the Electronic Communication of Surveillance in Scotland (ECOSS). Participating laboratories routinely report all identifications of organisms, infection or microbiological intoxication and where possible the antimicrobial resistance data unless they are known to be of no clinical or public health importance. The collected data are used for; the</p>

Metadata Indicator	Description
	<p>identification of single cases of severe disease, outbreaks, antimicrobial resistance patterns and longer term trends in the incidence of laboratory reported infections, enhanced surveillance, health protection, analytical and statistical use.</p> <p><b>Carbapenemase-Producing Organisms:</b> CPO isolates are derived from a range of screening and clinical specimens including urine, respiratory and blood isolates submitted to the Antimicrobial Resistance and Healthcare Associated Infections (AMRHA) Reference Unit Public Health England (PHE) and the Scottish AMR Satellite lab.</p> <p>Data from the CPE screening CRA uptake pilot, is an audit of patient admission based on the sampling strategy for the MRSA screening KPI protocol, and subject to the same validation checks.</p> <p><b>Clostridioides difficile Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Staphylococcus aureus Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Surgical Site Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b> The data are collected within the Scottish Intensive Care Society Audit dataset. The HAI data are collected solely for the purpose of surveillance. Evidence from case note review validation indicate that units collect their data in a consistent way and an algorithm built into the electronic data collection system ensures that case definitions are applied consistently. However, it is likely that there is some level of under and over reporting from time to time.</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> Validation of collated data includes assessing data completeness and quality. Sense check of expected codes, frequencies and patterns in the data, with resolution of any queries/data irregularities with the data originators.</p> <p><b>Healthcare Outbreaks and Incidents:</b> NSS are aware that the healthcare infection incident assessment tool (HIIAT) is subjective and that there is variation in how NHSScotland boards assess and therefore report healthcare infection incidents.</p> <p><b>Norovirus Outbreaks:</b> Data are quality checked when it first comes in for accuracy and NHS boards are contacted if there are any data issues. The data are then added onto a spreadsheet holding all the 2018 figures. The data on this spreadsheet is checked again before being added to the Tableau file and any issues resolved.</p>



Metadata Indicator	Description
	<p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<p><b>Completeness</b></p>	<p><b>Gram-negative Bacteraemia:</b></p> <p><i>Escherichia coli</i> bacteraemia:</p> <p>Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Urinary Tract Infection:</b> Susceptibility data in this report were derived from urinary isolates samples from cases from the diagnostic laboratories in each NHS board. VITEK 2 systems were used to determine the susceptibilities for the majority of isolates. Other methods (such as agar dilution and Etest®) may have been used for testing of some isolates/agents. Selective reporting may also have occurred, where laboratories have chosen only to test and/or report susceptibility results against certain agents for clinical reasons.</p> <p>Selective reporting potentially weakens comparisons of data between different laboratories and could also underestimate the occurrence of multidrug resistance.</p> <p><b>Carbapenemase-Producing Organisms:</b> CPO isolates are derived from a range of screening and clinical specimens including urine, respiratory and blood isolates. All potential CPOs isolated by Scottish diagnostic laboratories are referred the Scottish AMR Satellite Reference service and to the AMRHAI Reference Unit at PHE for confirmation. A study to review submission of CPO isolates is ongoing.</p> <p>CPE screening CRA uptake reported is based on one quarter, and represents only 12 NHS boards who participated in the pilot.</p> <p><b>Clostridioides difficile Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Staphylococcus aureus Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Surgical Site Infection:</b> Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p>

Metadata Indicator	Description
	<p><b>Healthcare Associated Infections in Intensive Care Units:</b> The data are collected within the Scottish Intensive Care Society Audit dataset. The HAI data are collected solely for the purpose of surveillance. Previous data validation exercises have concluded that the HAI data reported have a high level of sensitivity and accuracy when validated against the case notes. However, it is likely that there is some level of under and over reporting from time to time. Data for 2018 was not published in the previous Annual Report but can be found within the report <a href="#">Audit of Critical Care in Scotland 2019, reporting on 2018</a>.</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> Note, sharps incidents and occupational exposures are self-reported, thus open to bias. Sharps device data consists of products distributed throughout Scotland via the National Distribution Centre and is thought to represent the vast majority of products purchased.</p> <p><b>Healthcare Outbreaks and Incidents:</b> NSS are aware that the healthcare infection incident assessment tool (HIAT) is subjective and that there is variation in how NHSScotland boards assess and therefore report healthcare infection incidents. The extent of variation in assessment and unreported incidents has not been fully quantified.</p> <p><b>Norovirus Outbreaks:</b> NHS Boards only send in data when their ward has reopened so data are included in a retrospective way.</p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<b>Comparability</b>	<p><b>Gram-negative Bacteraemia:</b> Public Health England report on national data on antibiotic resistance <a href="https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report">https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report</a></p> <p>ECDC report on Antimicrobial resistance surveillance in Europe <a href="https://www.ecdc.europa.eu/en/antimicrobial-resistance/surveillance-and-disease-data/report">https://www.ecdc.europa.eu/en/antimicrobial-resistance/surveillance-and-disease-data/report</a></p> <p><i>Escherichia coli</i> bacteraemia: Details provided in quarterly publication <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Urinary Tract Infection:</b> Public Health England report on national data on antibiotic resistance <a href="https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report">https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report</a>.</p>

Metadata Indicator	Description
	<p><b>Carbapenemase-Producing Organisms:</b> Public Health England report on Carbapenem resistance  <a href="https://www.gov.uk/government/collections/carbapenem-resistance-guidance-data-and-analysis">https://www.gov.uk/government/collections/carbapenem-resistance-guidance-data-and-analysis</a></p> <p>ECDC report on Carbapenem resistance  <a href="https://ecdc.europa.eu/en/surveillance-atlas-infectious-diseases">https://ecdc.europa.eu/en/surveillance-atlas-infectious-diseases</a></p> <p><b><i>Clostridioides difficile</i> Infection:</b> Details provided in quarterly publication  <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b><i>Staphylococcus aureus</i> Infection:</b> Details provided in quarterly publication  <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Surgical Site Infection:</b> Details provided in quarterly publication  <a href="https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/">https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/</a></p> <p><b>Healthcare Associated Infections in Intensive Care Units:</b> Data comparable to equivalent data collected by other European countries where the ECDC protocol is utilised.</p> <p><b>Prevention of Healthcare Associated Bloodborne Viruses:</b> The data collected on sharps incidents and occupational exposures is comparable with that elsewhere in the UK  <a href="https://www.gov.uk/government/publications/bloodborne-viruses-eye-of-the-needle">https://www.gov.uk/government/publications/bloodborne-viruses-eye-of-the-needle</a></p> <p><b>Healthcare Outbreaks and Incidents:</b> N/A, reporting of all HCAI outbreaks is not mandatory elsewhere in the UK and comparable data are not published.</p> <p><b>Norovirus Outbreaks:</b> PHE produce a national norovirus surveillance report, however, reporting is voluntary and not comparable to Scottish data collected through mandatory reporting  <a href="https://www.gov.uk/government/statistics/norovirus-national-update">https://www.gov.uk/government/statistics/norovirus-national-update</a></p> <p><b>Development of Guidance:</b> N/A</p> <p><b>Infection Control in the Built Environment and Decontamination (ICBED):</b> N/A</p> <p><b>Care home antimicrobial resistance and healthcare associated infection (CARHAI):</b> N/A</p>
<b>Accessibility</b>	It is the policy of NSS to make its web sites and products accessible according to published guidelines.

Metadata Indicator	Description
<b>Coherence and clarity</b>	<p>Tables and charts are accessible via the website <a href="https://www.hps.scot.nhs.uk/">https://www.hps.scot.nhs.uk/</a></p> <p><b>Development of Guidance:</b> All NIPCM reviews and resources are produced using a defined process which ensures clarity and coherence. <a href="http://www.nipcm.scot.nhs.uk/resources/literature-reviews/development-process/">http://www.nipcm.scot.nhs.uk/resources/literature-reviews/development-process/</a></p>
<b>Value type and unit of measurement</b>	<p>Number of cases and incidence rates (per 100,000 population) for Gram-negative bacteraemia. AMR data includes percentage non-susceptible for antibiotics/organism combinations.</p> <p>Number of isolates, number of Carbapenemase-producers by organism and enzymes and incidence per 100,000 population.</p> <p>CPE CRA Uptake % = no.patients/records where CRA was applied/all patients/records in audit sample.</p> <p>Healthcare associated cases and incidence rates (per 100,000 Total occupied bed days (TOBDs)) for <i>Clostridioides difficile</i> infection, <i>Escherichia coli</i> bacteraemia &amp; <i>Staphylococcus aureus</i> bacteraemia.</p> <p>Community associated cases and incidence rates (per 100,000 population) for <i>Clostridioides difficile</i> infection, <i>Escherichia coli</i> bacteraemia &amp; <i>Staphylococcus aureus</i> bacteraemia.</p> <p>Number of procedures and Surgical Site Infections and incidence per categories (per 100 procedures) for inpatients and post discharge surveillance.</p> <p>Incidence Rate: Number of HAI (CR-BSI/VAP) per 1,000 device days (Ventilator days/CVC days) or Number of HAI per 1,000 patient (bed) days.</p> <p>Number and rate (per 100 WTE) of sharps related injuries per 100 WTE; number of significant occupation exposure. Volume (millions) sharps devices purchased.</p> <p>Total number of reported incidents is counted, often reported as a proportion of the total by infection type or organism.</p> <p>Number of patients affected and number of wards/bays closed.</p>
<b>Disclosure</b>	The NSS protocol on <b>Statistical Disclosure Protocol</b> is followed.
<b>Official Statistics designation</b>	Not Assessed
<b>UK Statistics Authority Assessment</b>	Not Assessed
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# Appendix 2 – Early Access Details

## Pre-Release Access

Under terms of the 'Pre-Release Access to Official Statistics (Scotland) Order 2008', NSS is obliged to publish information on those receiving Pre-Release Access ('Pre-Release Access' refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

## Standard Pre-Release Access

Scottish Government Health Department

NHS Board Chief Executives

NHS Board Communication leads

# Appendix 3 – NSS and Official Statistics

## Official Statistics

Our statistics comply with the **Code of Practice for Statistics** in terms of trustworthiness, high quality and public value. This also means that we keep data secure at all stages, through collection, processing, analysis and output production, and adhere to the ‘**five safes**’.