Raising Awareness of Antimicrobial Stewardship
FOR NURSES AND MIDWIVES
Good Care includes Good Antimicrobial Stewardship
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Introduction

It has been acknowledged that everyone who works in the health and social care environment has an important role to play in safeguarding people’s well-being.

Whilst this requires a multi-disciplinary approach to achieve, nurses and midwives, due to their more frequent interactions with patients and the general public at large, are in stronger positions to influence, ensure and enhance the goals of antimicrobial stewardship (Edwards et al, 2011).

Antibiotic use has played a significant impact in the last century on improving quality of life, increasing life expectancy and overall survival, particularly of those people who are more vulnerable due to lower immune responses.

The scale of use and overuse of antibiotic therapy is now at its highest levels since being introduced as a medical treatment, which is causing and will continue to cause considerable health challenges to patients, to the environment and, also, to the wider public health.

Resistance to antibiotics and other antimicrobials is recognised nationally and internationally as a major threat to public health and patient safety, requiring rapid and effective action. The need to engage with and progress antimicrobial stewardship is, therefore, a health and social care priority today and for the future (O’Neill, 2016; WHO, 2015; Scottish Government, 2014; Department of Health 2013).
Purpose of the Resource
The purpose of the resource is to support your learning around awareness and understanding of antimicrobial stewardship and the role that you have within this.

The resource is suitable for all registered nurses and midwives across NHS Scotland health boards, within all settings, delivering health and social care, including the private sector. It is a generic resource at the level of awareness and understanding and will be one of a suite of resources to address the learning needs of nurses and midwives.

Aim of the Resource
- To raise awareness and understanding of what antimicrobial stewardship is.
- To raise awareness and understanding of the nurses’ and midwives’ role in antimicrobial stewardship.

The resource has been developed embodying the principles of person-centred care and evidenced-based practice.

Learning outcomes
1. To understand what antimicrobial stewardship is and the importance of nurses and midwives, actively engaging and participating in stewardship as part of the multidisciplinary team.
2. To identify and understand the key role nurses and midwives play in the AMS process to improve practice and outcomes for patients and the general public.
3. To have an increased understanding of the term antimicrobial resistance and how this occurs.
4. To identify individual learning needs and goals for professional development.

Pre-Resource Self-Reflection Activity
Prior to engaging in the resource content, you are now asked to carry out a pre-resource self-reflection activity, to identify your awareness and understanding of antimicrobial stewardship.

At the end of the resource you will be asked to complete a further self-reflection activity. In comparing your individual ranking, from the pre and post activity, you may want to reflect on any gaps, or strengths identified. This exercise can be used to support your professional development and go towards evidence for your revalidation with the NMC (http://revalidation.nmc.org.uk/download-resources/forms-and-templates.html).

Please complete the pre-resource self-reflection activity on the following page.
Please consider the following questions and tick the most appropriate box that describes your level of awareness and understanding.
Your responses will contribute towards your insight into your level of awareness and understanding and may identify gaps in your learning needs.

<table>
<thead>
<tr>
<th>Question</th>
<th>Awareness</th>
<th>Understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.1 How would you rate your awareness and understanding of Antimicrobial Stewardship?</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Q.2 How would you rate your awareness and understanding of Antimicrobial Resistance?</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Q.3 How would you rate your awareness and understanding of the nurse and midwife’s role within Antimicrobial Stewardship?</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Q.4 How would you rate your awareness and understanding of what nurses and midwives need to know, to be an active member of the multidisciplinary team (MDT) to facilitate and support AMS principles?</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Q.5 How would you rate your awareness and understanding of what nurses and midwives need to do in practice to facilitate, support and embed AMS principles?</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Learning Activity

Please watch the short video below and after doing so, reflect and record what you consider to be the key messages and learning you have gained from engaging with the video content.

https://vimeo.com/345469078/db1dfec4d2

What is the nurse and midwife role within Antimicrobial Stewardship?

The Role of the Nurse and Midwife in Safe Antibiotic Use

Professor Fiona McQueen
Chief Nursing Officer,
Scottish Government
What is Antimicrobial Stewardship (AMS)?

Definition of Antimicrobial Stewardship

There are several definitions to be found for AMS. They all share a common aim and key principles, primarily addressing the need to take care of antibiotics to ensure we use them correctly so that they remain active for future generations. For this resource however, the definition below is the preferred choice:

AMS is one of the key strategies to overcome resistance. It involves the care and responsible management of antimicrobial use (Nathwani et al, 2012).

Antimicrobial stewardship
- is an inter-professional effort, across the continuum of care
- involves timely and optimal selection, dose and duration of an antimicrobial for the best clinical outcome for the treatment or prevention of infection with minimal toxicity to the patient
- and minimal impact on resistance and other ecological adverse events such as Clostridioides difficile (formerly known as Clostridium difficile).

Antimicrobial is the collective term for:
Antibacterials (antibiotics), antifungals, antivirals, antiprotozoals and anthelmintics.

AMS is not a single action that will address the antimicrobial resistance (AMR) problem we face. It is a complex and diverse combination of interventions and measures involving all healthcare professionals and the wider public.

AMS encompasses all activities intended to improve patient outcomes from infection while minimising negative consequences such as healthcare associated infections (e.g. Clostridoides difficile), drug toxicity and limiting the development of bacterial resistance.

An AMS programme requires surveillance of antibiotic use and antimicrobial susceptibility, monitoring of prescribing practice as measured by process indicators and assessment of impact of clinical outcome. Education of health and social care staff as well as patients and the public is also crucial.
Ultimately, the goals for AMS are to:
- improve patient safety
- improve patient outcomes
- minimise harm
- reduce healthcare costs
- safeguard antibiotics as a resource for future generations

An effective programme helps to reduce antimicrobial resistance, improve patient outcomes and reduce the opportunity for the spread of microorganisms, including those that are multidrug resistant. It can also modify prescribing practices and decrease antibiotic use (Dellit et al, 2007).

In summary, AMS is a co-ordinated programme that seeks to promote appropriate use of all antimicrobials, including antibiotics, antivirals and antifungals.

BSAC, From Principles to Practice diagram (e-book, 2018)
What is Antimicrobial Resistance (AMR)?

It is important to understand what is meant by this term and the resulting consequences of AMR. World Health Organisation (WHO) defines AMR as “resistance of a microorganism to an antimicrobial drug that was originally effective for treatment of infections caused by it” (WHO, 2014). How this happens is illustrated in the diagram (adjacent):

1. Lots of germs. A few are drug resistant.
2. Antibiotics kill bacteria causing the illness, as well as good bacteria protecting the body from infection.
3. The drug-resistant bacteria are now allowed to grow and take over.
4. Some bacteria give their drug resistance to other bacteria, causing more problems.

(Centre for Disease Control and Prevention (CDC), 2018)
So how does this affect the wider population?

Antibiotics are the only drug which can affect not just the individual who has consumed them but also has the potential to affect the people they come in to contact with; the spread could be infinite.

If we think about modes of transmission (contact, droplet and airborne) if a person becomes colonised (presence of bacteria on a body surface, without causing a disease) (Loveday et al, 2014, NIPCM, 2012) with a resistant organism, they could spread to others via contact (direct or indirect), droplet or airborne route of transmission until the bacteria eventually find a susceptible host.

If resistant bacteria colonise and infect someone who is vulnerable due to very young or advanced age or is immuno-compromised they may develop a drug resistant infection which is difficult to treat with antibiotics.

Some bacteria may become resistant to several antibiotics and are referred to as multi-drug resistant organisms (MDRO). Infections due to MDRO may be untreatable.


For this Global Action Plan to be effective it requires co-ordination among numerous international sectors and individuals, including human and veterinary medicine, agricultural, finance, environment and well-informed people. Five clear objectives have been identified.

Within the United Kingdom, the scale of the threat of AMR and the call for action resulted in the collective production among the four countries of a UK Five Year Antimicrobial Resistance Strategy 2013-2018, followed by a further plan for 2019-2024 along with a 20 year strategic vision.

Antimicrobial Stewardship and Resistance in Scotland

The Scottish Management of Antimicrobial Resistance Action Plan (ScotMARAP) was first issued in March 2008. It was the first to identify a multidisciplinary approach to AMS defining the key roles and responsibilities. This was later updated and published in 2014 (ScotMARAP2).

Within this document recommendations were identified for national and board level interventions, to improve the use of antimicrobials.
Following the discovery of penicillin, there was a flurry of activity in the development of antibiotics; however, this came to a gradual halt in the 1980s and no new classes of antibiotics have been discovered since 1987.

Essentially, the drugs we have available today are all we have to treat infections for the foreseeable future, so we need to protect this valuable resource.

When bacteria become resistant to the antibiotics we use, the treatment and management of infection becomes increasingly difficult.

Current problems with resistant organisms include:
- **MRSA**: methicillin resistant *Staphylococcus aureus*
- **VRE**: vancomycin resistant enterococci
- **ESBL**: extended spectrum betalactamase producers – WHO priority pathogen
- **CPE**: carbapenemase-producing enterobacteriaceae – WHO priority pathogen
- **CRO**: carbapenem-resistant organisms.

If we think back to previous problems involving antibiotics and bacteria and reflect on how we tackled them this can help us to understand how we can tackle the threat of AMR. In 2008, *Clostridioides difficile* Infection (CDI) had reached a high rate in Scotland and many patients died as a result (Vale of Leven Inquiry, 2014). Through improvements in infection control practices and restrictions on the use of certain high-risk antibiotics, rates of CDI reduced by approximately 80% and have remained at this reduced level. Further learning is available within the NES CDI resource.

To tackle resistance, we need to think about how we can reduce overall use of antibiotics and ensure the correct antibiotic choice, route and duration.

To put this in some context, currently, 33,000 people die each year from antimicrobial resistant infections across Europe alone (Cassini, 2018). If no action is taken, this will rise to 390,000 in Europe and 10 million globally by 2050 (O’Neil, 2014).
There have been very few new antibiotics in the last 30 years. To tackle the threat of resistance, incentives have been injected into the pharmaceutical industry to support development of new antibiotics for the treatment of MDRO.

All healthcare staff can help tackle AMR, in order to do this, nurses and midwives have to engage fully in the AMS process.

Deaths attributable to AMR every year, compared to other major causes of death

AMR now
700,000 (low estimate)

Tetanus
60,000

Road traffic accidents
1.2 million

Measles
130,000

Diarrhoeal disease
1.4 million

Cancer
8.2 million

Cholera
100,000–120,000

Diabetes
1.5 million

AMR in 2050
10 million

There is now increasing recognition of the critical role of nurses and midwives in antimicrobial administration, management and monitoring (Edwards et al, 2011; Gillespie et al, 2013; Olans, Olans & DeMaria, 2015; ANA, 2017). This demonstrates the important role of nurses and midwives in providing advocacy for patients to ensure medicines are used safely to support the fundamental principles in the NMC Code of Conduct (2015) in relation to advocacy and evidence-based practice.

Everyone who has a role in the prescribing, administration, supply and consumption of antibiotics has a role in antimicrobial stewardship and a responsibility to preserve this finite resource for future generations.

Within the NHS healthcare setting, nurses/midwives account for the greatest proportion (43%) of the workforce (Scottish Government, 2017), however, previous antimicrobial stewardship initiatives have failed to acknowledge the vital influential role the profession can have in driving forward change and improvement management within AMS.

As nurses and midwives are the constant factor in the patient journey and the main administrant of medicine, it is essential that the profession is integrated into the multidisciplinary approach to AMS to promote optimal patient outcomes, minimise AMR and antibiotic associated disease such as CDI.

AMS is one of the key methods to minimise the development of AMR along with infection prevention and control and improved environmental decontamination.

Effective AMS has been shown to reduce healthcare infections with associated benefits for patient outcomes.

Many of the principles of AMS are shared across the professional spectrum of doctors, nurses, midwives and pharmacists; therefore, if nurses and midwives actively contribute towards AMS as part of the wider multidisciplinary team, we will see optimal outcomes for the patients we care for, reduced incidence in harm associated with infection management and a reduction in the development of resistance.

WHAT DO YOU NEED TO KNOW?

- AMS is one of the key methods to minimise the development of AMR along with infection prevention and control and improved environmental decontamination.
- Effective AMS has been shown to reduce healthcare infections with associated benefits for patient outcomes.
- Many of the principles of AMS are shared across the professional spectrum of doctors, nurses, midwives and pharmacists; therefore, if nurses and midwives actively contribute towards AMS as part of the wider multidisciplinary team, we will see optimal outcomes for the patients we care for, reduced incidence in harm associated with infection management and a reduction in the development of resistance.
- Everyone who has a role in the prescribing, administration, supply and consumption of antibiotics has a role in antimicrobial stewardship and a responsibility to preserve this finite resource for future generations.
- Within the NHS healthcare setting, nurses/midwives account for the greatest proportion (43%) of the workforce (Scottish Government, 2017), however, previous antimicrobial stewardship initiatives have failed to acknowledge the vital influential role the profession can have in driving forward change and improvement management within AMS.
- As nurses and midwives are the constant factor in the patient journey and the main administrant of medicine, it is essential that the profession is integrated into the multidisciplinary approach to AMS to promote optimal patient outcomes, minimise AMR and antibiotic associated disease such as CDI.

There is now increasing recognition of the critical role of nurses and midwives in antimicrobial administration, management and monitoring (Edwards et al, 2011; Gillespie et al, 2013; Olans, Olans & DeMaria, 2015; ANA, 2017). This demonstrates the important role of nurses and midwives in providing advocacy for patients to ensure medicines are used safely to support the fundamental principles in the NMC Code of Conduct (2015) in relation to advocacy and evidence-based practice.
WHAT DO YOU NEED TO KNOW?

- The principles of the NMC professional accountability and responsibility standards underpin the nurses and midwives’ role in antimicrobial management.

  NMC Code of Conduct (2015), states, Nurses and Midwives are accountable to:
  - Provide a high standard of practice and care at all times
  - Keep your skills and knowledge up-to-date
  - Keep clear legible and accurate records
  - Nurses and Midwives have a duty to care to ensure patients get the correct medication

- There is an intrinsic link between Infection Prevention Control (IPC), Public Health and AMS. Therefore, these areas of practice cannot be addressed in isolation and are interlinked in delivering effective AMS processes.

  HAI Standards (2015) states that everyone involved in prescribing, supplying or administration of antimicrobials must have knowledge of common infections, microbiology investigations required and their antimicrobial management following local guidelines.

- As an accountable practitioner, you could be asked about your level of knowledge during facility inspections (Healthcare Improvement Scotland or Care Inspectorate, depending on setting).
RAISING AWARENESS OF ANTIMICROBIAL STEWARDSHIP | FOR NURSES AND MIDWIVES

What do you need to do to support AMS?

- **ENGAGE**
  - With national and local policies and guidelines
  - Work closely with the multidisciplinary team to ensure good infection prevention and control processes
  - Effective administration and management of antibiotics
  - Work with patients, families and public to educate and raise awareness of antimicrobial resistance and best practices.

- **INVOLVE**
  - Increase involvement in antimicrobial stewardship as part of your role and routine and encourage others to adopt the practices of AMS on a daily basis
  - Become involved with or have awareness of your local team for antimicrobial stewardship
  - Involve the wider multidisciplinary team in decision making around appropriate antimicrobial therapy and clinical response of patients.

- **INFLUENCE**

- **ACT**
INFLUENCE
Nurses and Midwives can influence two main areas:

<table>
<thead>
<tr>
<th>Medicines Management</th>
<th>Nursing/Midwifery Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribing in line with recommended guidelines – non-medical prescribers</td>
<td>Adherence to infection prevention and control standards both national and local</td>
</tr>
<tr>
<td>Monitor duration of therapy</td>
<td>Provision of essential nursing care including nutrition, hydration and prevention of pressure ulcers</td>
</tr>
<tr>
<td>Promote appropriate route of administration</td>
<td>Appropriate sampling</td>
</tr>
<tr>
<td>Timing of antimicrobial administration</td>
<td>Review microbiology results</td>
</tr>
<tr>
<td>Participation in therapeutic drug monitoring</td>
<td>Nursing assessment</td>
</tr>
<tr>
<td>Check allergy status</td>
<td>Health promotion</td>
</tr>
<tr>
<td>Contribute to preparing patient for Out-patient parenteral antimicrobial therapy (OPAT)</td>
<td>Discharge planning</td>
</tr>
</tbody>
</table>

INFLUENCE (cont)

- Correct duration of therapy is essential to ensure the infection is adequately treated but that adverse effects are minimised
- Most common uncomplicated infections do not require treatment for more than 5 days
- Some examples of infections which may require longer duration of therapy, include, meningitis, bone and joint infections and endocarditis
- Only sample within the context of presenting signs and symptoms of infection. Over sampling can lead to unnecessary use of antibiotics.
  For example:
  - Dipstick testing should not be used to diagnose UTI in people over 65 years or with a catheter as a large proportion of this population will have bacteria living harmlessly in their bladder – asymptomatic bacteriuria. Dark coloured or unpleasant smelling urine can be caused by dehydration rather than infection.
  - All wounds will have a degree of bacterial colonisation, only swab wounds when there is evidence of local infection or systemic infection.

BE AWARE

- Extending treatment beyond the recommended duration leads to emergence of resistant strains
- Ensure both indication and duration are documented on the drug kardex and/or electronic record
- Ensure patients on IV antibiotics are reviewed daily and de-escalation conversations take place within 72 hours of starting treatment
- Prompt and timely administration of antimicrobials saves lives.
RAISING AWARENESS OF ANTIMICROBIAL STEWARDSHIP | FOR NURSES AND MIDWIVES

ACT
Put learning into practice

**Medicine Management/Prescribing**
- Ensure that all use of antimicrobials/antibiotics is rational and appropriate
- Follow local antimicrobial guidelines to ensure the appropriate drug choice, route, dose, frequency and duration of therapy
- Medicine administration – daily review of drug Kardex or electronic medicines record, e.g. do medicines have stop dates, should intravenous drugs be changed to the oral route
- Are management plans in place and are they being adhered to facilitate following evidence-based guidelines and quality monitoring?
- Review in timely manner changing from IV to oral route – most can take place within first 72 hours

**Therapeutic Monitoring**
- Most health boards have IVOST policies to promote early switch. Check your local antimicrobial prescribing guidelines and/or discuss with pharmacist
- Always apply “the 5Rs”.

**5Rs**
- **Right drug**
- **Right patient**
- **Right dose**
- **Right time**
- **Right route**

- Contribute to therapeutic monitoring
- Be mindful of which antibiotics require therapeutic monitoring i.e. gentamicin and vancomycin
- Check local policy as to how often monitoring should occur and when samples should be taken
- The stage in the process at which levels are measured, depends on the drug: i.e. **Gentamicin** requires **POST-dose** monitoring (occasionally, pre-dose monitoring required);
  **Vancomycin** requires **PRE-dose** monitoring.

Further learning available within **NES GaV module**.
Antimicrobial Stewardship is Every Nurse and Midwife’s Business

<table>
<thead>
<tr>
<th>Antimicrobial Stewardship within the nurse and midwife role equates to</th>
<th>Good and effective medicine management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good and effective prescribing</td>
</tr>
<tr>
<td></td>
<td>Good and effective care and management</td>
</tr>
<tr>
<td></td>
<td>Good and effective infection control practices</td>
</tr>
<tr>
<td></td>
<td>Good and effective education, inclusive of patients, the public, fellow team members and wider multi-professional health and social care workforce</td>
</tr>
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</table>
Learning into PRACTICE

Learning Activity
Watch the following short videos and hear the experience of other nurses in different settings, as to how they have engaged and become involved in supporting AMS within their role to influence and act to improve outcomes for their patients.

Video 1
Jo McEwen
https://vimeo.com/356416449/9f641faa01

Video 2
Lois Scobie
https://vimeo.com/356415717/c66f880e42
Post Resource Self-Reflection Activity

**Learning Activity**

Write a reflective piece to record your thinking around your initial scoring of your answers and your scoring after completing this resource.

Identify areas of strength, gaps in knowledge and learning needs requiring to be addressed.

Identify how you will use the engage, involve, inform and act model in your own practice.

This learning activity can be used as evidence for your NMC Revalidation. (http://revalidation.nmc.org.uk/download-resources/forms-and-templates.html).
### Post-resource self-reflection

<table>
<thead>
<tr>
<th>Question</th>
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<tbody>
<tr>
<td><strong>Q.1</strong> How would you rate your awareness and understanding of Antimicrobial Stewardship?</td>
<td>None</td>
<td>Limited</td>
</tr>
<tr>
<td><strong>Q.2</strong> How would you rate your awareness and understanding of Antimicrobial Resistance?</td>
<td>None</td>
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<td><strong>Q.3</strong> How would you rate your awareness and understanding of the nurse and midwife’s role within Antimicrobial Stewardship?</td>
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If we want to achieve better outcomes for our patients, and live in a world where antibiotics are still effective, then nurses and midwives, along with other healthcare professionals must take action.

Nurses are in a very strong position to make a difference to the future effectiveness of antibiotic use and ultimately to the quality of life and survival of people within our society.

Working collaboratively with patients, families, communities and health and social care colleagues will enable antimicrobial stewardship to be embedded in daily practice and secure a future whereby the threat of antimicrobial resistance can be managed.
Feedback

Before you complete this resource, we would really appreciate your feedback. You can access the online feedback form using the following link

https://response.questback.com/nhseducationforscotland/nandmstewardship
Below are links to some useful resources which you may find of interest:

Antibiotics – who’s responsible? Video
https://vimeo.com/110980807

Antibiotic Guardian Pledge Campaign
https://antibioticguardian.com/

Antimicrobial Companion App
Quick and easy access to clinical guidance and supports decision making on antibiotic prescribing
https://www.sapg.scot/quality-improvement/antimicrobial-companion-app/

Antimicrobial stewardship: managing antibiotic resistance
https://www.futurelearn.com/courses/antimicrobial-stewardship

Gentamicin and Vancomycin modules

Keep Antibiotics Working: Five key points for health and social care staff
https://www.nes.scot.nhs.uk/media/4263822/keep_antibiotics_working_final_march_2019.pdf

Managing people with a *Clostridioides difficile* infection module

NHS Inform - Keep antibiotics working campaign
https://www.nhsinform.scot/antibiotics

Scottish Infection Prevention and Control Education Pathway (SIPCEP)

What causes antibiotic resistance? TED Ed video – YouTube
https://www.youtube.com/watch?v=znnp-lvj2ek

Scottish Reduction in Antimicrobial Prescribing
AMR – Antimicrobial resistance/resistant.

Antibiotic – Type of drug which either destroys or inhibits the growth of bacteria, also referred to as antibacterial.

Antifungal – Type of drug which either destroys or inhibits the growth of fungi.

Antimicrobial – Collective term for antibiotic, antifungal and antiviral drugs. All agents which are active against microbes.

Antimicrobial Stewardship – Co-ordinated programmes that promote the optimal use of antimicrobials and minimise the associated harm (toxicity, spread of infection, AMR, CDI).

Antiviral – Type of drug which is active in treating certain viral infections.

Antiprotozoan – Type of drug which is active in the treatment of protozoan infections.

Anthelmitic – Type of drug which is effective in the treatment of helminth infections (i.e. worms).

CDI – Clostridiodides difficile infection.

Clostridiodides difficile – Bacterium which infects the bowel causing diarrhoeal illness. Often caused by the unsolicited use of antibiotics. Disease spectrum ranges from mild to severe.

CPE – Carbapenemase producing Enterobacteriaceae. Enzyme which is produced by some Gram-negative bacteria which stops carbapenems working. Carbapenems are the last line treatment in infection.

CRO – Carbapenem resistant organism. Bacteria which produce carbapenemases.

ESBL producer – Extended Spectrum Beta-lactamase producer. Enzyme produced by some Gram-negative bacteria which stops beta-lactam antibiotics from working. Beta-lactam antibiotics include penicillins and cephalosporins.

HAI – Healthcare Associated Infection. An infection which is attributable to an episode of healthcare – can be either inpatient or outpatient.

HPS – Health Protection Scotland. Established in 2005 to strengthen and co-ordinate Health Protection in Scotland.


MRSA – Meticillin resistant Staphylococcus aureus. Staph. aureus which has developed a resistance mechanism to certain antibiotics such as flucloxicillin.

MDRO – Multi Drug Resistant Organisms. Organisms which have developed resistance to multiple antimicrobials.

NES – NHS Education for Scotland. NHS Scotland’s education and training body.

OPAT – Outpatient Parenteral Antibiotic Therapy. Some infections require long term antibiotic therapy but not necessarily hospitalisation. Antibiotics can be given at home/community/hospital setting while patient stays at home.

Resistance – The act of fighting against something. For the purposes of this topic – bacteria fighting against antibiotics.
SAB – Staphylococcus aureus bacteraemia (blood stream infection).

SAPG – Scottish Antimicrobial Prescribing Group. Multi-professional group established in 2008 to work with health boards to optimise the use and management of antimicrobials.


Therapeutic monitoring – Monitoring of serum blood level to ensure that the drug concentration is within therapeutic range. Certain drugs may require the dose or dosing frequency to be changed to achieve this.

VRE – Vancomycin Resistant Enterococci. Type of bacteria which have developed resistance to vancomycin.
References

ANA, 2017. Redefining the Antibiotic Stewardship Team: Recommendations from the American Nurses Association/Centers for Disease Control and Prevention Workgroup on the Role of Registered Nurses in Hospital Antibiotic Stewardship Practices. CDC.


HEALTHCARE IMPROVEMENT SCOTLAND, 2015. Healthcare Associated Infection (HAI) Standards. HIS.


This resource may be made available, in full or summary form, in alternative formats and community languages.

Please contact us on 0131 656 3200 or email: altformats@nes.scot.nhs.uk to discuss how we can best meet your requirements.