



Surgical antibiotic prophylaxis duration



Prepared by HSE/RCSI:
Antimicrobial Resistance & Infection Control Team (AMRIC)
National Clinical Programme for Surgery (NCPS)
V1.0 October 2021



Target audience for presentation:

- Anyone involved in the use of Surgical Antibiotic Prophylaxis
 - **Prescribes** – Surgeons, Obstetricians, Gynaecologists, Anaesthetists, Cardiologists
 - **Dispenses** – Pharmacists
 - **Administers** – Nurses
 - **Quality & Patient Safety Staff**
- *Contents of this AMRIC/NCPS presentation are not for local amendment however please follow with your own slide deck to include local audit results, plans for quality improvement etc.*

- Surgical antibiotic prophylaxis is a critical step in preventing surgical site infection.
- Maximum benefit with the least harm is achieved by:
 - Administering the right agent, at the right dose, at the right time and for the right duration.
- In terms of duration most procedures only require a single dose of surgical antibiotic prophylaxis to reduce the risk of a surgical site infection (SSI)
 - Extended duration of surgical antibiotic prophylaxis is not associated with further reduction in risk of SSI
 - There is evidence of harm such as acute kidney injury and *Clostridioides difficile* infection with extended duration

JAMA Surgery | Original Investigation

Association of Duration and Type of Surgical Prophylaxis With Antimicrobial-Associated Adverse Events

Westyn Branch-Elliman, MD, MMSc; William O'Brien, MS; Judith Strymish, MD; Kamal Itani, MD; Christina Wyatt, MD; Kalpana Gupta, MD, MPH

CONCLUSIONS AND RELEVANCE Increasing duration of antimicrobial prophylaxis was associated with higher odds of AKI and *C difficile* infection in a duration-dependent fashion; extended duration did not lead to additional SSI reduction. These findings highlight the notion that every day matters and suggest that stewardship efforts to limit duration of prophylaxis have the potential to reduce adverse events without increasing SSI.

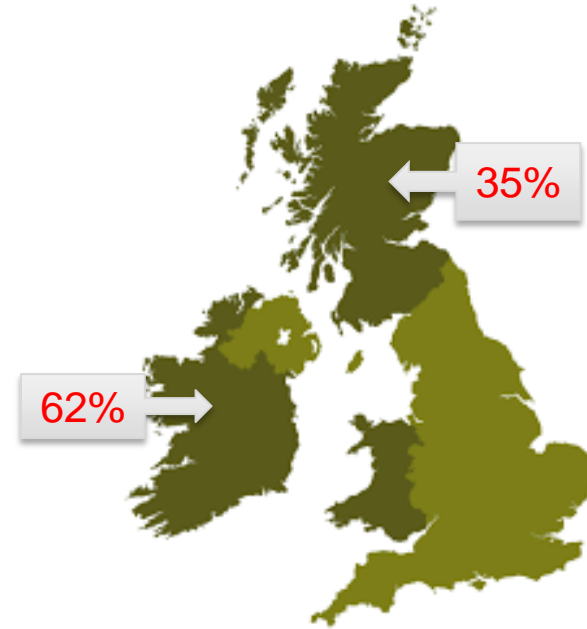
JAMA Surg. 2019;154(7):590-598. doi:10.1001/jamasurg.2019.0569
Published online April 24, 2019.

Author Affiliations: Author affiliations are listed at the end of this article.

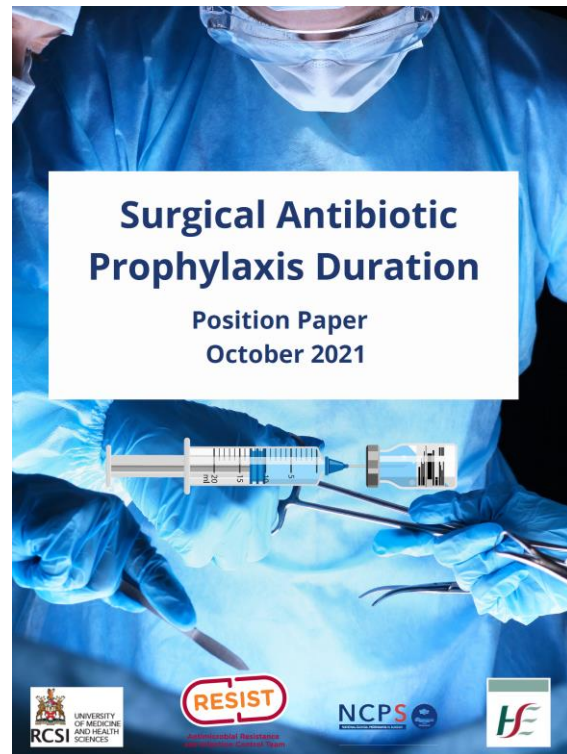
Corresponding Author: Westyn Branch-Elliman, MD, MMSc, Department of Medicine, VA Boston Healthcare System, 1400 VFW Plwy, West Roxbury, MA 02132 (wbranch@bidmc.harvard.edu).



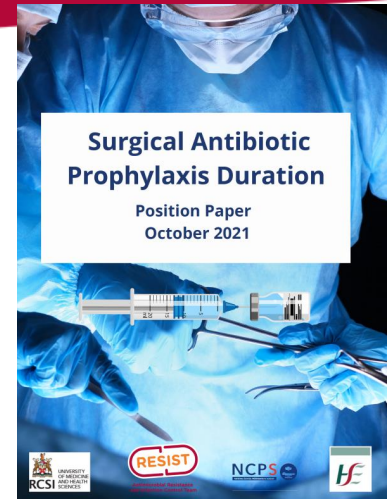
- 2020 national antimicrobial point prevalence study showed 62% of cases exceeded a single dose
- 2017 European Study showed Scotland only 35% of cases exceeded a single dose
- Scope for improvement
- Development of position statement & associated resources to assist in that improvement



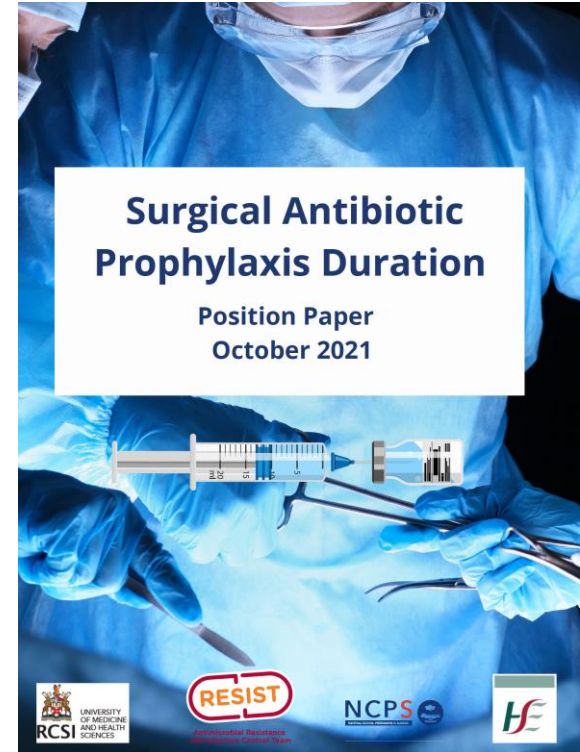
- Position statement on duration of antibiotic prophylaxis in surgery
- Developed jointly by National Clinical Programme for Surgery (NCPS) & HSE antimicrobial resistance and infection control team (AMRIC)
- Review & feedback provided by:
 - Royal College of Surgeons Ireland
 - National Clinical Programme for Anaesthesia
 - Institute of Obstetrics and Gynaecologists
 - National Women & Infants Health Programme
 - National Clinical Programme for Trauma & Orthopaedics
 - College of Anaesthesiologists
 - National Heart Programme
 - HSE Antimicrobial Stewardship Advisory Group
- Consensus of expert opinion supported by all key stakeholders



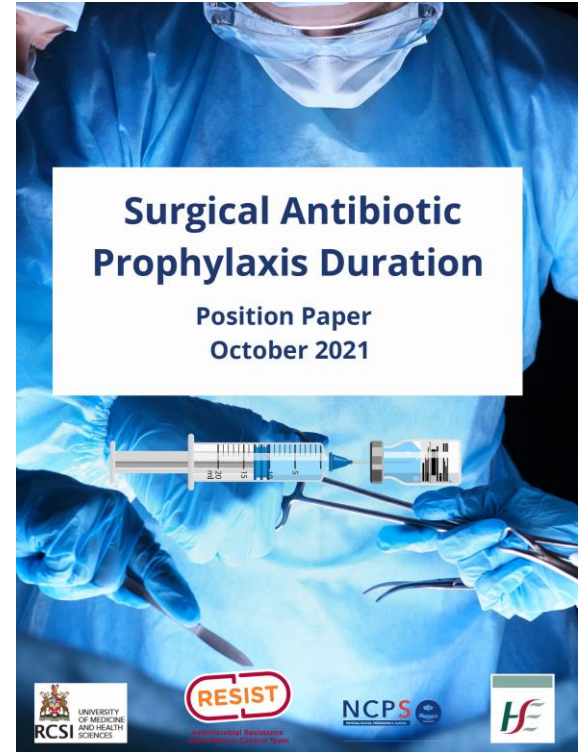
- Recommendations
 - Maximum durations of surgical antibiotic prophylaxis depending on the type of surgery
 - Supported by evidence
- Durations
 - **Most procedures do not require post-operative antibiotics**
 - Otherwise depending on type of procedure
 - Maximum of 24 hours
 - Maximum of 48 hours
 - Locally agreed maximum may be less than this



- Taking account of evidence & expert opinion a duration greater than 48 hours cannot be reasonably justified.
 - Applicable to both parenteral & oral routes.
 - Antibiotic prophylaxis should not be continued beyond the limits specified even if **drains** remain in place.

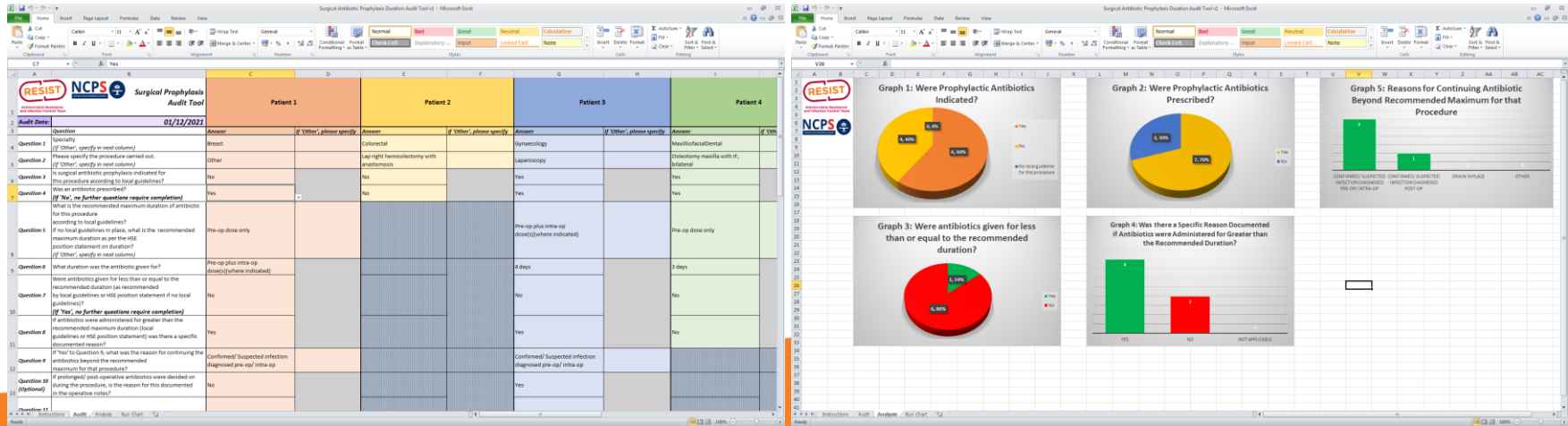


- Treatment is **NOT** prophylaxis
 - If infection is suspected or confirmed pre-op/intra-op/post-op then the model of antibiotic prophylaxis is no longer applicable.
 - Treatment agent & duration as per local prescribing guidelines or infection specialist advice.



- Local discussions to progress implementation:
 - Surgical/theatre directorate
 - Antimicrobial advisory committee or Pharmacy & therapeutics committee
 - Quality & safety committee
 - Audit committee
- Suggested local quality improvement actions:
 - Amendment of operative notes proforma to encourage documentation
 - Amendment of drug chart / electronic prescribing record
 - Amendment of sign out theatre documentation
 - Amendment of post-op surgical nursing care plan

- Resources to support implementation:
 - Excel audit tool** as part of a quality improvement project. (**Fulfills audit requirement**) Available at: bit.ly/3eGoCKw
 - Tool is for local use and is intended to support quality improvement, there is no reporting requirement associated with its use
 - Video available to guide you through the use of the tool
 - We would like to hear your experience in its use and if further requirements are needed to improve its use antibiotics.prescribing@hse.ie



- Resources to support implementation: **bit.ly/3eGoCKw**
 - eLearning module on all aspects of surgical antibiotic prophylaxis including “the right duration” on HSeLanD (**RCPI 2 CPD credits**)
 - Audience: anyone who prescribes, dispenses or administers surgical antibiotic prophylaxis.


HELP EXTEND MY LEARNING

Learning outcomes

By the end of this course you will be able to:

- Indicate the factors that influence the right agent and right dose for surgical antibiotic prophylaxis.
- Identify the appropriate timings for initial dosing and re-dosing during surgical procedures to support better patient outcomes.
- Decide on the appropriate duration of surgical antibiotic prophylaxis to promote patient centred-care.

This course should take you approximately 30 minutes to complete.



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HELP EXTEND MY LEARNING

Case study: Meet Tom

Tom is a 45-year-old man undergoing a transurethral resection of the prostate (TURP). He has a history of multiple UTIs.

You've cared for previous patients who've developed a post-operative bloodstream infection after the TURP procedure and want to prevent that from occurring in Tom.

Select NEXT to continue.



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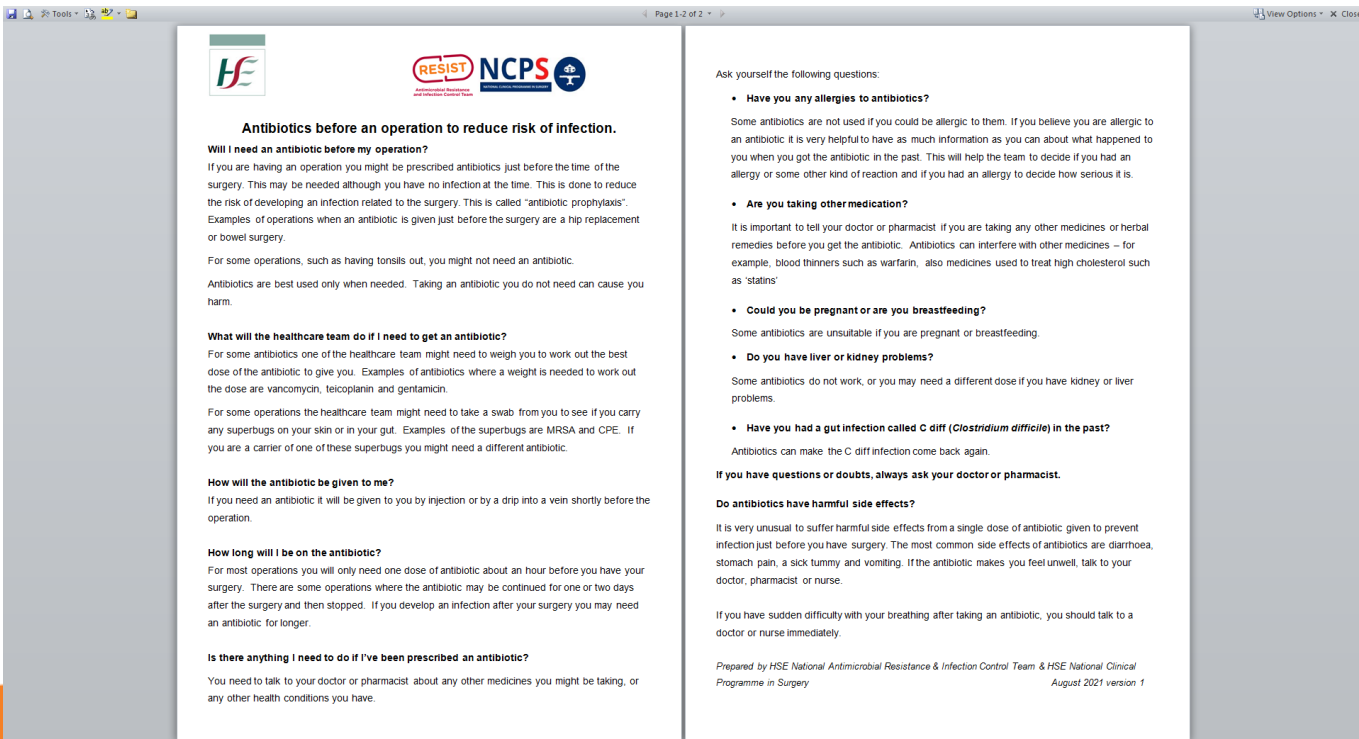
- Resources to support implementation: **bit.ly/3eGoCKw**
 - A3 posters and pens with key messaging.



- Resources to support implementation: **bit.ly/3eGoCKw**
 - A Model 4 hospital has commenced a quality improvement project on this position statement
 - Learning from that site will be made available in due course on the resources page bit.ly/3eGoCKw



- Resources to support implementation: bit.ly/3eGoCKw
 - A patient information leaflet entitled “Antibiotics before an operation to reduce risk of infection”.



The screenshot shows a patient information leaflet (PIL) titled "Antibiotics before an operation to reduce risk of infection." The leaflet is presented in a browser window. At the top, there are logos for HSE, RESIST, and NCPS. The text is organized into sections with bold headings. The first section, "Will I need an antibiotic before my operation?", explains that antibiotics are prescribed just before surgery to reduce the risk of infection, a process called "antibiotic prophylaxis". It gives examples of operations where this is used, such as hip replacement or bowel surgery. The second section, "What will the healthcare team do if I need to get an antibiotic?", describes how the team will determine the best dose and timing for the antibiotic. The third section, "How will the antibiotic be given to me?", states that the antibiotic will be given by injection or drip shortly before the operation. The fourth section, "How long will I be on the antibiotic?", explains that most patients only need one dose, but some may need it for one or two days. The final section, "Is there anything I need to do if I've been prescribed an antibiotic?", advises patients to talk to their doctor or pharmacist about other medicines they are taking. On the right side of the leaflet, there are several questions for patients to ask themselves, such as "Have you any allergies to antibiotics?", "Are you taking other medication?", "Could you be pregnant or are you breastfeeding?", "Do you have liver or kidney problems?", and "Have you had a gut infection called C diff (Clostridium difficile) in the past?". Each question is followed by a brief explanation. At the bottom right, there is a note about the leaflet being prepared by the HSE National Antimicrobial Resistance & Infection Control Team & HSE National Clinical Programme in Surgery, dated August 2021, version 1.

Antibiotics before an operation to reduce risk of infection.

Will I need an antibiotic before my operation?

If you are having an operation you might be prescribed antibiotics just before the time of the surgery. This may be needed although you have no infection at the time. This is done to reduce the risk of developing an infection related to the surgery. This is called "antibiotic prophylaxis". Examples of operations when an antibiotic is given just before the surgery are a hip replacement or bowel surgery.

For some operations, such as having tonsils out, you might not need an antibiotic.

Antibiotics are best used only when needed. Taking an antibiotic you do not need can cause you harm.

What will the healthcare team do if I need to get an antibiotic?

For some antibiotics one of the healthcare team might need to weigh you to work out the best dose of the antibiotic to give you. Examples of antibiotics where a weight is needed to work out the dose are vancomycin, teicoplanin and gentamicin.

For some operations the healthcare team might need to take a swab from you to see if you carry any superbugs on your skin or in your gut. Examples of the superbugs are MRSA and CPE. If you are a carrier of one of these superbugs you might need a different antibiotic.

How will the antibiotic be given to me?

If you need an antibiotic it will be given to you by injection or by a drip into a vein shortly before the operation.

How long will I be on the antibiotic?

For most operations you will only need one dose of antibiotic about an hour before you have your surgery. There are some operations where the antibiotic may be continued for one or two days after the surgery and then stopped. If you develop an infection after your surgery you may need an antibiotic for longer.

Is there anything I need to do if I've been prescribed an antibiotic?

You need to talk to your doctor or pharmacist about any other medicines you might be taking, or any other health conditions you have.

Ask yourself the following questions:

- Have you any allergies to antibiotics?**

Some antibiotics are not used if you could be allergic to them. If you believe you are allergic to an antibiotic it is very helpful to have as much information as you can about what happened to you when you got the antibiotic in the past. This will help the team to decide if you had an allergy or some other kind of reaction and if you had an allergy to decide how serious it is.

- Are you taking other medication?**

It is important to tell your doctor or pharmacist if you are taking any other medicines or herbal remedies before you get the antibiotic. Antibiotics can interfere with other medicines – for example, blood thinners such as warfarin, also medicines used to treat high cholesterol such as 'statins'.

- Could you be pregnant or are you breastfeeding?**

Some antibiotics are unsuitable if you are pregnant or breastfeeding.

- Do you have liver or kidney problems?**

Some antibiotics do not work, or you may need a different dose if you have kidney or liver problems.

- Have you had a gut infection called C diff (Clostridium difficile) in the past?**

Antibiotics can make the C diff infection come back again.

If you have questions or doubts, always ask your doctor or pharmacist.

Do antibiotics have harmful side effects?

It is very unusual to suffer harmful side effects from a single dose of antibiotic given to prevent infection just before you have surgery. The most common side effects of antibiotics are diarrhoea, stomach pain, a sick tummy and vomiting. If the antibiotic makes you feel unwell, talk to your doctor, pharmacist or nurse.

If you have sudden difficulty with your breathing after taking an antibiotic, you should talk to a doctor or nurse immediately.

*Prepared by HSE National Antimicrobial Resistance & Infection Control Team & HSE National Clinical Programme in Surgery
August 2021 version 1*

- Resources to support implementation: **bit.ly/3eGoCKw**
 - Communications e.g. RCSI bulletin, RESIST newsletter, Health Matters



HSE-AMRIC along with other HSE national programmes & colleges for surgery, anaesthesia and obstetrics have agreed a position paper about the use of antibiotic prophylaxis for the prevention of surgical site infection. The key message is that in most cases no further antibiotic is needed once the operation is finished but in some case it may be useful to continue for 1 day and in others for 2 days.

The idea behind antibiotic prophylaxis is to have enough antibiotic in the tissues for the critical period at the time of surgery and in some cases for a short period afterwards. This has huge benefit in reducing the risk of infection but if the antibiotic is continued for too long there is no additional benefit and there is an increasing risk of harm from the antibiotic. Stopping antibiotic prophylaxis gives the best of both worlds with all the benefit and very little risk of harm.

**Thank you for your support in implementing this
quality & patient safety initiative**

**We would be interested to hear of your local experiences for this quality
improvement work or any feedback you have on any of the tools or
resources, email antibiotics.prescribing@hse.ie**

