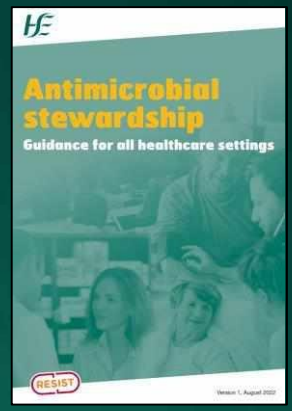
Antimicrobial stewardship guidance for all healthcare settings

15th November 2022

RESIST

Antimicrobial Resistance & Infection Control Programme



Antimicrobial stewardship guidance for all healthcare settings

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Dr Colm Henry, Chief Clinical Officer, HSE

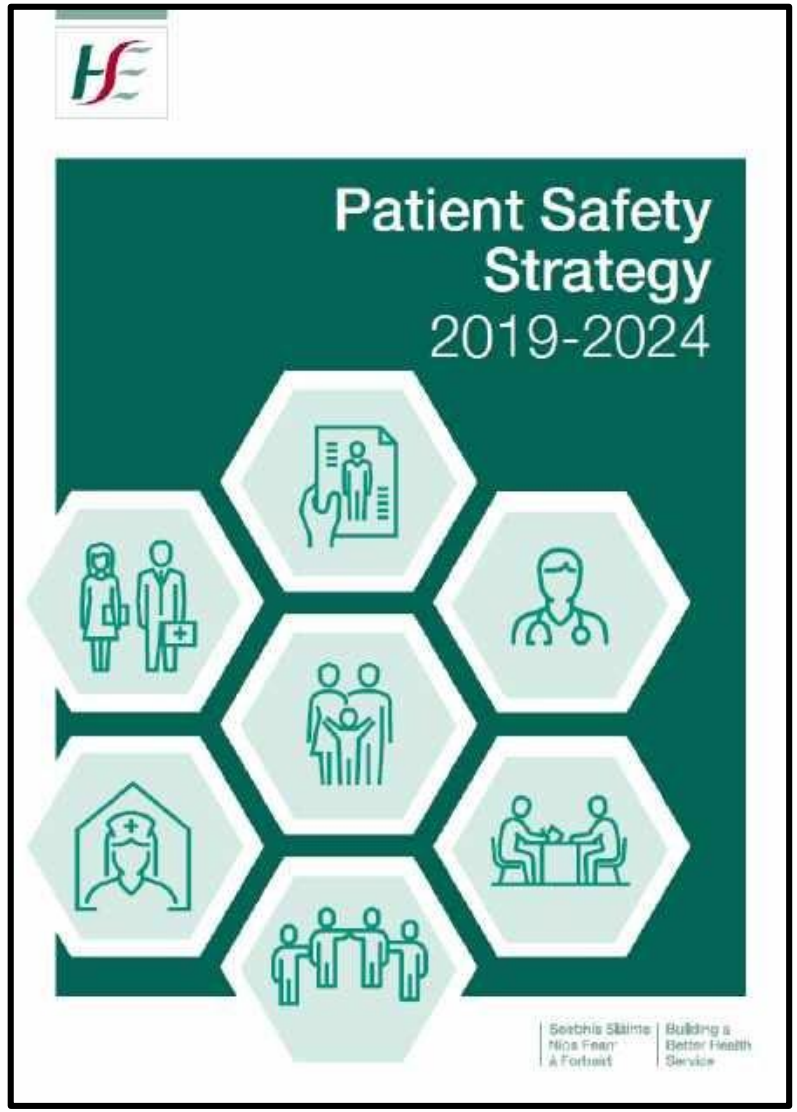
Antimicrobial resistance – a global health threat

- Antimicrobial resistance (AMR) is included in the WHO top ten list of threats to human health in the coming decade
- Almost 5 million deaths worldwide in 2019 associated with AMR *Lancet 2022; 399: 629–55*
- Need to curb, and hopefully reverse, this growing trend of AMR
- Need effective antimicrobials, now and in the future, to enable us to deliver healthcare
- Antimicrobial use is the key driver of AMR
- The process of using antimicrobials prudently is referred to as antimicrobial stewardship
- Antimicrobial stewardship is **an integral component of patient safety**

Antimicrobial stewardship - an integral component of patient safety

Common shared themes:

- Building quality and patient safety capacity and capability in practice
- Using data to inform improvements
- Providing a platform for sharing and learning; reducing common causes of harm and enabling safe systems of care and sustainable improvements



AMS reduces the risk of preventable harms relating to antimicrobial use & antimicrobial resistance

PREVENTABLE HARM

17%

of all hospitalisations are affected by one or more adverse events, with 30-70% potentially preventable.[2,3]

The 2009 Irish National Adverse Event Study indicated that an **adverse event** occurred in approximately **1 in 8** acute hospital admissions[3]

PREVENTABLE DEATH

In the UK an estimated **5.2%** of adverse events resulted in Patient Death.[4]

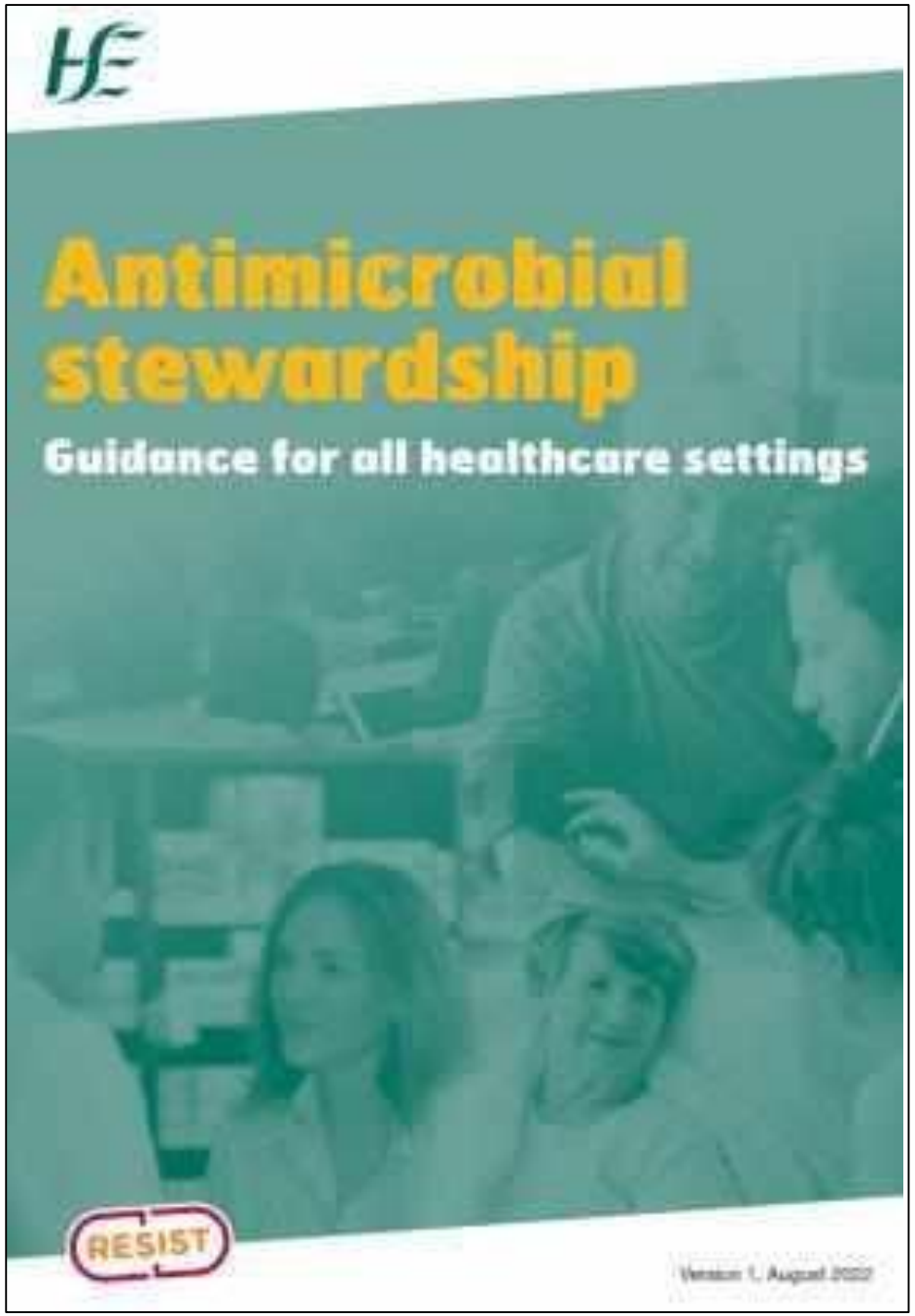
PATIENT HARM estimated as **14th LEADING CAUSE** of global **DISEASE BURDEN**[5]

15% of **HOSPITAL EXPENDITURE** in OECD attributed to **TREATING SAFETY FAILURES**[5]

Total cost of clinical claims in **2010-2018** was **€1391.8 million**[6]

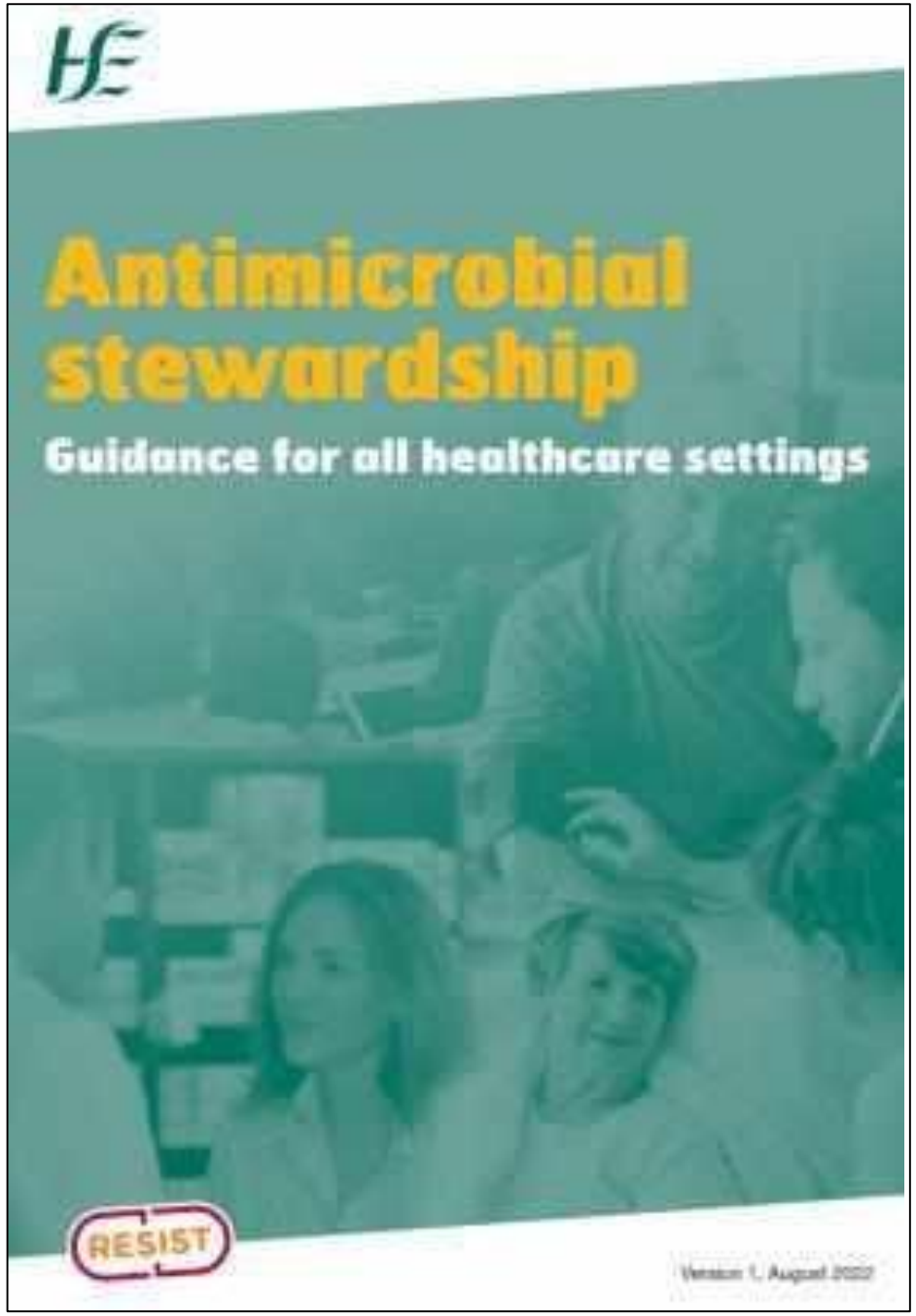
Antimicrobial stewardship guidance

- The central theme within this guidance:
  - **All healthcare workers are antimicrobial stewards**
- Successful AMS relies on collaboration between:
  - **The healthcare team**
  - **The managers**
  - **The service users**
- The approach to AMS should be integrated between acute & community services



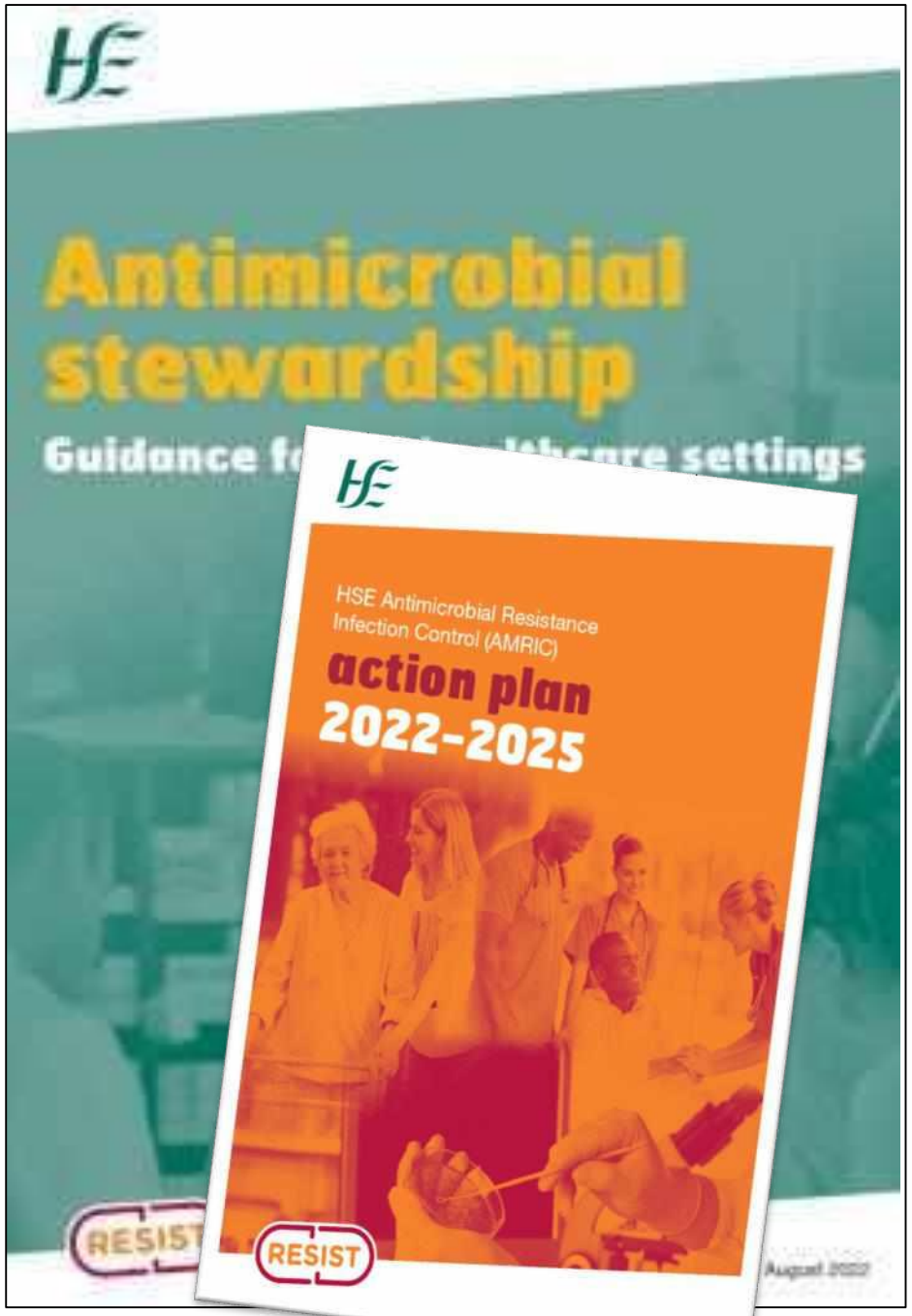
Principles of good AMS – how can you play your part?

1. Recognise clinical evidence of infection
2. Avoid unnecessary antimicrobial use
3. Choose an antimicrobial that will have the most benefit and cause the least harm
4. Optimise the dosing regimen and route
5. Minimise the duration
6. Assess response to treatment
7. Communicate effectively about antimicrobials
8. Prevent infection (including vaccination)



Antimicrobial stewardship guidance

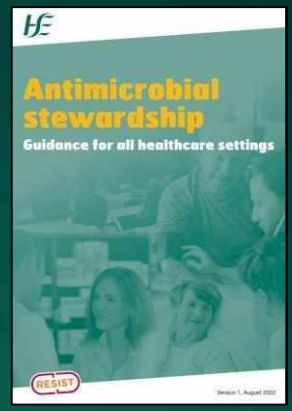
- To deliver successful AMS requires:
  - **Robust governance, structures and supports**
    - **focus of afternoon session**
  - **Measurable deliverables, contained in HSE AMRIC action plan**
    - Dr Eimear Brannigan, Clinical Lead will detail further



EUROPEAN ANTIBIOTIC AWARENESS DAY

A European Health Initiative

Preventing Antimicrobial Resistance Together



AMS guidance for all healthcare settings
Introduction

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Shirley Keane, Head of Service, HSE-AMRIC

Welcome

- Welcome colleagues from key frontline services playing a role in AMS

- Welcome to our patient representative
- All healthcare workers are antimicrobial stewards
- The approach to AMS should be integrated between acute & community services
- The most successful AMS is when there is collaboration between all members of healthcare team

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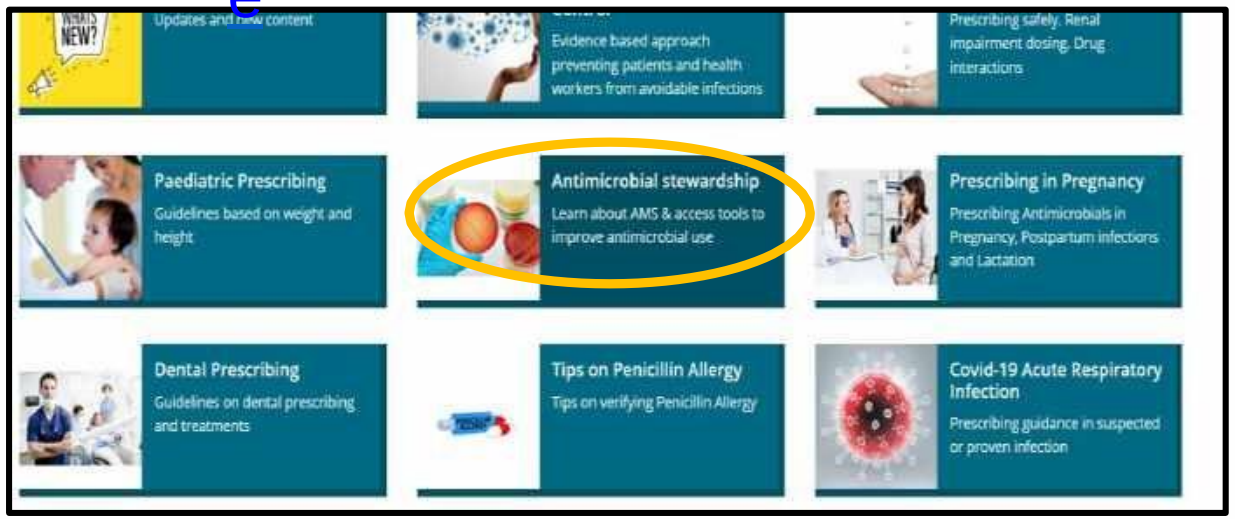
Outputs from the day

- Copies of the presentations
- Summary of feedback from workshop & interactive sessions
- Discuss locally in your setting or professional group on how to implement as applicable
- Add as agenda item at next meeting (AMS/IPC or equivalent) to discuss and share the learnings

www.antibioticprescribing.ie



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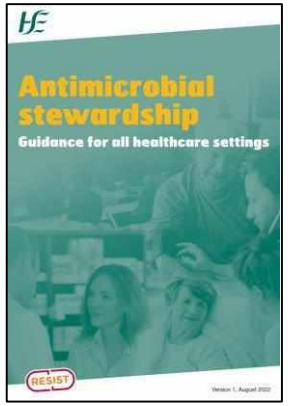
Acknowledgements



- All involved in AMS guidance development & approval
  - Working group – AMRIC team & Dr Sinead O'Donnell, Bernie Love
  - AMS advisory group
  - Acute & community operations
  - Providers of feedback
  - Prof Martin Cormican
  - Dr Colm Henry & AMRIC Oversight

- Organisers of AMS workshop
  - AMS workshop working group
  - CCO office

- Today's speakers

- AMS facilitators for workshop

Join us on twitter

#AMSforall

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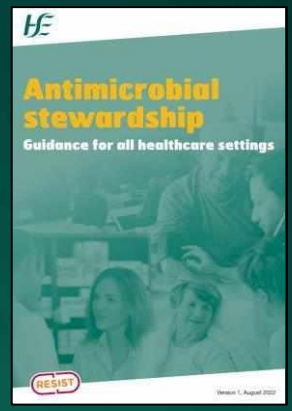

Antimicrobial stewardship guidance for all healthcare settings

Focus on reducing unnecessary use

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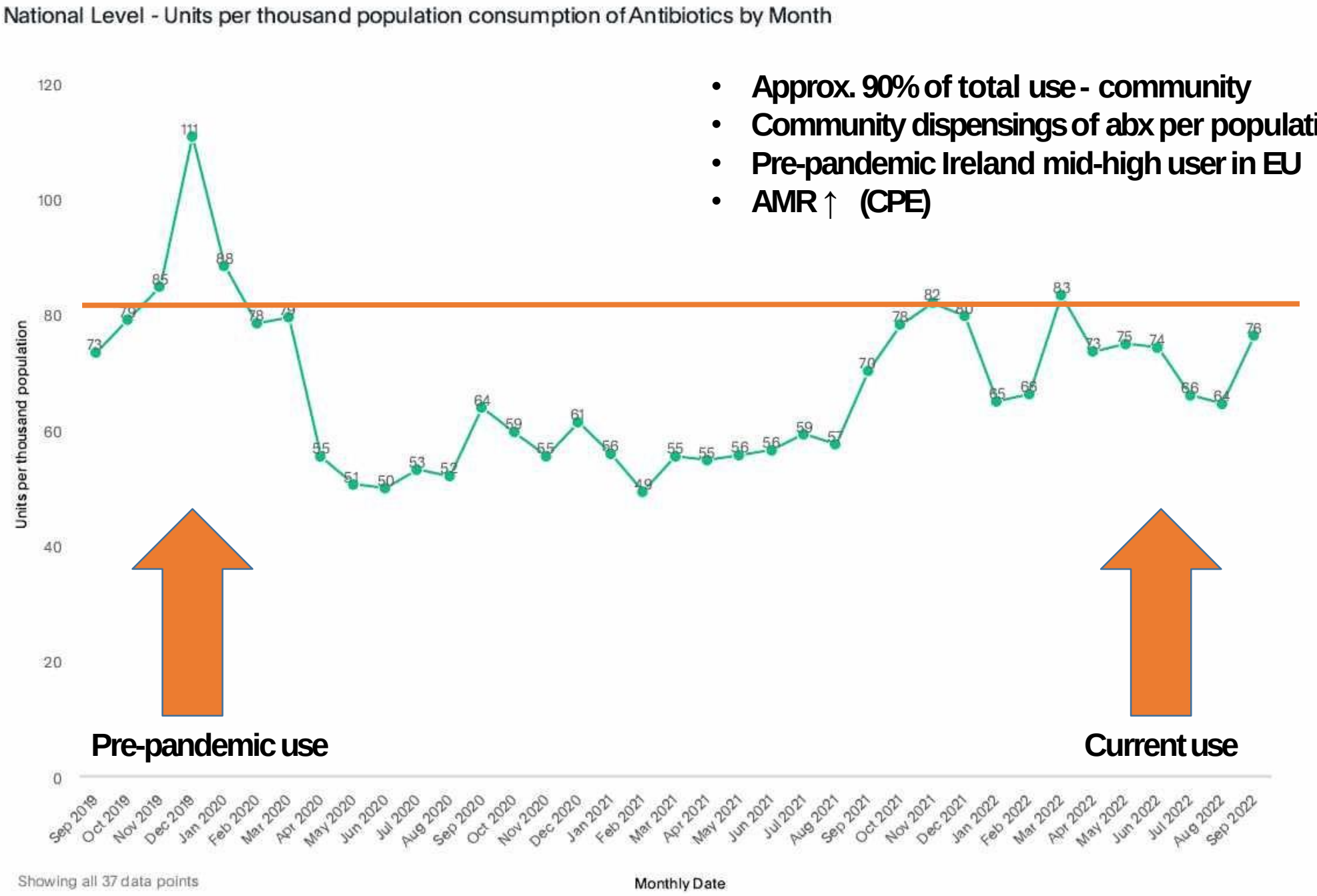
Dr Eimear Brannigan, Clinical Lead, HSE-AMRIC



- **Approx. 90% of total use - community**
- **Community dispensings of abx per population (HMR)**
- **Pre-pandemic Ireland mid-high user in EU**
- **AMR ↑ (CPE)**

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Principles of good AMS – how can you play your part?

1. Recognise clinical evidence of infection
2. Avoid unnecessary antimicrobial use
3. Choose an antimicrobial that will have the most benefit and cause the least harm
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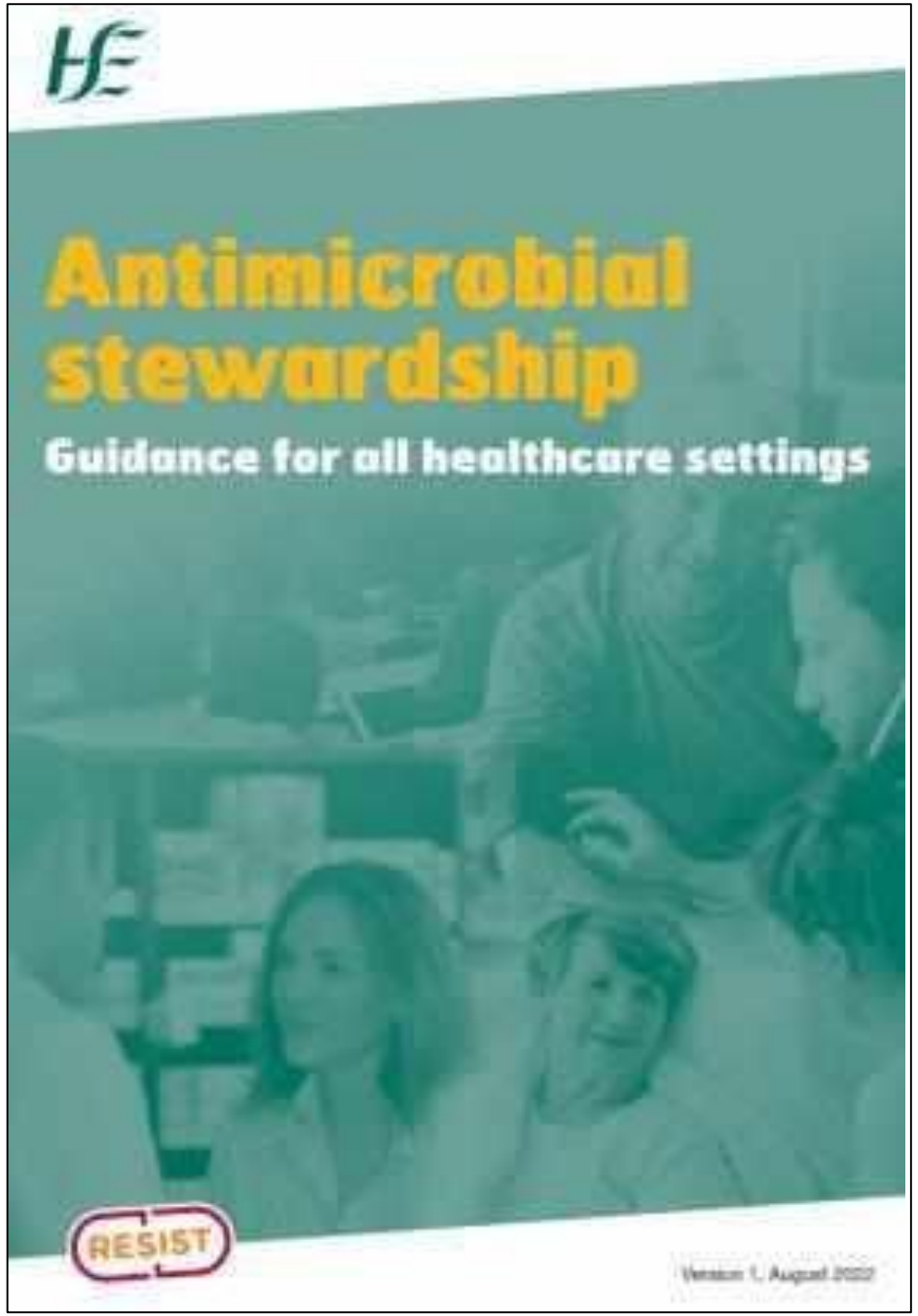
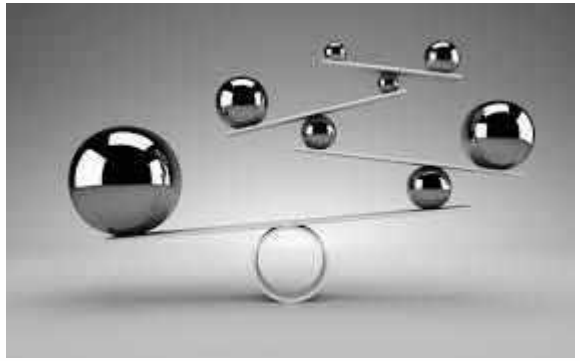


Antimicrobial stewardship



- Antibiotics play an important role in the management of bacterial infection and are life-saving
- Facilitate major surgery & chemotherapy
- Need to preserve this
- While ensuring those most likely to benefit from antibiotics receive that benefit

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HSE Antimicrobial Resistance and Infection Control action plan 2022 – 2025 https://bit.ly/3LjmCqR

The Action Plan sets out a range of HSE actions aligned to the five strategic objectives of iNAP2:

1: Improving awareness and knowledge of AMR

2: Enhancing surveillance of antibiotic resistance and antibiotic use

3: Reducing infection and disease spread

4: Optimise the use of antibiotics in human and animal health

5: Promote research and sustainable investment in new medicines, diagnostic tools, vaccines and other interventions

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AMRIC action plan measures

HSE Antimicrobial Resistance Infection Control (AMRIC) **action plan 2022-2025**

	Target 2021	2021 Projected Out-Turn	Target 2022	Target 2023	Target 2024	Target 2025
Hospital acquired *Clostridium difficile* Infection: Rate of new cases of hospital associated *C. difficile* infection	<2 /10,000 bed days used	2.0	<2 /10,000 bed days used	<1.9 /10,000 bed days used	<1.8 /10,000 bed days used	<1.7 /10,000 bed days used
Hospital acquired *S. aureus* blood stream infection: Rate of new cases of hospital acquired, *Staphylococcus aureus* bloodstream infection	<0.8 /10,000 bed days used	0.9	<0.8 /10,000 bed days used	<0.75 /10,000 bed days used	<0.7 /10,000 bed days used	<0.65 /10,000 bed days used
Community consumption of antibiotics : Consumption of antibiotics in community settings (defined daily doses per 1,000 population) per day based on wholesaler to community pharmacy sales – not prescription level data	<22	**19.5 (to end Q2 2022)**	<22	<21.5 (2%)	<21.0 (4%)	20.5 (6%)
Acute consumption of antibiotics: Consumption of antibiotics in acute settings (defined daily doses per 100 bed days used) per day	78.1 DDD/100 bed days used (2019)	**71.9 (2021)**	76.6 DDD/100 bed days used (2%)	75.1 DDD/100 bed days used (4%)	73.6 DDD/100 bed days used (6%)	72.1 DDD/100 bed days used (8%)

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HPSC data

AMRIC action plan measures

HSE Antimicrobial Resistance Infection Control (AMRIC) action plan 2022-2025

	Target 2021	2021 Projected Out-Turn	Target 2022	Target 2023	Target 2024	Target 2025
Compliance with surgical antibiotic prophylaxis duration position statement (as per the annual antimicrobial point prevalence study)	28% of surgical antibiotic prophylaxis prescriptions extended beyond 24 hours	**PPS analysis in progress**	26%	24%	22%	20%
General Practice prescription of antibiotics: General Practice antibiotics prescribed (and paid for by PCRS) were "red antibiotics"	34% "Red"	**32% red (end Q2 2022)**	32% "Red"	30% "Red"	28% "Red"	26% "Red"
General Practice prescription of antibiotics: Consumption rate of antibiotics in general practice (paid for by PCRS)	Baseline in 2022 (issue 10 GP reports)	**Rate added end 2021 & ↑ to end Q2 2022**	2% reduction on previous year	2% reduction on previous year	2% reduction on previous year	2% reduction on previous year

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Reduce unnecessary use

Prescribers – doctor, dentist, nurse, midwife

- Consider if infection self-limiting – no antibiotic required
- Use source control to manage infection
  - Drainage of pus "*Don't let the sun go down on pus*"
  - Removal of infected device
- Do not prescribe antimicrobials solely based on culture result of a microbiological sample
  - Is there evidence of infection?
  - Does the result reflect colonisation or contamination?
- Minimise the duration of antimicrobials, evidence continually evolving and guidance updated, "*Shorter is better*"
- Discussion with service user re: benefits vs. harms of antibiotics – enhance understanding, influence future behaviours
- Prevent infection – vaccination, IPC standard precautions, review of indwelling devices

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Reduce unnecessary use

Pharmacists

- Advise on symptomatic treatment for self-limiting infections
  - Hydration, rest analgesia
- Direct service users to www.undertheweather.ie for self-care advice
- Manage the expectation of an antibiotic for a viral illness or self-limiting infection, even if service user may need referral to doctor/dentist if unwell
- Advocate for most appropriate duration as per guidance
- Prompt review of antibiotic prophylaxis
  - Guidance on www.antibioticprescribing.ie

REVIEWING AZITHROMYCIN PROPHYLAXIS

- Azithromycin prophylaxis should be reviewed every 6-12 months. If there is no evidence of clinical benefit or there is evidence of adverse effects, it should be discontinued, with discussion with the original prescriber.
- This review should include an assessment of: ECG, hearing, LFTs, current medication, any relevant results of microbiological sampling, adverse effects and frequency of exacerbations.
- This review can occur at an outpatient appointment, opportunistically if the patient has an inpatient stay or at a routine GP review.
- Clear communication between the original prescriber and GP should include details of the intended plan for review and deprescribing as appropriate.

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Reduce unnecessary use

Nurses & midwives

- Check immunisation status of residents and encourage uptake
  - Guidance supporting pneumococcal vaccination in RCFs www.antibioticprescribing.ie

- Promote best practice in use of dipstick urinalysis
  - AMRIC position statements

- Promptly remove invasive devices

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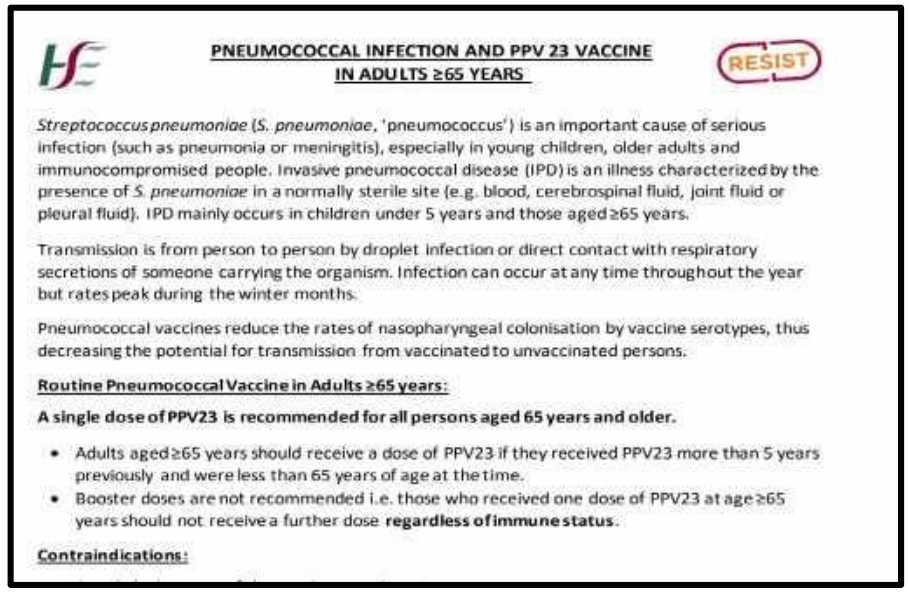

PNEUMOCOCCAL INFECTION AND PPV 23 VACCINE IN ADULTS ≥65 YEARS

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Streptococcus pneumoniae (*S. pneumoniae*, 'pneumococcus') is an important cause of serious infection (such as pneumonia or meningitis), especially in young children, older adults and immunocompromised people. Invasive pneumococcal disease (IPD) is an illness characterized by the presence of *S. pneumoniae* in a normally sterile site (e.g. blood, cerebrospinal fluid, joint fluid or pleural fluid). IPD mainly occurs in children under 5 years and those aged ≥65 years.

Transmission is from person to person by droplet infection or direct contact with respiratory secretions of someone carrying the organism. Infection can occur at any time throughout the year but rates peak during the winter months.

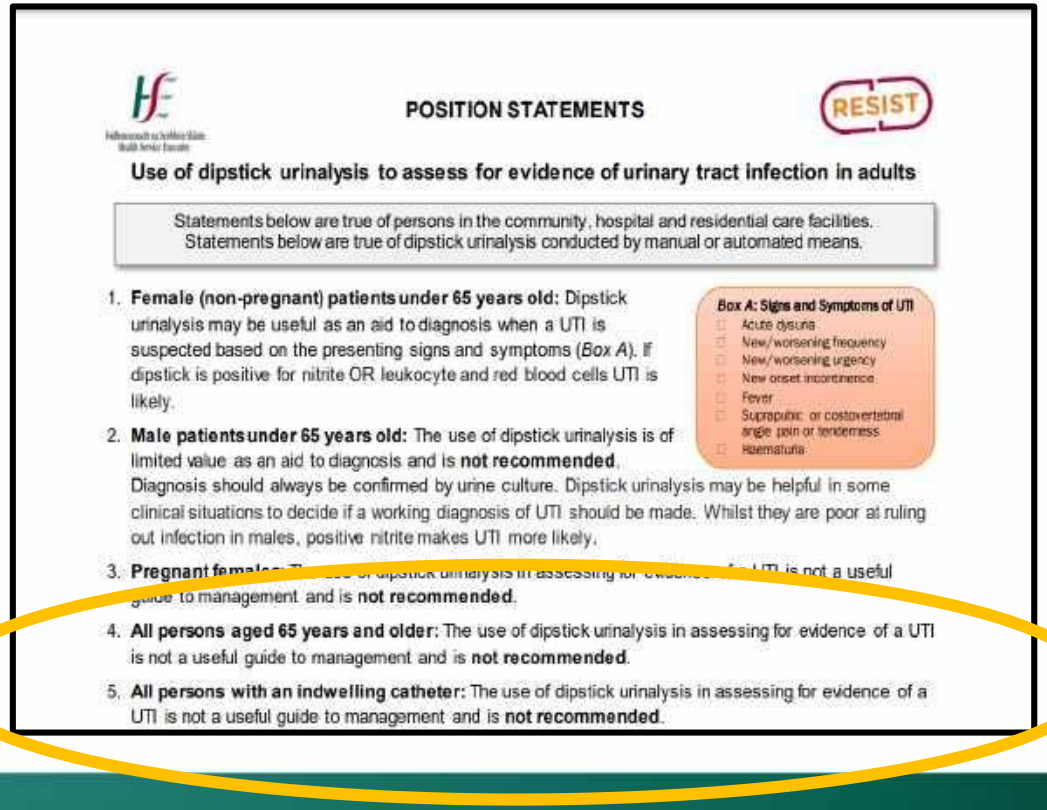
Pneumococcal vaccines reduce the rates of nasopharyngeal colonisation by vaccine serotypes, thus decreasing the potential for transmission from vaccinated to unvaccinated persons.

Routine Pneumococcal Vaccine in Adults ≥65 years:

A single dose of PPV23 is recommended for all persons aged 65 years and older.

- Adults aged ≥65 years should receive a dose of PPV23 if they received PPV23 more than 5 years previously and were less than 65 years of age at the time.
- Booster doses are not recommended i.e. those who received one dose of PPV23 at age ≥65 years should not receive a further dose **regardless of immune status**.

Contraindications:



POSITION STATEMENTS

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Use of dipstick urinalysis to assess for evidence of urinary tract infection in adults

Statements below are true of persons in the community, hospital and residential care facilities.
Statements below are true of dipstick urinalysis conducted by manual or automated means.

1. **Female (non-pregnant) patients under 65 years old:** Dipstick urinalysis may be useful as an aid to diagnosis when a UTI is suspected based on the presenting signs and symptoms (*Box A*). If dipstick is positive for nitrite OR leukocyte and red blood cells UTI is likely.

Box A: **Signs and Symptoms of UTI**
- Acute dysuria
- New/worsening frequency
- New/worsening urgency
- New onset incontinence
- Fever
- Suprapubic or costovertebral angle pain or tenderness
- Haematuria

2. **Male patients under 65 years old:** The use of dipstick urinalysis is of limited value as an aid to diagnosis and is **not recommended**. Diagnosis should always be confirmed by urine culture. Dipstick urinalysis may be helpful in some clinical situations to decide if a working diagnosis of UTI should be made. Whilst they are poor at ruling out infection in males, positive nitrite makes UTI more likely.
3. **Pregnant females:** [illegible] is not a useful guide to management and is **not recommended**.
4. **All persons aged 65 years and older:** The use of dipstick urinalysis in assessing for evidence of a UTI is not a useful guide to management and is **not recommended**.
5. **All persons with an indwelling catheter:** The use of dipstick urinalysis in assessing for evidence of a UTI is not a useful guide to management and is **not recommended**.

Shared experience of reducing unnecessary antibiotic use for service users

1. Professor Deborah McNamara – reducing unnecessary antibiotic use for surgical patients

2. Dr Paul Ryan – reducing unnecessary antibiotic use for community patients

3. Annie Joseph – reducing unnecessary antibiotic use for residents in a residential care facility

- Presentations serve to provide food for thought for the workshop that follows

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Surgical antibiotic prophylaxis

Prof Deborah McNamara

Co-Lead, National Clinical Programme in Surgery

Clinical Design & Innovation

Person-centred, co-ordinated care

NCPS

NATIONAL CLINICAL PROGRAMME IN SURGERY

Surgical Antibiotic Prophylaxis

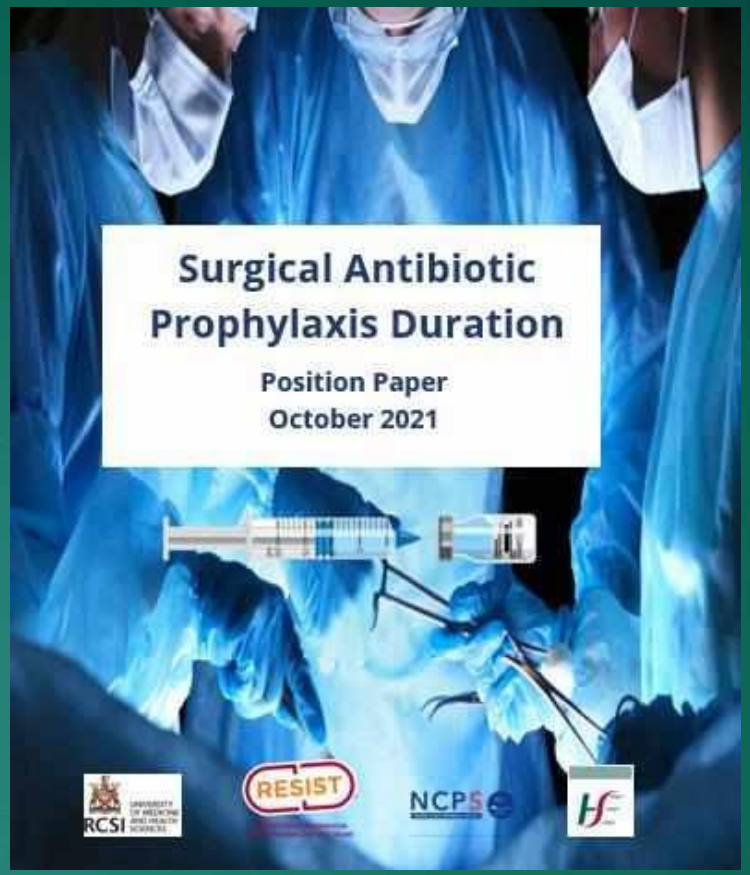
- Use of antibiotics to reduce risk of surgical site infection, both superficial or deep
- SSI are intrinsic risks to many surgical procedures
- Inappropriate administration of surgical antibiotic prophylaxis can result in poor outcomes even with best surgical technique
- Aim is to achieve maximum benefit with the least harm

NCPS
NATIONAL CLINICAL PROGRAMME IN SURGERY

DURATION

- Most procedures only require a **single adequate** dose of the **right agent** at the **right time** for surgical antibiotic prophylaxis to reduce the risk of a surgical site infection (SSI)
- Extended duration of surgical antibiotic prophylaxis 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

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)

Approved by AMRIC, the National Clinical Programme in Surgery (NCPS), the Royal College of Surgeons (RCSI), NCP for Anaesthesia, Institute of Obstetrics and Gynaecologists, National Women and Infants Health Programme, NCP in Trauma and Orthopaedics, National Heart Programme, College of Anaesthesiologists and the HSE Antimicrobial Stewardship Advisory Group.

Guidance for Specific Surgical Procedures

- Orthopaedic surgery (including implant surgery)
- Vascular surgery
- Neurosurgery
- Thoracic surgery
- Ear-nose and throat surgery
- Urology
- Plastic and reconstructive surgery
- Cardiology - percutaneous procedures including placement of implantable devices

- Maxillofacial surgery
- Cardiac surgery
- Head and neck surgery

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Prophylaxis is not treatment

- Evidence & expert opinion do not justify a prophylaxis duration >48 hours
- Applicable to both parenteral & oral routes
- Should not be continued even if drains remain in place

NCPS
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Surgical Antibiotic Prophylaxis Position Paper October 2021

1. **Maximum duration of antibiotic prophylaxis is the duration of the surgical procedure for most surgical procedures** – usually a single dose within 60 minutes prior to incision.
2. An **additional intra-operative dose may be required** depending on antibiotic half-life
3. The **maximum duration of antibiotic prophylaxis is 24 hours** (and in rare cases 48 hours)
4. Antibiotic **prophylaxis for more than 48 hours cannot be justified** for any surgical procedure on the basis of current evidence or consensus of expert opinion
5. Antibiotic prophylaxis not required on the basis that drains remain in place.

News

National Clinical Programme for Surgery and HSE agree joint position on surgical antibiotic prophylaxis

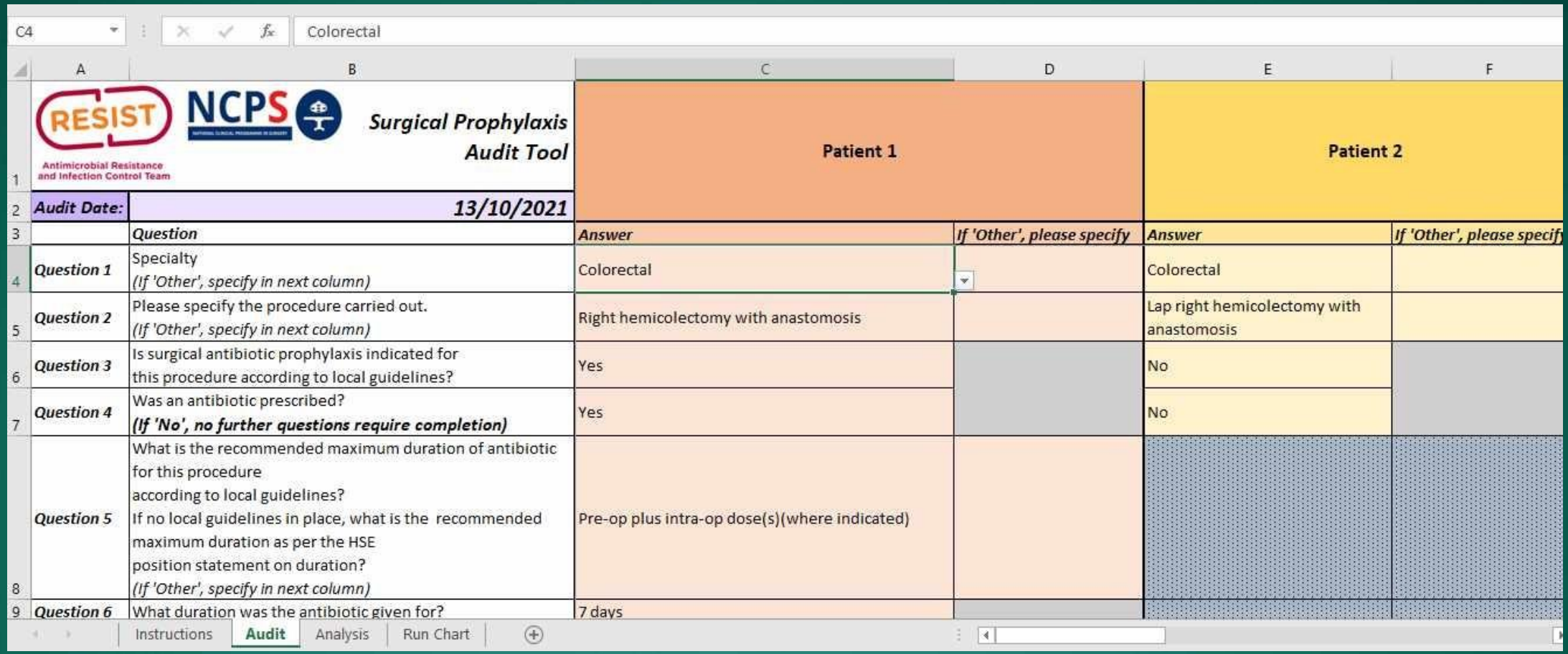
10 December 2021

SURGICAL

GENERAL NEWS

RCSI

An Excel tool to support local audit and QI



C4 | Colorectal

	A	B	C	D	E	F
1	RESIST Antimicrobial Resistance and Infection Control Team / NCPS	*Surgical Prophylaxis Audit Tool*	**Patient 1**		**Patient 2**	
2	***Audit Date:***	***13/10/2021***				
3		***Question***	***Answer***	***If 'Other', please specify***	***Answer***	***If 'Other', please specify***
4	***Question 1***	Specialty *(If 'Other', specify in next column)*	Colorectal		Colorectal	
5	***Question 2***	Please specify the procedure carried out. *(If 'Other', specify in next column)*	Right hemicolectomy with anastomosis		Lap right hemicolectomy with anastomosis	
6	***Question 3***	Is surgical antibiotic prophylaxis indicated for this procedure according to local guidelines?	Yes		No	
7	***Question 4***	Was an antibiotic prescribed? ***(If 'No', no further questions require completion)***	Yes		No	
8	***Question 5***	What is the recommended maximum duration of antibiotic for this procedure according to local guidelines? If no local guidelines in place, what is the recommended maximum duration as per the HSE position statement on duration? *(If 'Other', specify in next column)*	Pre-op plus intra-op dose(s)(where indicated)			
9	***Question 6***	What duration was the antibiotic given for?	7 days			

Instructions | **Audit** | Analysis | Run Chart

NCPS NATIONAL CLINICAL PROGRAMME IN SURGERY

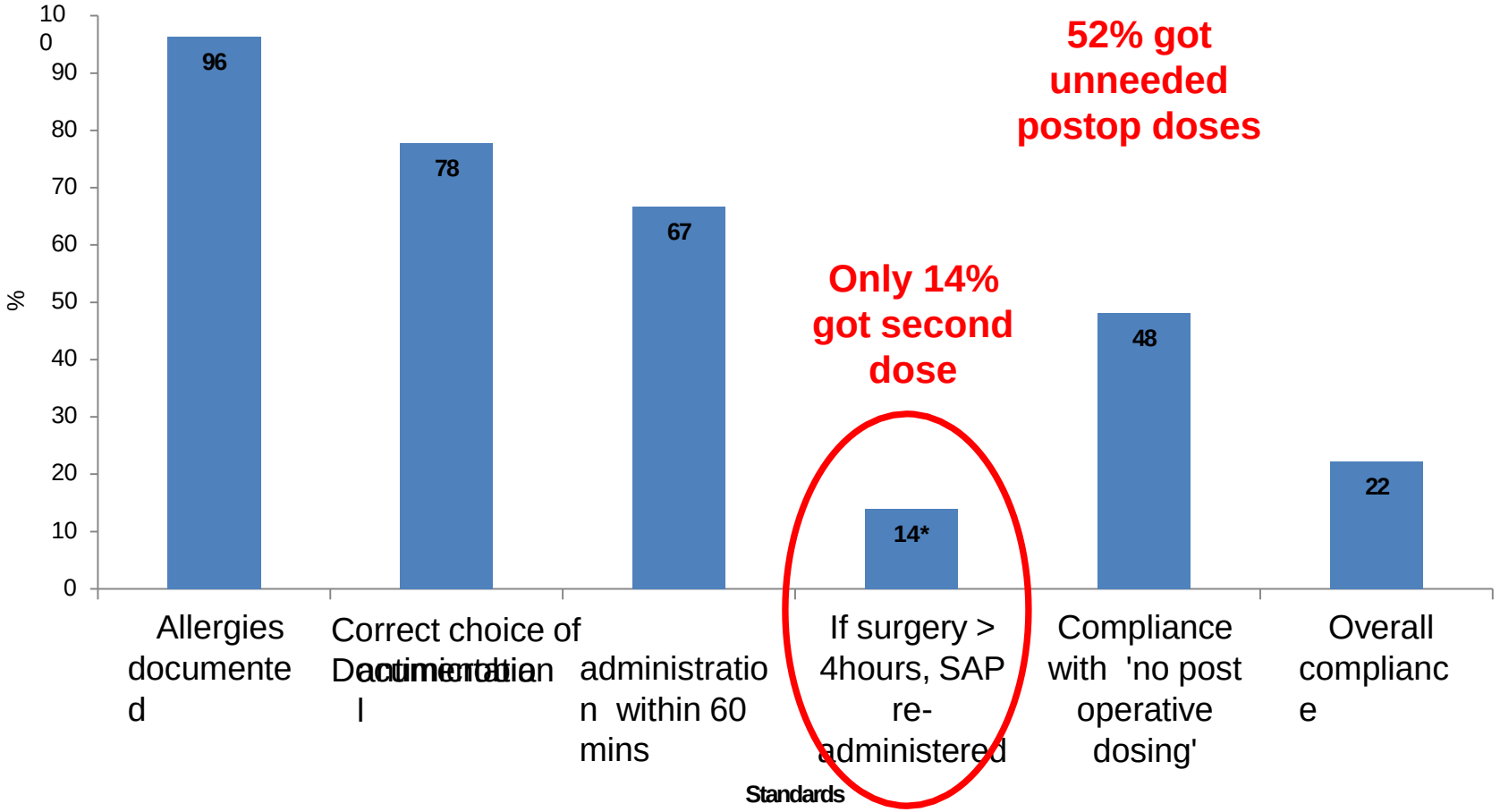
Antimicrobial stewardship in practice

1. **67% of patients got timely antibiotic prophylaxis**
2. **22% of patients surgery >4 hours got 2nd dose**
3. **Half got unneeded post-op antibiotic doses**

Short point prevalence audits can rapidly assess local practice

Acknowledgement Ms Niamh McCawley

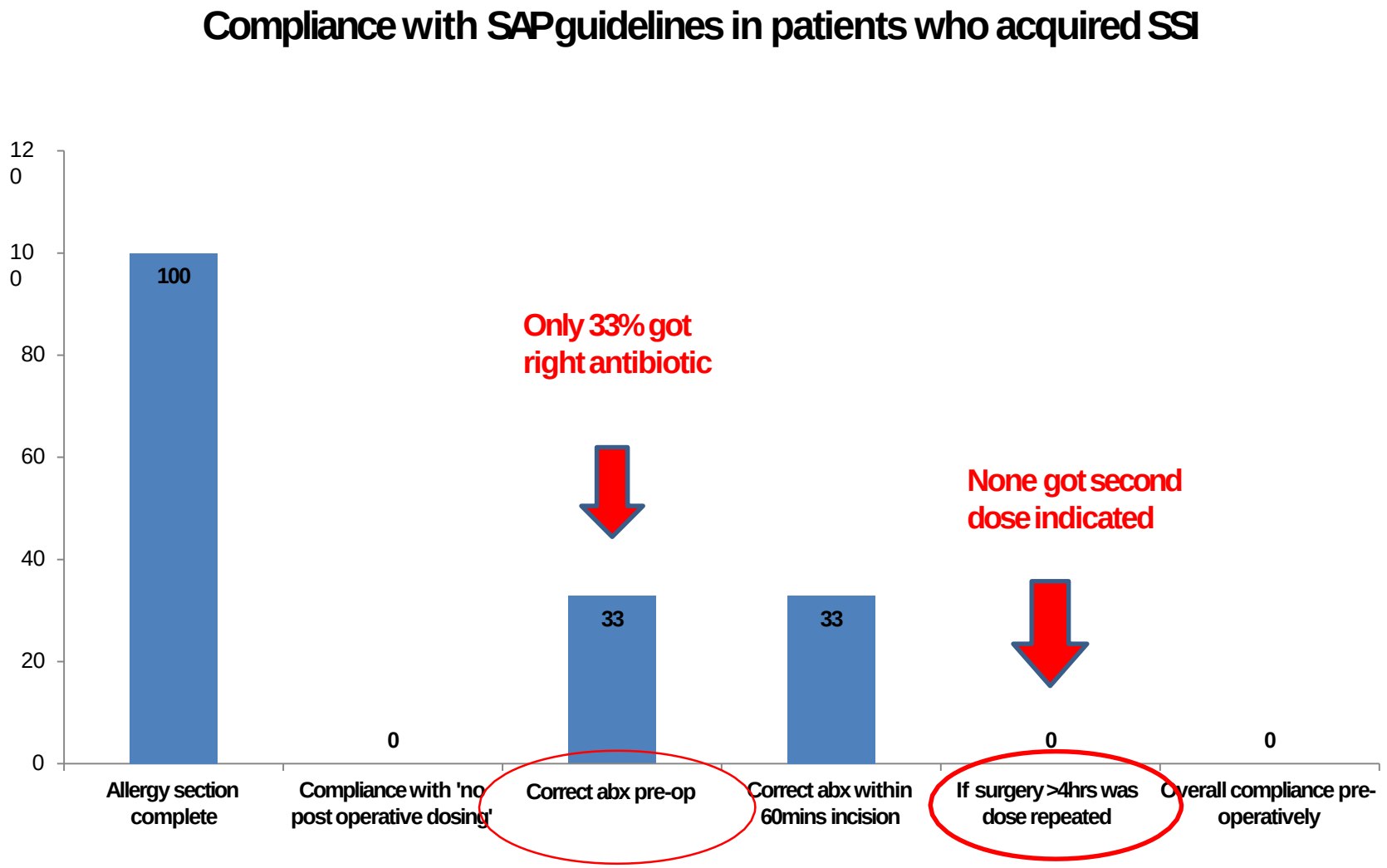
Prospective audit of antibiotic compliance elective UGI & CR surgery over 1 month period (n=27)



Acknowledgement Ms Niamh McCawley

@betterbeaumont

Look-back audit on elective patients who acquired SSI



Acknowledgement Ms Niamh McCawley

Antimicrobial stewardship in practice: from global to local

@betterbeaumont

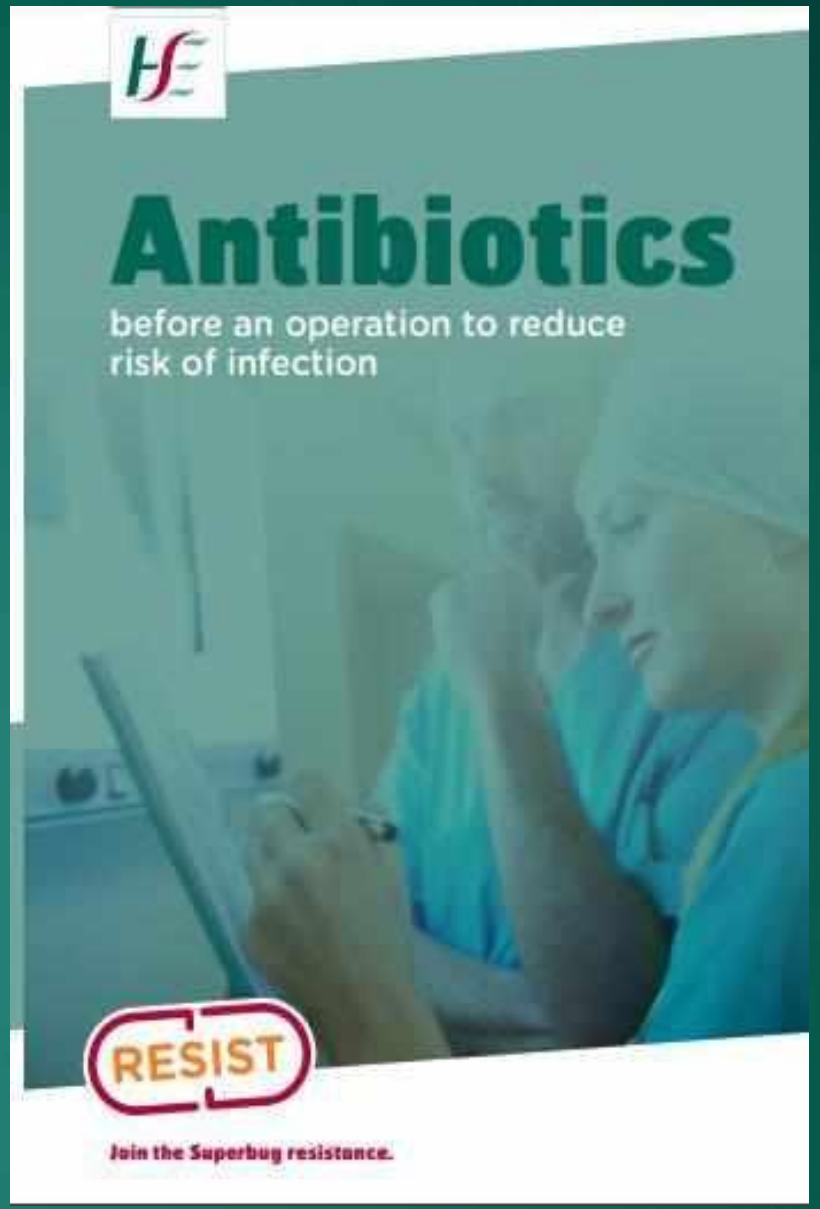
Acknowledgement Dr. Eoin Kelleher, Beaumont Hospital

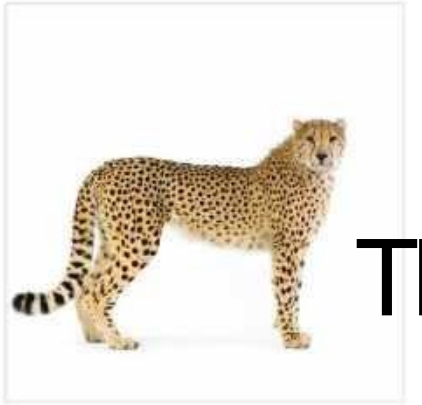
Implementation

Posters

Patient Information

Online resources on AMRIC website





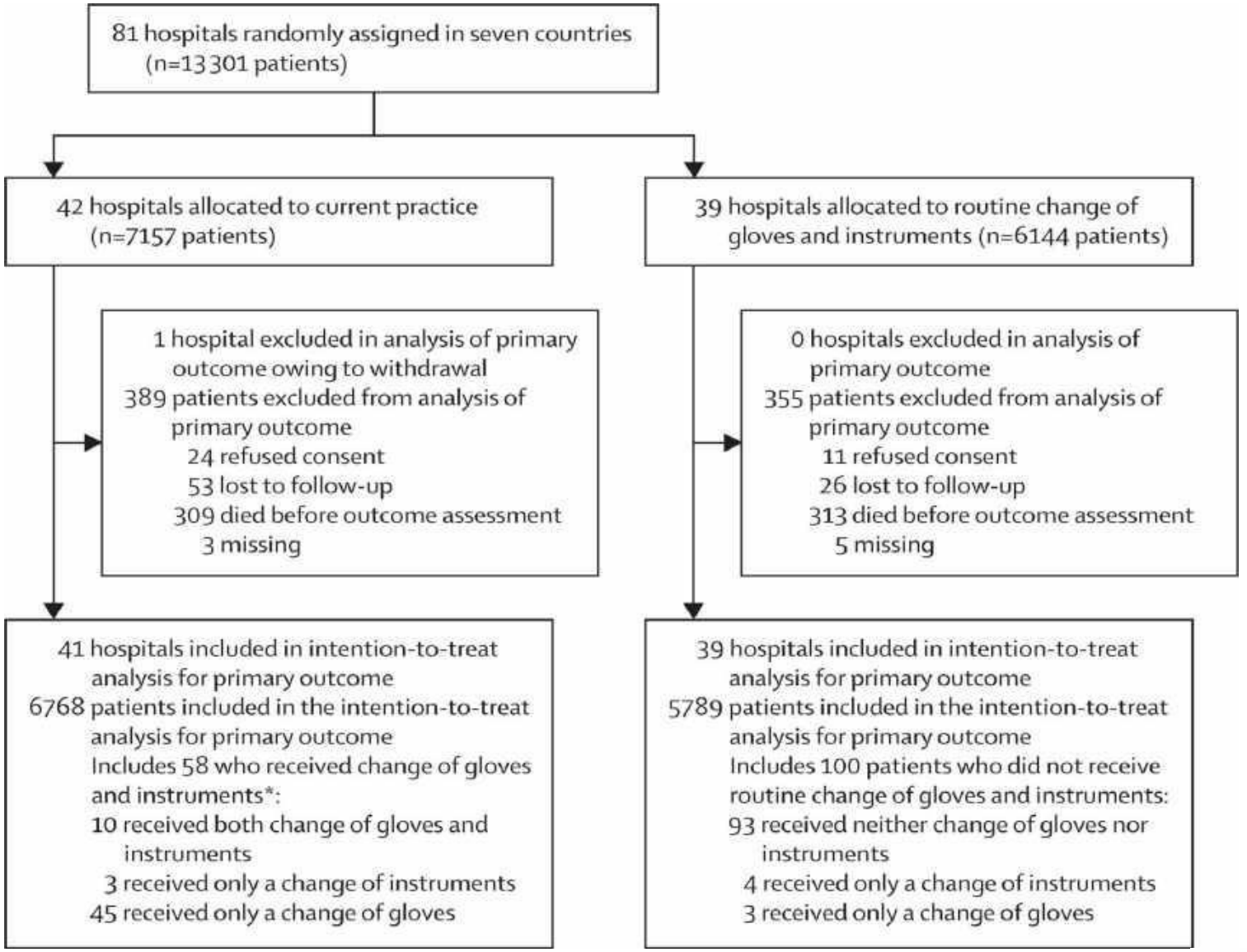
There's more to SSI prevention than antibiotics

Routine sterile glove and instrument change at the time of abdominal wound closure to prevent surgical site infection (ChEETAh): a pragmatic, cluster-randomised trial in seven low-income and middle-income countries

NIHR Global Research Health Unit on Global Surgery*

The Lancet DOI: (10.1016/S0140-6736(22)01884-0)

RCT to test impact of routine change of gloves and instruments before closing wound



The Lancet DOI: (10.1016/S0140-6736(22)01884-0)

	CURRENT	INTERVENTION
Colorectal	14.8 %	15.5 %
Safe surgery checklist	95.6 %	97.1 %
ASA 3 or 4	17.4 %	16.7 %
Prophylactic antibiotics	**98.4 %**	**98.3 %**
Contaminated or dirty	39.3 %	38.1 %

The Lancet DOI: (10.1016/S0140-6736(22)01884-0)

There's more to SSI prevention than antibiotics

	CURRENT	INTERVENTION	RISK RATIO
Mortality	6.4 %	6.4 %	0.88
SSI at discharge	**10.1 %**	**8.1 %**	**0.77**
Readmission	3.6 %	3.4 %	1.02
Median LOS	5 (3-8)	6 (4-9)	1.12

The Lancet DOI: (10.1016/S0140-6736(22)01884-0)

CONCLUSIONS
Surgical Antibiotic Prophylaxis

- Inappropriate administration of antibiotic prophylaxis can result in poor outcomes even with the best surgical technique

- Extended prophylaxis is not a substitute for careful surgery or good aseptic technique by all members of the surgical team

- Maximum benefit with least harm is achieved by:
  - the right agent at the right dose,
  - at the right time, for the right duration.
  - with high quality care by all members of surgical team

NCPS
NATIONAL CLINICAL PROGRAMME IN SURGERY

AMRIC IMPLEMENTATION INITIATIVE-MCCU

PRESENTATION BY ANNIE JOSEPH CNM1 AND IPC/AMS LINK PRACTITIONER

MAYNOOTH COMMUNITY CARE UNIT

INTRODUCTION

- Residential care facilities are identified as having a high burden of infection, resulting in increased use of antibiotics. This subsequent rise in antibiotic use causing concern regarding multidrug resistant organism colonisation especially among the residential care population.

- Maynooth Community Care Unit is a 33 bedded with 31 extended care beds and 2 respite beds.

PREPARATION

PPSA

- In order to achieve the best result for the project the initial focus was on a survey completed by our partnering pharmacist Roisin Foran from April 2021 to August 2021. The PPSA(Point Prevalence Survey of Antimicrobial use) outcome was encouraging as there was just one resident who has received antibiotic therapy for a UTI within the last 30 days-3.4% which was lower than the CHO 7 prevalence(21%) and national (22%). Additionally there was no resident prescribed prophylactic antibiotic therapy. There was no healthcare associated infections such as CDifficile, CPEor outbreaks.

Recommendations from PPSA

- Nature of allergies to be documented in the drug kardex.
- Blood for renal functions should be available for all residents to make sure suitability of drug antibiotics.
- Electronic laboratory access.

Challenges

- **Medical Team**
  - It was difficult to explain and bring the change from the routine practice of using urine dip stick for diagnosing UTI.
  - G.P service was very uncooperative initially due to the change of practice.

- **Lab Results**
  - It was a challenge to receive lab results on time due to MCCU has no e-access , which cause subsequent delay in providing required medical intervention in a timely manner.

- **Nursing Team**
  - Nursing staff strongly believed that dip sticks are necessary for early identification of UTI.

What did we do

- Part of the PPSA audit antimicrobial pharmacist provided informal education sessions to the staffs and G.P., and she was readily available to advice if any need arises.
- As the IPC team we provided training sessions with an emphasis on the prevention of spreading the infection between residents by healthcare workers. MCCU has three IPC link practitioners and they focus on Hand Hygiene and PPE training for the staff aiming to raise awareness and better understanding in order to gain their cooperation towards the implementation of the AMRIC programme.
- IPC team conducted audits such as antibiotic use, monitoring infections, laundry management, waste management, cleaning equipment, environmental cleaning audit etc.
- Staff members were given protected time to attend training in the HSE Land. Staff reaction was very positive and 99.9% of the staff completed the required online training within the set time frame.
- MCCU removed urine dipstick containers from the wards and stopped ordering from the pharmacy.

Current Practice

- Staff were advised to monitor and report any changes in the residents condition from their baseline such as increased tiredness, respiratory symptoms, early identification of delirium, cloudy/concentrated urine and a sudden lack of interest towards food and fluids etc.

- A staff member has been allocated to monitor and encourage fluid intake for the residents on a daily basis.

- Any concerns regarding residents condition is communicated to the GP and start on antibiotic therapy only deemed necessarily.

Residents with indwelling catheter has given extra care such as hand hygiene, care of the catheter, using proper PPE, monitoring urine colour and density, monitoring fluid intake, proper positioning and changing of the catheter and urinary bag to avoid recurrence of urinary tract infection.

Current Practice

- 99% of the residents are immunised against flu and covid-19.
- Ongoing monitoring of the resident for symptoms and staff education as necessary.
- Checking full bloods annually for all residents and as necessary.
- HCAI/AMR/ Antimicrobial consumption monthly survey- Last Friday of every month.
- The recent October 2022 result was 3.4%, no prophylactic antibiotics prescribed and no healthcare associated infections.
- Adhere to Antimicrobial prescribing and IPC guidelines.

Conclusion

- MCCU succeeded in implementing AMRIC program in the unit by ongoing education, constant monitoring and excellent team work.
- Antibacterial use is subsequently reduced as a result of the implementation of the AMRIC programme.
- MCCU is happy to take on any such initiatives going forward as well, simply because the ultimate benefit go to the service user which enhance their quality of life. At the some time such programmes indirectly reduce the burden on the system to some extent.
- Last but least I would like to thank the support from nursing admin, especially from DON Maire O'Keeffe for the support and guidance.

THANK YOU

Annie Joseph, CNM1
Maynooth Community Care Unit

Why 5 Days of Antibiotics is Enough!

Dr Paul Ryan, HSE AMRIC GP Advisor

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Why was duration of antibiotics 7 days?

- Pneumonia was successfully treated with short durations of antibiotics in the1940s
- Range of 1.5 to 4 days of therapy resulted in high cure rates
- Concept of continuing to treat bacterial infections past the time when signs and symptoms have resolved can be traced back to 1945.

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Then give for another 2-3 days…..

- Administer penicillin to patients with pneumonia ‘until there was definite clinical improvement and the temperature had remained below 100°F for 12 hours...then given for another two to three days’

Meads M, Harris HW, Finland M, Wilcox C. Treatment of pneumococcal pneumonia with penicillin. *N Engl J Med.* 1945;232:747–755.

- Perceived need to treat beyond resolution of symptoms was driven by a desire to prevent relapses
- But the recurrent infections seen in the case series were indicative of reinfection rather than relapse

Why a Reduction From 7 Days to 5 Days

- RCT comparing 5 days versus 7 days duration of antibiotics for hospitalized patients with community-acquired pneumonia
  (*JAMA Internal Med.* doi:10.1001/jamainternmed.2016.3633)

- Control group continued antibiotics on day 5
- Experimental group had their antibiotics stopped if afebrile for 48 hours and had no more than 1 sign of clinical instability
  i.e. Hypotension, tachycardia, tachypnoea or hypoxia

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Why a Reduction From 7 Days to 5 Days?

- 40% of patients in both arms had Pneumonia Severity Index scores of IV to V (severe illness)
- Prior studies of short-course antibiotic therapy had focused primarily on patients with mild to moderate illness.
- Across all end points, time points, and populations; short-course therapy **was as effective** as longer courses of therapy

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“Shorter Duration of Antibiotics is Better”

- Now more than 45 RCTs demonstrating “shorter is better”

  Wald-Dickler N, Spellberg B. Short course antibiotic therapy–replacing Constantine units with “shorter is better”. Clin Infect Dis. 2019. doi:10.1093/cid/ciy1134

- Each day of antibiotic therapy beyond the first confers a decreasing additional benefit to clinical cure
- While increasing adverse effects, superinfections, and selection of antibiotic resistance.

  Vaughn VM, Flanders SA, Snyder A, et al. Excess antibiotic treatment duration and adverse events in patients hospitalized with pneumonia. A multihospital cohort study. Ann Intern Med. 2019 [Epub ahead of print]. doi:10.7326/M18-3640

- 5 day duration of antibiotics as effective as 7 day duration
- NICE incorporated theses changes

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5 Day Courses Equivalent to 7 day Courses

- Infections for which short course therapy has been shown to be equivalent in efficacy to longer therapy:
  - Community acquired pneumonia
  - Acute exacerbation of chronic bronchitis and COPD
  - Acute bacterial sinusitis
  - Tonsillitis

- No antibiotic required in viral infections such as:
  - Bronchiolitis
  - The majority of children with otitis media/acute cough

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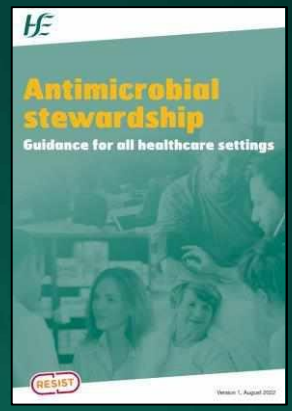

AMS guidance for all healthcare settings

Workshop on reducing unnecessary use

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Marie Philbin, Chief Antimicrobial Pharmacist, HSE-AMRIC

Workshop

- Focus: reducing unnecessary use in the healthcare setting assigned to your table (see sheet on table)
  - Hospital / Dental setting / GP / Residential care facility / Community pharmacy

- Multidisciplinary group from various healthcare settings on each table

- Antimicrobial stewardship professional on each table

- Role of the facilitator
  - Keep the discussions focussed on the relevant questions
  - Feedback on behalf of the table

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Workshop

- Session duration: 60 minutes
  - AMRIC introduction to session: 5 minutes
  - Introduction to each other on your table: 5 minutes
  - Workshop questions: 10 minutes x 3
  - Feedback: 15 minutes

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Workshop

- The morning presentations will have provided food for thought

- There are no wrong suggestions, we want to gather and understand as many different perspectives as possible

- Feedback at the end of session:
  - Nominated AMS professional
  - Roaming microphone
  - Group the feedback via setting
  - Brief
  - Only add contributions not already mentioned

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Workshop

- Outputs
  - AMRIC will collect workshop sheets at end of session: number the questions on the sheet and add healthcare setting
  - AMRIC will collate all of the feedback
  - Available on www.antibioticprescribing.ie
  - Use to inform AMRIC work
  - Use to inform your local work

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Question 1:

- Come up with **3** ways in which you can positively deliver on **reducing unnecessary use** in the designated healthcare setting stated for your table.
- May be ideas not covered in the presentations or further expansion of those ideas.

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Question 2:

- What barriers do you anticipate in advance of delivering on these 3 proposals?

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Question 3:

- What plans can you put in place in advance to overcome these barriers?

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Feedback

- **Residential care facilities**
  - Tables: 1, 10, 16
- **GP practice**
  - Tables: 2, 3, 11
- **Dental**
  - Tables: 4, 7, 9
- **Community pharmacy**
  - Tables: 6, 13, 15
- **Hospital**
  - Tables: 5, 8, 12, 14

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13:00 - 14:00	Lunch	
Afternoon Session Chair: Marie Philbin, Chief Antimicrobial Pharmacist, AMRIC		
14:00 - 14:15	**AMS, the Policy Perspective**	**Rosarie Lynch** National Patient Safety Office, Department of Health
14:15 - 14:30	**HSE AMS guidance for all healthcare settings- a focus on governance, structures and supports**	**Marie Philbin** Chief Antimicrobial Pharmacist, AMRIC
14:30 – 14:45	**Delivering AMS Governance in a hospital group**	**Prof. Colette Cowan** CEO, UL Hospitals Group
14:45 - 15:15	**Interactive session: local governance, structures and supports required for AMS**	**AMRIC Team**
15:15 - 15:30	**Close of workshop**	**Dr. Eimear Brannigan** Clinical Lead, AMRIC

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WORKING TOGETHER TO PROTECT ANTIMICROBIALS FOR THE FUTURE

Antimicrobial Resistance, the Policy Perspective

AMRIC Antimicrobial Stewardship Workshop
Tuesday, 15th November 2022

Rosarie Lynch
Head of Clinical Effectiveness and Antimicrobial Resistance
Department of Health

National Patient Safety Office
Oifig Náisiúnta um Shábháilteacht Othar

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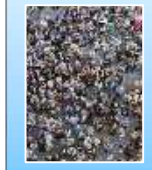
NPSO, Chief Nursing Officer Division

Rachel Kenna
Chief Nursing Officer

- The National Patient Safety Office
-  Nursing & Midwifery Policy Unit
-  Strategic Workforce Planning Unit
-  Population Health Screening Unit
-  Professional Regulation Unit

NPSO Structure

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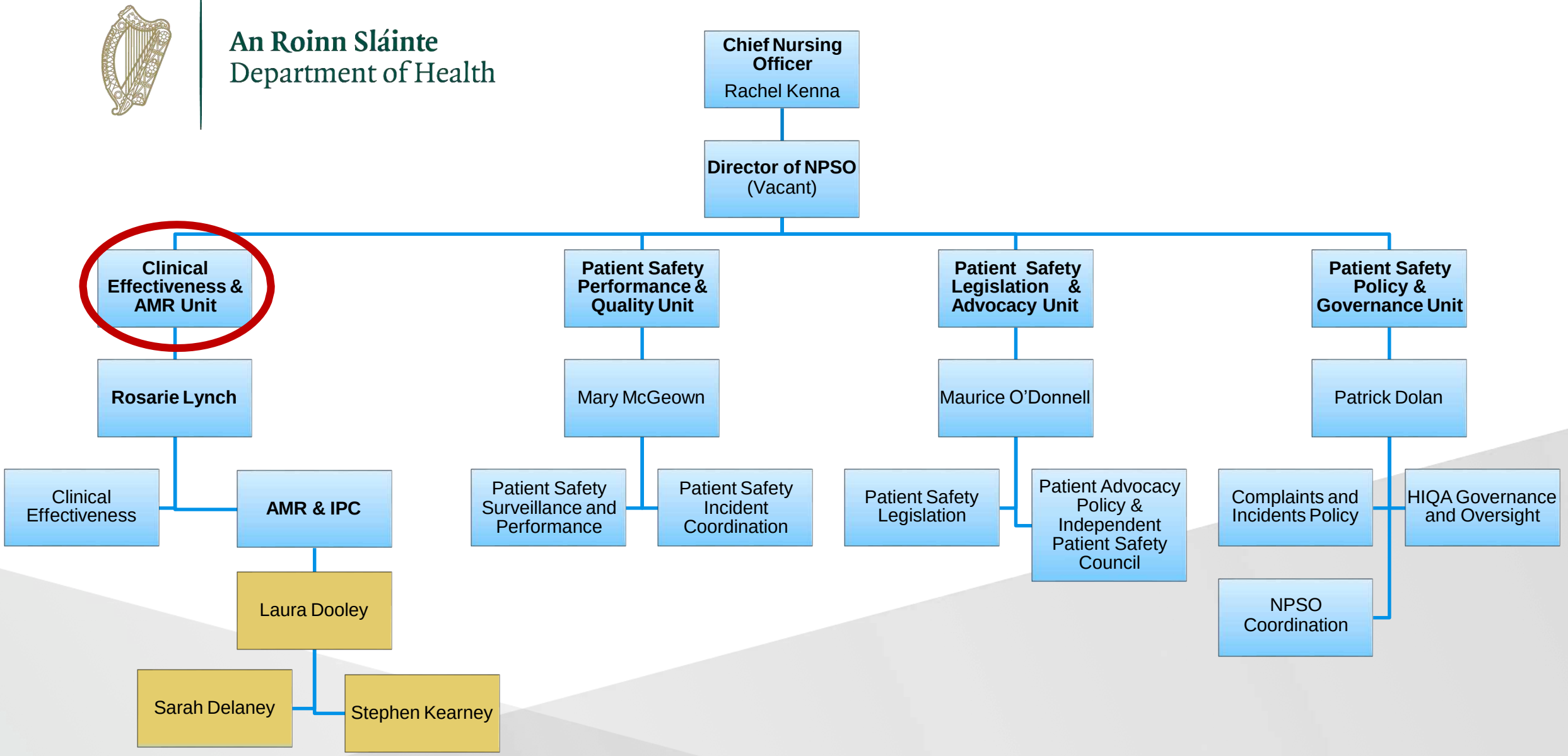

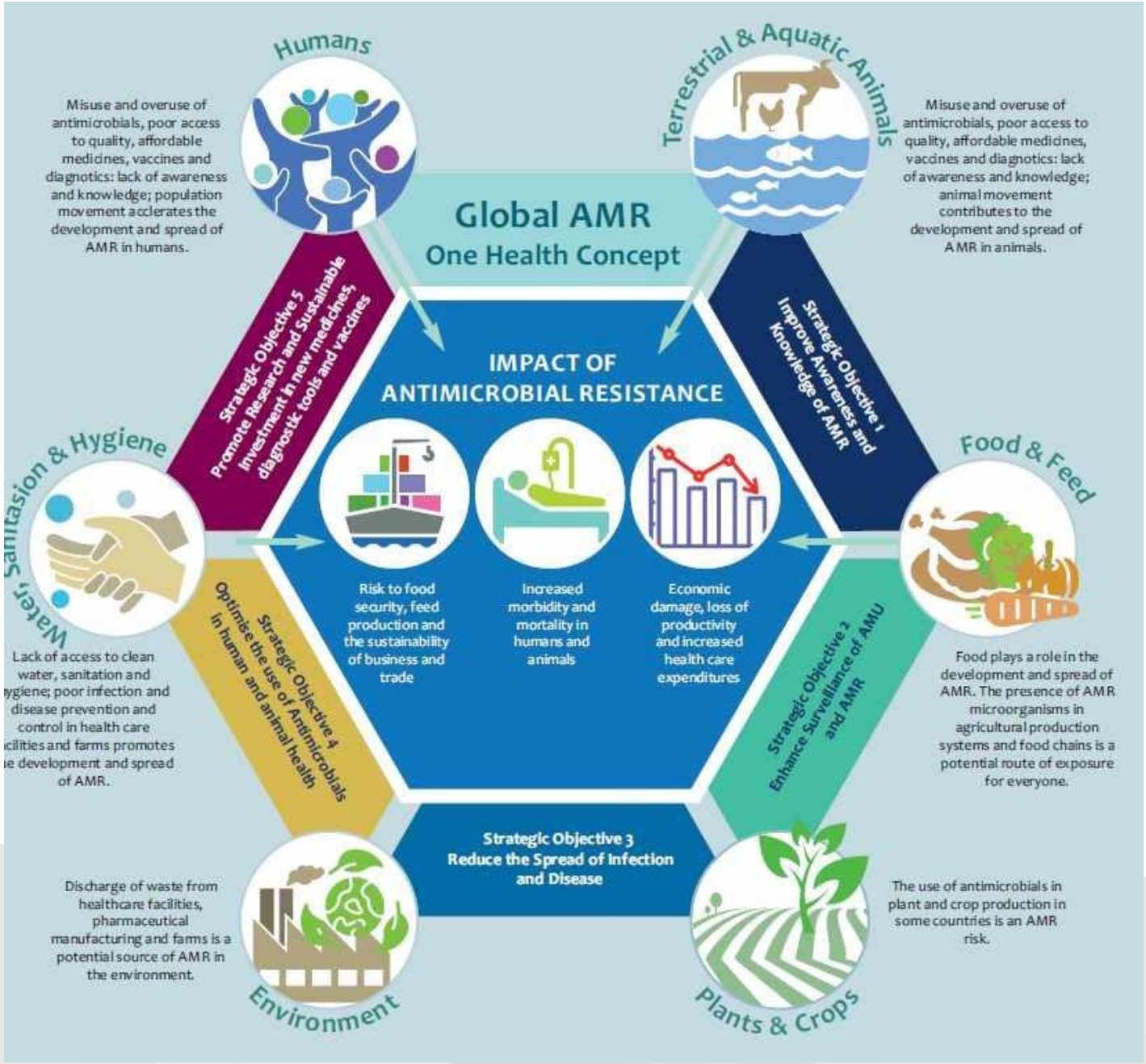

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One Health approach

WHO Global Action Plan 2015

European Action Plan 2017

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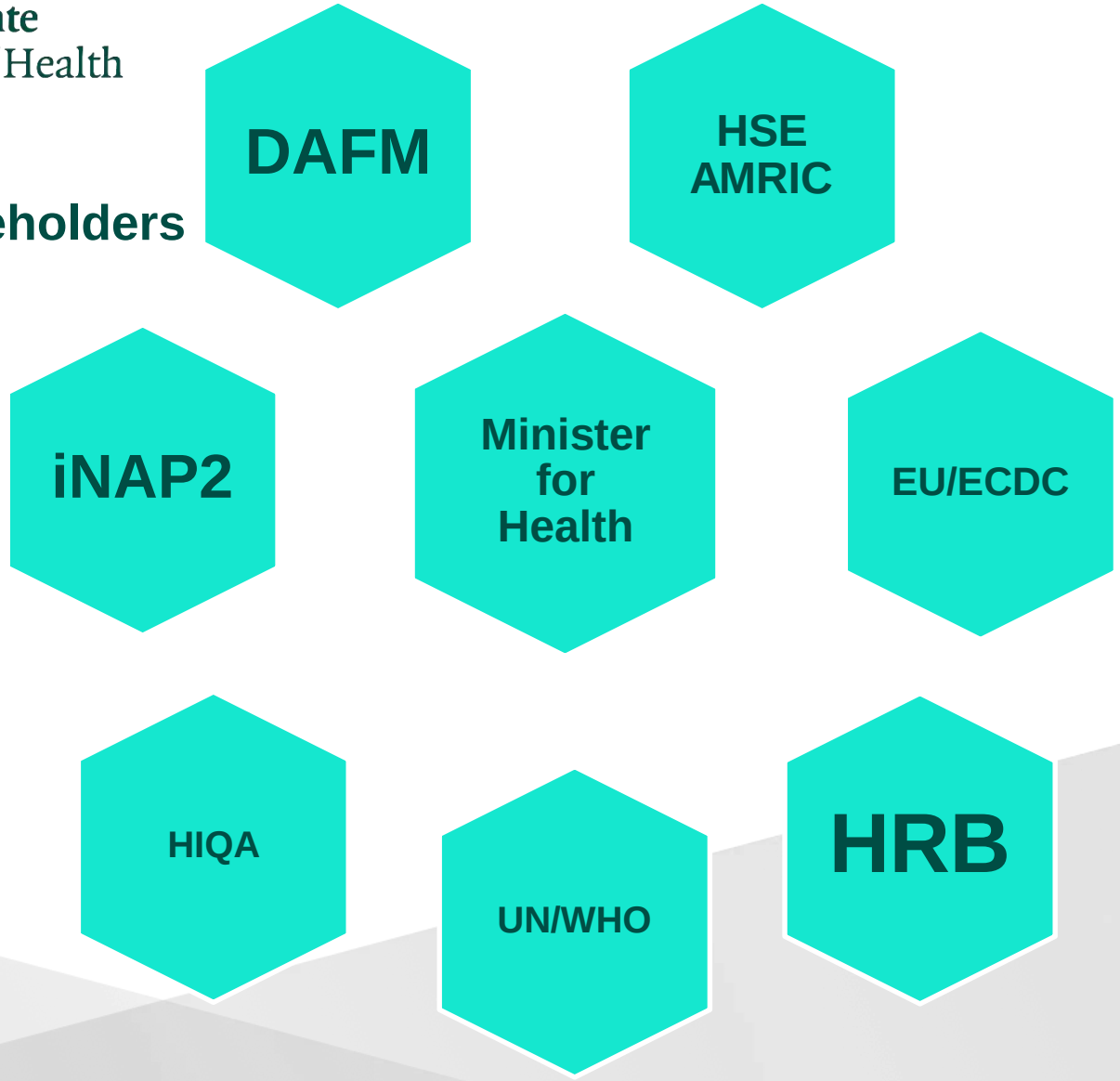
AMR Stakeholders



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AMR Team Brief

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- Secretariat Support for the Interdepartmental Consultative Committee on AMR (shared with Department of Agriculture, Food and the Marine)
- Engagement with EU and International partners re: AMR and IPC and providing national representation at international fora
- iNAP2 Implementation and Monitoring and stakeholder engagement
- AMRIC Oversight and Annual Estimates Application and Business Planning Process
- AMR KPI Performance monitoring and reporting
- Ministerial and parliamentary business re: AMR and IPC - preparation of briefing and communications material, response to PQs and Representations, FOI requests, media etc.

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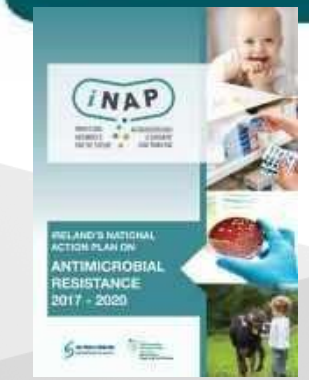
iNAP1 to iNAP2 Journey

MAR 2015 — 1st Interdepartmental AMR Committee

OCT 2017 — Declaration of CPE Public Health Emergency; iNAP 1 Launch



NOV 2018 — One Health Prescribers Conference

JAN 2019 — One Health Surveillance Report

NOV 2019 — EC/ECDC One Health Country Visit

JAN 2020 — Declaration of COVID-19 Public Health Emergency

NOV 2021 — iNAP 2 Launch

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iNAP2 Stakeholder Engagement

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External

- CORU
- Dental Council
- Health Information & Quality Authority
- Health Products Regulatory Authority
- Health Research Board
- HSE AMRIC
- Independent Patient Safety Council
- Irish College of General Practitioners
- Irish Institute of Pharmacists
- Nursing & Midwifery Board of Ireland
- Pharmaceutical Society of Ireland
- Royal College of Physicians in Ireland
- Royal College of Surgeons in Ireland

Internal

- Capital
- Community Pharmacy, Dental, Optical and Aural
- eHealth
- Health Protection Coordination & Support
- Healthy Ireland
- International Unit
- Medicines Unit
- Mental Health
- Office of the Chief Nurse
- Primary Care
- Professional Regulation
- Research Unit
- Sláintecare
- Social Care
- Strategic Workforce Planning

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iNAP2 Strategic Objectives

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- One Health Actions: 15 Actions
- SO1: Improve awareness and knowledge of antimicrobial resistance: 18 Actions
- SO2: Enhance Surveillance of antibiotic resistance and antibiotic use: 15 Actions
- SO3: Reduce the spread of infection and disease: 16 Actions
- SO4: Optimise the use of antibiotics in human and animal health: 21 Actions
- SO5: Promote research and sustainable investment in new medicines, diagnostic tools, vaccines and other interventions: 18 Actions

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Implementation and Monitoring

Overview of the current human health indicators relevant to AMR and IPC

Key Performance Indicator	Definition	Frequency	Target	Source
Clostridioides difficile (*C. difficile*)	Rate of new cases of hospital associated *C. difficile* infection	Monthly	< 2/10,000 bed days used	HSE
Staphylococcus aureus (*Staph. aureus*)	Rate of new cases of hospital acquired Staph. aureus bloodstream infection	Monthly	<0.8/10,000 bed days used	HSE
Hospital Acquired COVID-19 Cases	Rate of new hospital acquired COVID-19 cases in hospital inpatients	Monthly	N/A	HSE
Carbapenem-producing *Enterobacteriales* (CPE)	No. of new cases of CPE	Quarterly	100%	HSE
Screening of patients with CPE	% of acute hospitals implementing the requirements for screening of patients with CPE guidelines	Quarterly	100%	HSE
National policy on restricted antimicrobial agents	% of acute hospitals implementing the national policy on restricted antimicrobial agents	Quarterly	100%	HSE
Consumption of antibiotics in community settings	Consumption of antibiotics in community settings (defined daily doses per 1,000 population) per day based on wholesaler to community pharmacy sales – not prescription level data	Quarterly	<22	HSE
C. difficile	Rate of new cases of *Clostridioides difficile* infection (CDI) in acute hospitals per 10,000 bed days used.	Annual	N/A	NHQRS
S. aureus	Rate of *Staphylococcus aureus* (*S. aureus*), methicillin resistant *S. aureus* (MRSA) blood stream infections and methicillin-susceptible *S. aureus* (MSSA) blood stream infections in acute hospitals per 1,000 bed days used.	Annual	N/A	NHQRS
Carbapenemase Producing *Enterobacterales* (CPE)	are gram-negative bacteria that are carried in the bowel and are resistant to most, and sometimes all, available antibiotics. It has become increasing apparent in recent years that CPE may also persist for long periods in the hospital environment in particular in drains.	Annual	N/A	NHQRS
Antibiotic consumption in public acute hospitals	In-hospital antibiotic consumption rates are measured in Defined Daily Dose (DDD) per 100 bed days used (BDU).	Annual	N/A	NHQRS
Antibiotic consumption in the community	Community antibiotic consumption rates are measured in Defined Daily Dose (DDD) per 1,000 inhabitants per day from community consumption data.	Annual	N/A	NHQRS

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AMRIC Oversight

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- A formal process with quarterly meetings.
- Papers are submitted by HSE AMRIC in advance, these align to the HSE's AMRIC Action Plan.
- Clarifications are sought and provided at the meetings.
- This is part of the formal DOH HSE performance management process and is connected to the Annual Estimates Application and Business Planning Process.

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Next steps…

iNAP2 Actions for 2022 include:

- ✓ Progress the second One Health Report on Antimicrobial Use & Resistance 2021.
- ✓ Progress the Patient and Staff Stories Project and complete phase1.
- ✓ Ongoing participation with healthcare professional bodies to encourage participation in AMR and IPC professional development.
- ✓ Working closely with health stakeholders to develop ambassadors for the key messages related to prudent antibiotic use to the general public and their own membership.
- ✓ Explore an annual Student Award for research amongst the health professional student groups on AMR and IPC work : implemented as the Students and **G**raduates **o**f the **L**ast **D**ecade (GOLD) award in October 2022.

Midterm Review 2023

- A midterm review of the iNAP2 human health actions is planned for 2023 and work has commenced.
- This will consider any further relevant learning from the COVID-19 Pandemic.

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Strategic Objective 1
Improve awareness and knowledge of AMR

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The Patient and Staff Stories Project – 2022

- This project is a key deliverable for 2022 under SO1.

- The aim of this project to seek to explore the knowledge, practices, experiences and perceptions of both patients and staff in relation to AMR and IPC through the use of storytelling.

- There are two main outputs from this project:
    1) A patient and staff stories booklet.
    2) A final report with analyses of the key findings and themes which emerged.

- Phase 1 is currently being completed. Phase 2 will commence in 2023.

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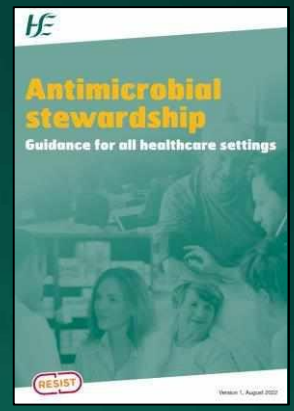
Stay in Touch!

Joint AMR webpage: www.gov.ie/amr

Email: OneHealth@health.gov.ie

NPSO on Twitter: @npsoIRL

National Patient Safety Office
Oifig Náisiúnta um Shábháilteacht Othar



AMS guidance for all healthcare settings Focus on governance, structures and supports

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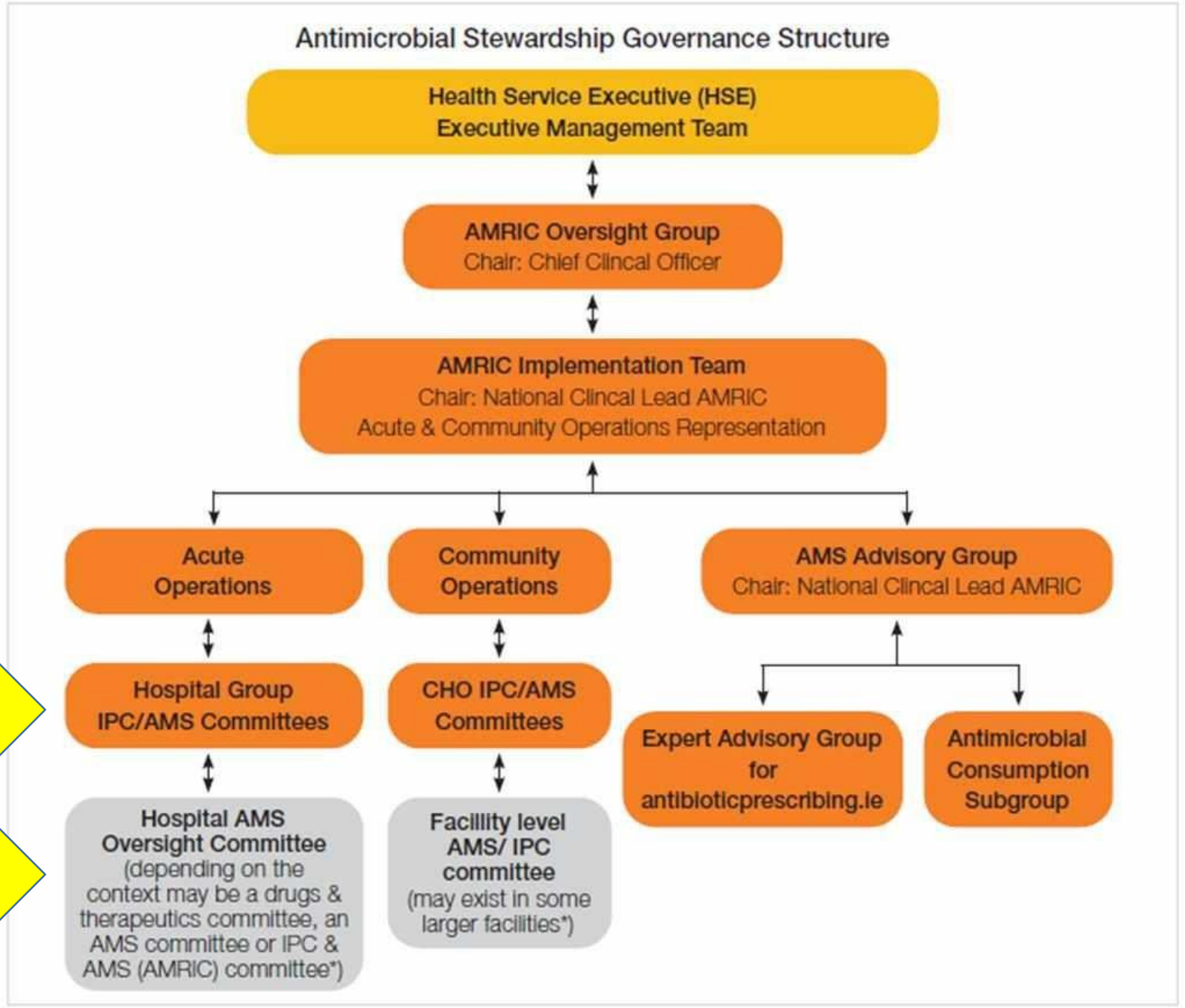
Antimicrobial Resistance & Infection Control Programme

Marie Philbin, Chief Antimicrobial Pharmacist, HSE-AMRIC

HSE AMRIC governance structure



Prof Cowan presentation

Marie Philbin presentation

Page 32 of AMS guidance

Overview of governance, structures & supports required for AMS

- Key role for the hospital & service managers – more detail next slide

- Multidisciplinary AMS oversight committee
  - Oversee and support work of AMS team
  - An AMS/IPC committee good model that reflects national structures
  - Coordinate with drugs & therapeutics committee

- AMS team responsible for designing, implementing and reporting on the AMS programme of work

- All healthcare organisations, relevant to local context, should have
  - An AMS policy
  - Annual AMS plan

- Approach to AMS should support integrated measures & objectives between acute & community services

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Role of the hospital / service manager

- AMS is identified as a strategic quality and safety initiative
- AMS operates in planned and structured fashion
- Appropriate governance structures in place for oversight of AMS
  - Approval of annual report
  - Approval of annual plan
- Endeavour to provide appropriate resources such as human, financial and ICT
- Encourage availability and participation in AMS education & training for all healthcare workers
- A senior clinician is engaged to support and champion the AMS programme – this may be the AMS lead

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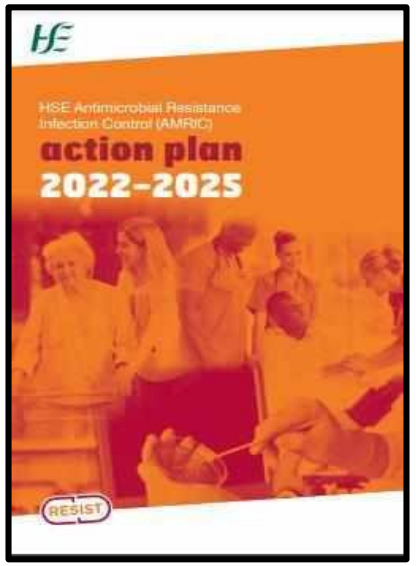
Governance, supports & structures will differ depending on your setting

- Hospital groups, CHOs, acute hospital and some larger residential care facilities

- Most likely to have formal AMS governance structures in place
  - IPC/AMS committee or other committee that takes responsibility for AMS
  - AMS programme
  - +/- AMS team
  - Annual AMS plan
  - Annual policy

- Important to be aware of these structures and engage in them
  - Representative of your area on the AMS committee
  - Key priorities and targets of the annual plan
  - Attendance at regular education sessions
  - Review of audit feedback relevant to your team/ward and discuss with team



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Governance, supports & structures will differ depending on your setting

- For smaller facilities, GP practices, community pharmacies recommend tailoring to your individual setting

- If you have an overall **facility/practice annual plan** for all aspects of the healthcare setting ensure AMS is acknowledged in that, examples of inclusions for annual plan:
  - Name a designated lead within the setting for AMS
  - Decide on the key focus areas (2 or 3) for the year
  - Decide on frequency of AMS meetings, for example quarterly or twice per year

- Attendance at educational AMS webinars or arrange for local session from an AMS professional

- Use meetings to discuss
  - Changes/updates to guidance
  - Review targets, for example GP green red reports or local dispensed/prescribing reports
  - Discuss local audit findings

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Governance, supports & structures will differ depending on your setting

Examples of meeting discussion topics in your settings

- **GP setting**
  - Review quarterly green red reports, discuss challenges within and compare to national targets (2022: 68% green, 32% red)
  - Review antibiotic prophylaxis: UTI, azithromycin
- **Dental setting**
  - Review antimicrobial prescriptions & durations with current oral/dental guidelines on www.antibioticprescribing.ie
  - Familiarise with the green/red antibiotic classification

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Governance, supports & structures will differ depending on your setting

Examples of meeting discussion topics in your settings

- **Community Pharmacy setting**:
  - Review all antibiotics dispensed to a residential care facility and work out the %green vs. % red and compare to national targets (2022: 68% green, 32% red)
    - Provide feedback to the facility
  - Advocate for durations in line with www.antibioticprescribing.ie
  - Review dispensing data for urinary dipsticks and feedback

- **Residential care facility setting:**
  - Review dipstick urinalysis position statement for implementation in the facility
    - Engage all stakeholders: prescribers, pharmacists, nurses and healthcare assistants
  - Review the immunisation status of your residents, for example pneumococcal

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Antimicrobial stewardship needs to be part of governance and accountability structures to support change

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'Delivering AMS Governance in a Hospital Group'

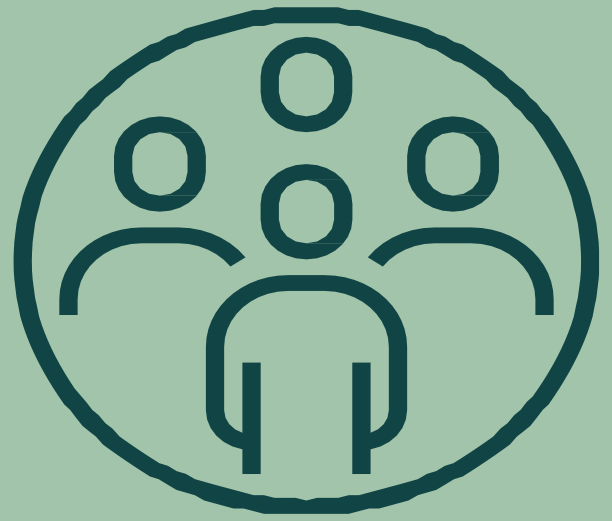
Professor Colette Cowan
Chief Executive Officer
UL Hospitals Group

15th November 2022

Ospidéil OL
UL Hospitals
Working together, caring for you

Introduction

1. UL Hospitals Group
2. The role of the Infection Prevention & Control Team
3. IPC – A shared responsibility across ULHG
4. IPC – Management of Risks
5. Challenges – CPE/CPE & Burkholderia
6. Challenges – *S.aureus* IV line infections
7. Antimicrobial Stewardship Team
8. Meropenem Prescribing
9. Other Reserve Agents - Excellent compliance
10. Collaboration IPC/Antimicrobial Stewardship
11. Areas for Improvement



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UL Hospitals Group – Our Hospitals

Ennis Hospital (Model 2)
- 50 Inpatient Beds
- 18 Day Case Beds

University Hospital Limerick (Model 4)
- 531 Inpatient Beds
- 149 Day Case Beds

Maternity Hospital
- 83 Inpatient Beds
- 19 Neo Natal Cots

Nenagh Hospital (Model 2)
- 52 Inpatient Beds
- 21 Day Case Beds

Croom Orthopaedic Hospital
- 44 Inpatient Beds
- 13 Day Case Beds

St. John's Hospital (Voluntary Model 2S)
- 86 Inpatient Beds
- 10 Day Case Beds

The role of the Infection Prevention & Control Team (IPCT) ULHG

- The role of the Infection Prevention & Control Team (IPCT) is to promote best infection control practice in order to ensure the delivery of a quality service for our patients, visitors and staff.
- The IPCT do this by:

1. Providing advice on management of patients with infections.
2. Educating healthcare workers and patients regarding potential risks of infection.
3. Providing, monitoring and reviewing policies and information leaflets for the prevention and control of infection.
4. Auditing infection control practices throughout the hospital.
5. Communicating and providing information on infection control to the healthcare workers.
6. Liaising with key stakeholders e.g. Hygiene Services, Technical Services, Bed Management and Catering
   regarding Infection Control standards, Estates.

Our team strives for excellence in infection control using evidence based practice to achieve the best possible patient care.

All members of the IPCT aim to create an environment where patients feel safe and comfortable.

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IPC – A shared responsibility across UL Hospitals Group

IPC – A shared responsibility across UL Hospitals Group

- The main way the IPCT get staff invested and aware of IPC issues is through extensive education and training programmes.
- The Centre of Nurse & Midwifery Education (CNME) training programme captures all new nurse and midwife members of staff including overseas nurses. The IPCT partake in the education of these groups along with IV study days, wound care study days, sepsis study days and venepuncture and cannulation study days.
- Face to face IPC education sessions are also given at the Corporate Induction day to all
  grades of staff across the group.
- The IPCT provide refresher training to all grades and disciplines in off ward sessions and on an on-going basis they target staff in clinical areas capturing medical, nursing and ancillary staff members.
- The newly appointed IVI team are auditing and promoting good practice around aseptic
  non touch technique (ANTT) and promoting care bundles and good IV line care.

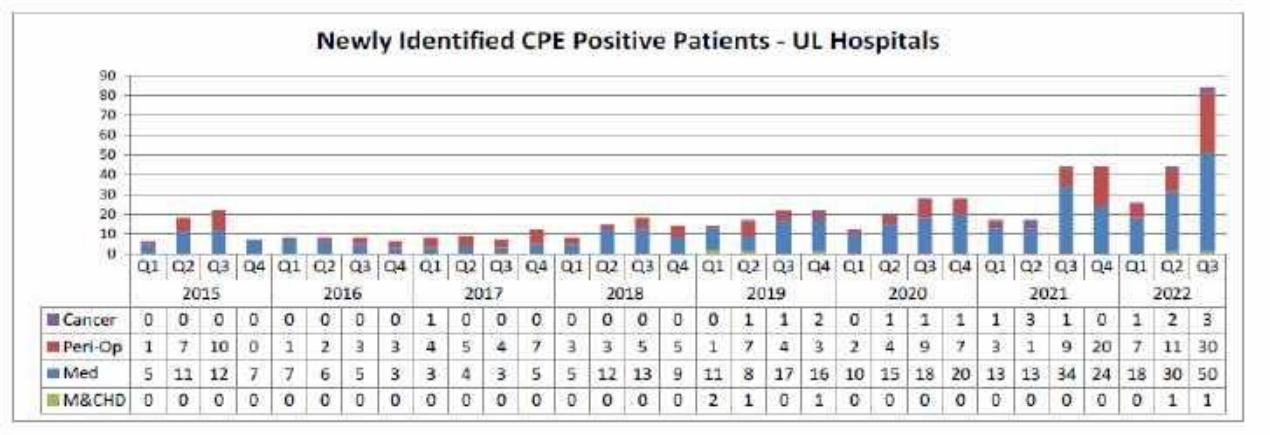
IPC – A shared responsibility across UL Hospitals Group

- IPC engage with architects, contactors and estates during all phases of projects and site improvements.
- IPC provide extensive training to non consultant hospital doctors prior to them commencing work within the hospital group.
- As the team are continuously monitoring trends for hygiene and infection issues across the site, specific clinical area training and auditing is carried out in areas of concern in a way to address if there are any issues and to support staff.

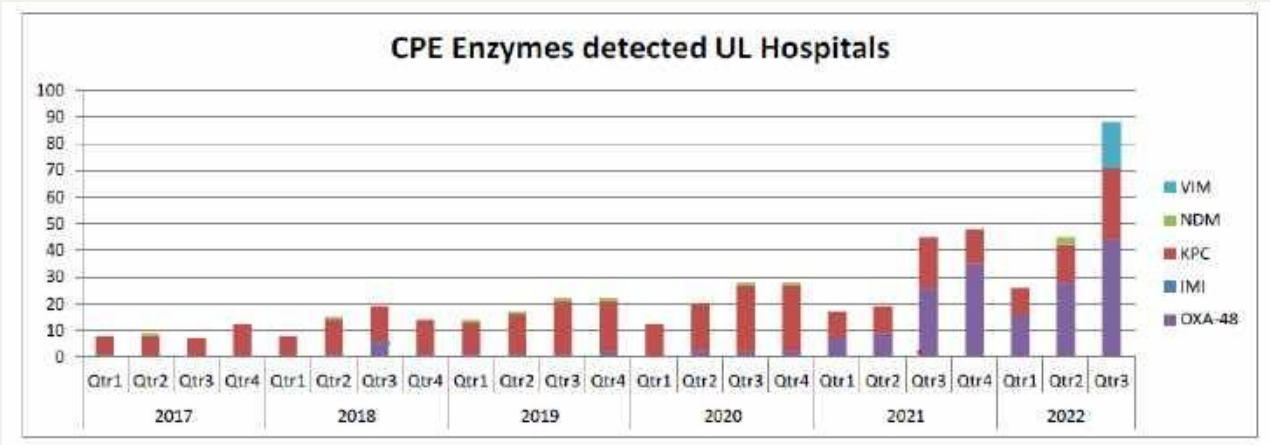
IPCT – Management of Risk

- IPCT have daily meetings and a large weekly team meeting where all issues or incidents are discussed and corrective actions are agreed.
- On a quarterly basis the IPCT meet with each Directorate to discuss all their infection rates, any risks pertaining to IPC, audit findings etc.. This is a multidisciplinary meeting that includes a Risk Advisor and Antimicrobial Pharmacists. Any issues or risks raised at this meeting are then brought to the quarterly Hospital Infection Control Committee Meeting (HICCM) and to the Quality and Safety committee (Qualsec). If necessary the risks identified are put on the Corporate Risk Register and Quality Improvement Plans (QIPs) are agreed.
- When required, IPCT engage with the Serious Incident Management Team (SIMT) to agree
  QIPs and agree learnings.
- The team collate and report the healthcare associated infection returns to the Business Information Unit (BIU) namely focusing on COVID-19, Staph aureus bacteremias (SABs), C.difficile and CPE and they provide an in-depth review of the cases that caused the group to not meet the Key Performance Indicator (KPI).

Setting the scene……challenges CPE



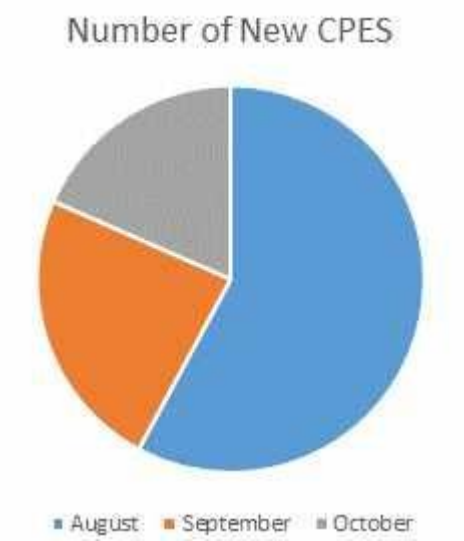
Increased numbers PLUS dissemination of new enzymes=more antibiotics including combinations more expensive antibiotics



CPE& Burkholderia

CPE detections rose significantly within ULHG in August 2022.

- As a result of the increase in detections, IPC focused on environmental facilities, practices and services in areas with increased CPE activity.
- A targeted education and audit programme was initiated in these areas.
- This multi-faceted approach resulted in a 60% reduction in new CPE detections across ULHG in September. This decrease continued into October with a 67% reduction based on August detection rates.



Burkholderia outbreak occurred in the ICU of UHL.

- 6 detections over a period of 7 months in early-mid 2022.
- IPC initiated a focus on environmental hygiene practices, hand hygiene compliance and education on Multi-Drug Resistant Organisms within ICU/HDU.
- IPC/Microbiology engaged in an investigative process to determine the source of the infection
  reservoir. Each patient journey was mapped for overlap, any overlap area being investigated.
- Using evidence based knowledge on reservoirs that can harbour Burkholderia in healthcare settings, IPC set about sampling medical devices, fluid reservoirs, medicines, environmental areas and toiletries/cosmetics.
- The source was determined to be a contaminated batch of shaving cream supplied as part of a shaving kit. Further infection has been prevented by the rapid removal of this product from ULHG.

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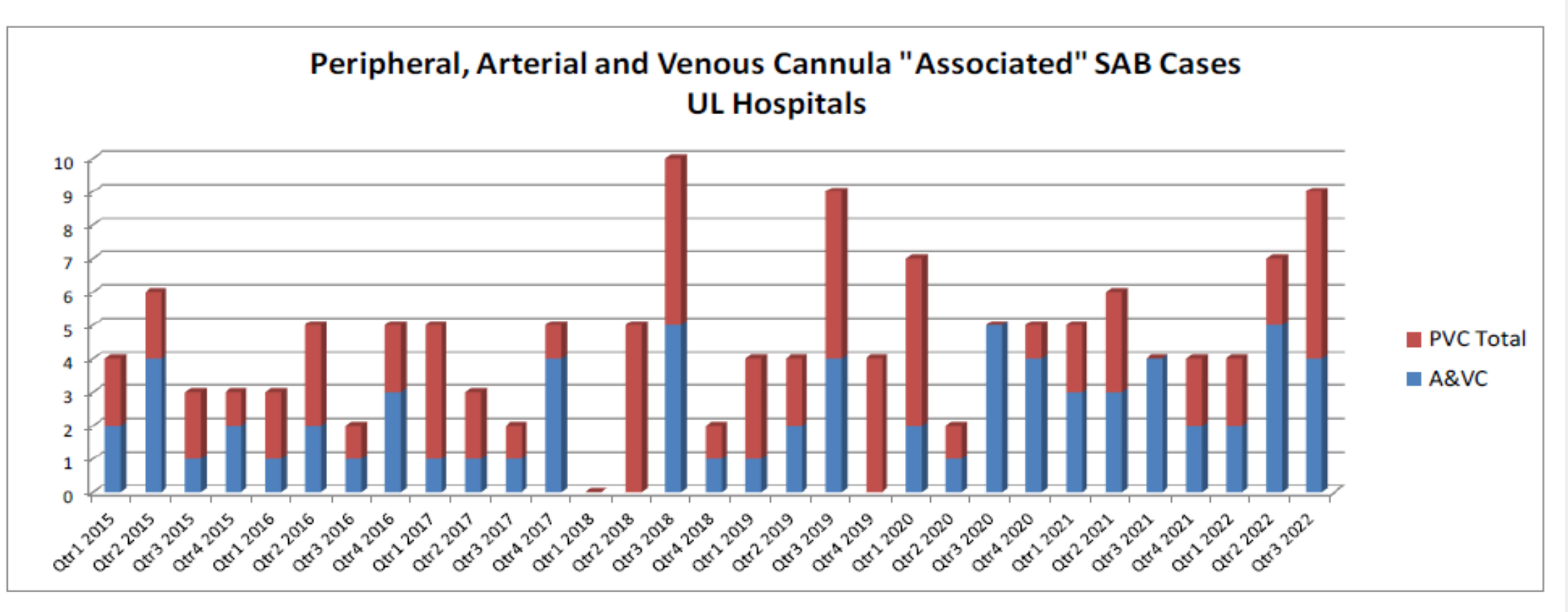
Setting the Scene……challenges *S.aureus* IV line infections



S.aureus bloodstream infection = 2 weeks iv antibiotics, more diagnostics, Echo etc and potential for Infective Endocarditis

Unnecessary iv antibiotics ⟶ increased duration iv lines ⟶ increased risk infection

Antimicrobial Stewardship Team

- Antimicrobial Stewardship Committee
  - Paediatric representation
  - Consultant Physician
  - Consultant Surgeon
  - Antimicrobial Pharmacists
  - Microbiology team
  - Surveillance Scientists
  - ID Consultant
  - NCHD Lead going forward/representative

Engagement from clinical colleagues

Priorities for the Team

- Maintaining robust clinical liaison service
- Quarterly reports with updated data per Directorate where possible
- Annual report to reflect on areas for improvement
- Maintaining meropenem weekly rounds where possible
- Recent CPE therapeutics round for agents used in suspected /confirmed CPE infections
- Antimicrobial awareness day in November - MDT involvement with new IPC Lead for Surgical Site Infection
- Participation in national point prevalence survey of antimicrobial use Sept/Oct 22 review of all antimicrobials in six hospitals

Annual Report – Focus on key trends year on year. . . ..

Antimicrobial Stewardship Annual Report 2021
Issued April 2022

Ospidéil OL
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Summary Key Points

- This report summarises key activities and data on antimicrobial consumption for 2021, however due to the Covid-19 pandemic the most recent national data available at the time of writing is data from all of 2020.
- UHL-in 2020, overall antibiotic use decreased by 13% compared with the previous year and consumption was below the median for tertiary hospitals nationally for the first time since 2017.
- In Ennis-antibiotic use decreased by 5% remaining below the median for secondary hospitals.
- In Nenagh- antibiotic use was unchanged compared with 2019 and remains below the median for secondary hospitals nationally.

- Carbapenem consumption in UHL decreased by 31% in 2020 and below the median for tertiary hospitals for the first time since 2017.However local data shows an ongoing increase in use in 2021 and into Q1 2022.
- In Ennis, carbapenem use decreased by 32% and is below the median for secondary hospitals.
- In Nenagh carbapenem use increased by 44% and is now at the median for secondary hospitals.

- Compliance with restricted use of meropenem in UHL in 2021 was 82% (81% in the medical directorate, 84%in the peri-operative directorate).
- Compliance with prescribing of other reserve/restricted antimicrobials in UHL in 2021 was 88% for the medical directorate and 97% for peri-operative directorate.

- Fluoroquinolone [ciprofloxacin/levofloxacin] use decreased in UHL by 12% in 2020.Use of these agents remained above the median for tertiary hospitals.
- In Ennis fluoroquinolone use decreased by 28 % and is below the median for secondary hospitals.
- In Nenagh fluoroquinolone use decreased by 22%, however use remains above the median for secondary hospitals since 2007.

Point Prevalence Survey 2021 UHL
- Documentation of indication for antimicrobials was 88% compared with 91% nationally.
- Documentation of a review /stop date of antimicrobials was 44% compared with 47% nationally.
- Compliance with local guidelines was 77% in UHL compared with 84% nationally.
- UHL showed a higher use of co-amoxiclav, piperacillin-tazobactam and meropenem compared with other hospitals nationally.

Antimicrobial expenditure 2021 UHL
- Overall antimicrobial cost for UHL increased by approx. 519,100 Euro to a total expenditure of over 2 million Euro compared with cost of 1.5 million in 2020.The increase includes approx. 250,000 in antibiotics and 270,000 on antifungal agents.

Opportunities for improvement for prescribers
- Improvement in documentation of indication and proposed duration of antimicrobials in the drug kardex.
- Improvement in compliance with local antimicrobial guidelines

Priorities for Audit for AMS Team
- Maintaining meropenem weekly audits and quarterly off site audits in Ennis, Nenagh, Croom and UMH.
- Priority audits planned include fluoroquinolone, daptomycin , ambisome and piperacillin-tazobactam use.

Antimicrobial	UHL Change vs 2020	Vs median for tertiary hospitals (DDD/100BDU)	UHL Decile score	Ennis Change vs 2020	Vs median for secondary hospitals (DDD/100BDU)	Nenagh Change vs 2020	Vs median for secondary hospitals (DDD/100BDU)
Antibiotics	↓4%		9	↓19%		↑21%	
Broad Spectrum Penicillins	↑2%		9	↓15%		↑37%	
IV co-amoxiclav	↑2%		10	↓22%		↑20%	
PO co-amoxiclav	↔		7	↓9%		↑38%	
Piperacillin-tazobactam	↑4%		10	↓15%		↑45%	
2 GC	↓16%		3	↓8%	Minimal use	NA	
3 GC	↔		5	↑9%		↑113%	
Fluoroquinolones	↓37%		7	↓10%		↓5%	
Carbapenems	↑32%		9	↑191%		↑25%	
Clindamycin	↓16%		6	↓53%		NA	
Gentamicin	↓10%		5	↓57%		NA	
PO Clarithromycin	↓24%		8	↓41%		↓7%	
IV Clarithromycin	↑33%		9	NA	None used	NA	Minimal use
IV Vancomycin	↓15%		8	↓35%		↓14%	
Daptomycin	↓27%		8	↓90%		↑71%	
IV Linezolid	↓11%		7	↔	Minimal use	↑225%	
PO Linezolid	↓11%		8	↓100%	Minimal use	NA	Minimal use
IV Antibiotics	↑2%		7	↑1%		↑3%	
Switch IV Antibiotics	↓16%		8	↑16%		↑10%	
Antifungals	↑52%		8	↑25%		↑500%	Minimal use

Caveat - using DDD/100 bed days used excludes bed days used in ED……..

Meropenem Prescribing

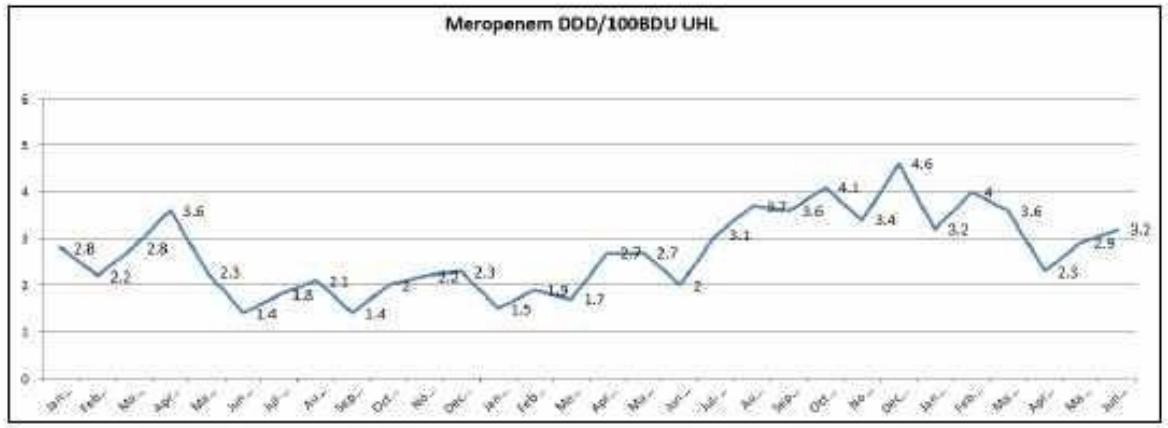


Figure 2. Meropenem Consumption UHL Jan 2019- June 2022

Figure 3.Ward V Critical Care Meropenem use 2021-Q2 2022

- Monitoring all prescriptions of meropenem
- Requirement to discuss meropenem pre-prescribing
- Compliance reported per Directorate quarterly
- Feedback to Strategic CPE committee meeting
- Supported by weekly meropenem rounds

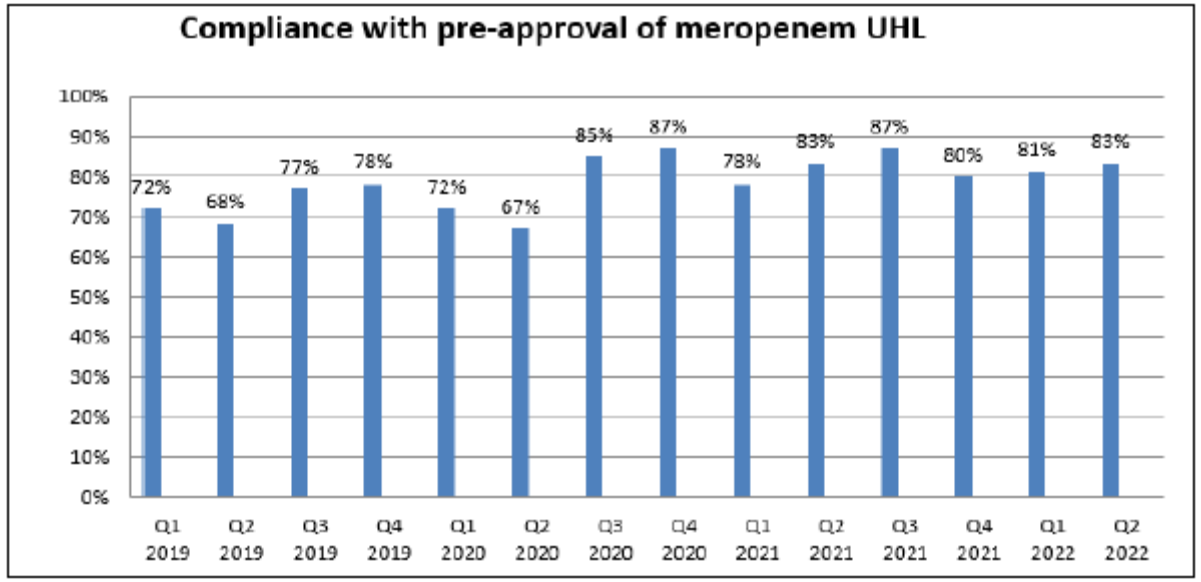


Figure 5.Compliance with requirement for pre-approval of meropenem

Medicine Directorate	Target	Q2 2021 Medicine	Q3 2021 Medicine	Q4 2021 Medicine	Q1 2022 Medicine	Q2 2022 Medicine
Micro/ID contacted before prescribing meropenem	≥ 80%	74%	85%	74%	89%	96%
If not pre-approved was it deemed appropriate	≥ 90%	84%	96%	83%	89%	100%
Indication documented in kardex	≥ 95%	80%	74%	78%	80%	78%
Antibiotic choice in line with guidelines	≥ 90%	80%	89%	74%	89%	100%
Cultures taken before starting antibiotics	≥ 80%	89%	100%	100%	89%	96%
Duration or review date in kardex	≥ 80%	53%	37%	43%	29%	43%
Allergy section completed on kardex	≥ 90%	95%	81%	91%	94%	96%
If deemed appropriate , is duration appropriate	≥ 80%	53%	78%	94%	96%	96%
Did team exceed planned duration		66%	n/a	17%	n/a	n/a

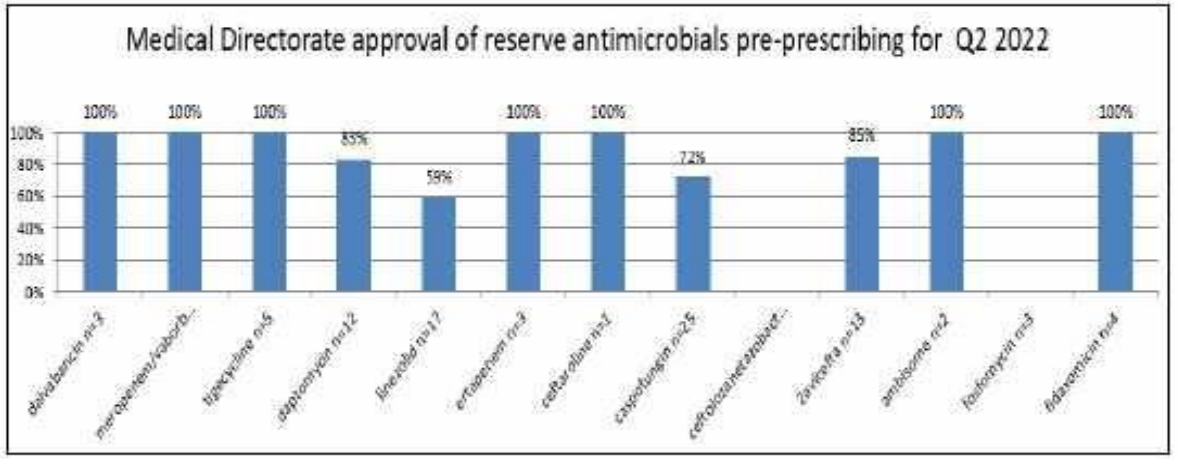
Improvement in documentation of a proposed duration of antibiotics – focus of audit and QIP plan in progress led by 2 Interns

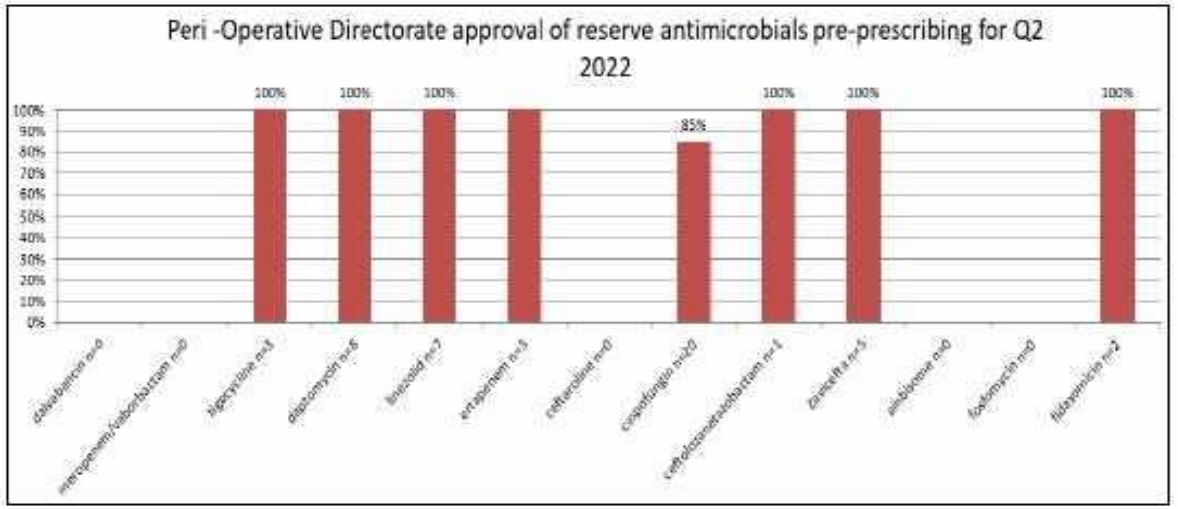
Key Performance Indictors

Croom Orthopaedic Hospital

	Target	Q1 2020	Q3 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Compliance of choice of agent with antimicrobial policy	≥90%	79%	100%	92%	83%	76%	87%
Documentation of indication in kardex	≥95%	79%	60%	75%	72%	97%	88%
Patient on IV therapy but eligible for PO switch	≤10%	0%	50%	17%	14%	0%	8%
Cultures Taken before starting antimicrobials where applicable	>80%#	75%	80%	80%	83%	70%	88%
Treatment Duration or review date in kardex	>80%#	71%	20%	75%	50%	67%	65%
Compliance with documentation of allergy status	90%#	87%	100%	100%	94%	94%	100%
Duration >7 days appropriate, if applicable	>80%#	N/A	100%	66%	100%	100%	100%

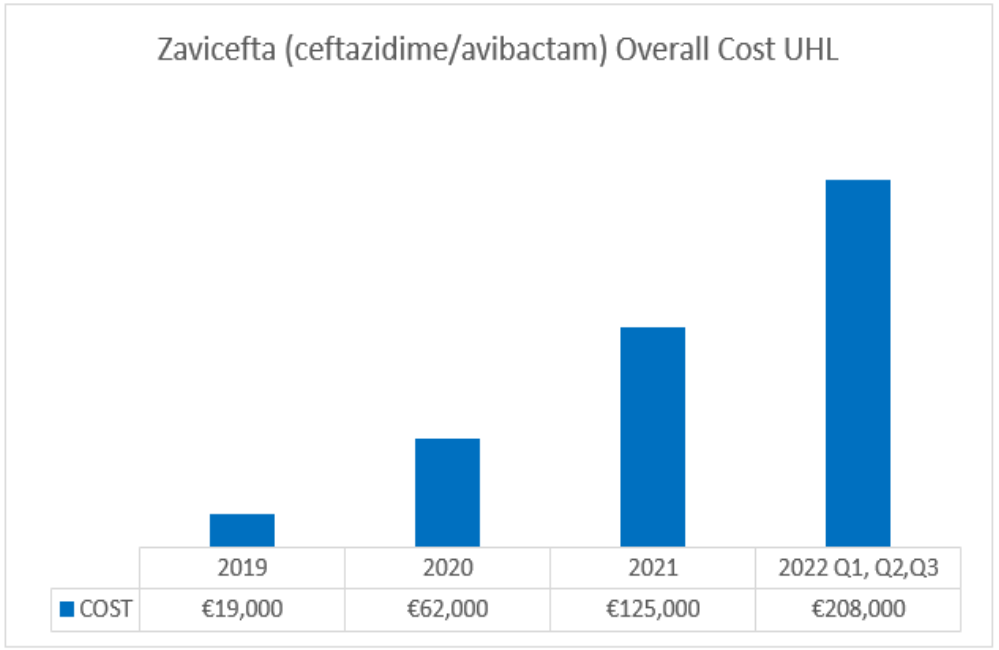
Other Reserve Agents - Excellent compliance



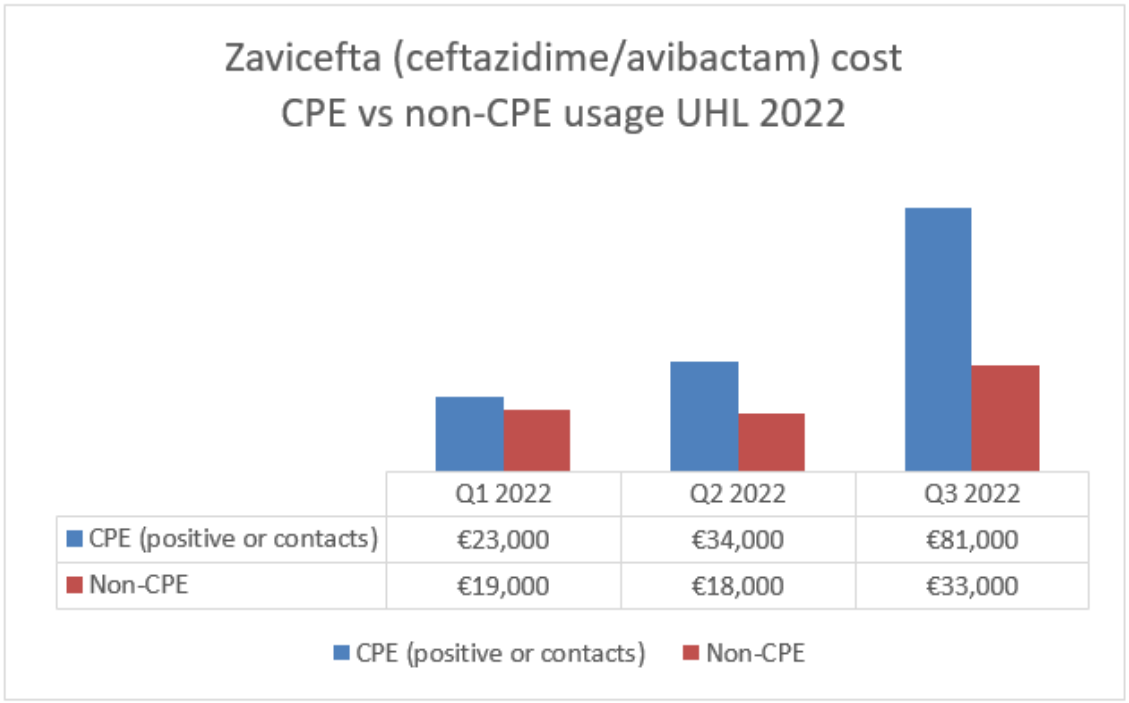


Collaboration IPC/Antimicrobial Stewardship

Zavicefta (ceftazidime/avibactam) Expenditure UHL: Antibiotic with CPE cover.



	2019	2020	2021	2022 Q1, Q2,Q3
COST	€19,000	€62,000	€125,000	€208,000



	Q1 2022	Q2 2022	Q3 2022
CPE (positive or contacts)	€23,000	€34,000	€81,000
Non-CPE	€19,000	€18,000	€33,000

CPE (positive or contacts) Non-CPE

Significant cost associated with specific antibiotics with activity against CPE infections

Review patients prescribed newer agents incorporated into weekly meropenem ward rounds

Initiatives - Medication Safety Moments

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Co-amoxiclav and **Piperacillin-tazobactam** are **CONTRAINDICATED** as both contain penicillin components

Ceftriaxone may be prescribed with **CAUTION** unless the patient has a history of Type 1 hypersensitivity*

Ciprofloxacin can be **SAFELY** prescribed in penicillin allergy

*Cephalosporins (e.g. ceftriaxone) should not be prescribed to patients with a history of Type 1 hypersensitivity to penicillin (i.e. anaphylaxis, angioedema, urticaria or rash occurring immediately after penicillin administration). Cross reactivity may occur.

Approved by Drug and Therapeutics Committee May 2018. Slides should not be altered.

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Antibiotic prescribing
Do you have all the pieces of the jigsaw?

1. UHL Group Adult Antimicrobial Guidelines
These are **empiric** guidelines i.e. recommendations are based on a likely and anticipated cause of infection before culture results are known. The guidelines utilise the **"Start Smart then Focus"** antibiotic care bundle and are available in APP format, on iHub and on the intranet.

2. Previous antibiotic history
Recent antibiotic use may have altered the gut flora and empiric choice of recommended antibiotics may need to change.

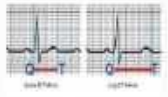
3. Accurate Allergy History.
Ensure that any reported antibiotic "allergy" is a true allergy and not an intolerance or adverse effect.

4. Previous Culture Results
The patient may have recent relevant culture results. Always refer to **iLab** prior to prescribing antibiotics.

5. Review and De-escalate.
Review antibiotics daily and de-escalate as appropriate once any new culture results known.

6. Contact Micro/ID
Contact Micro/ID if any advice on antibiotic choice needed

The following classes of Antimicrobials are associated with Drug induced QT-interval prolongation*:



- **Macrolides e.g Clarithromycin and erythromycin**
- **Quinolones e.g Ciprofloxacin and levofloxacin**
- **Azole Antifungals e.g Fluconazole**

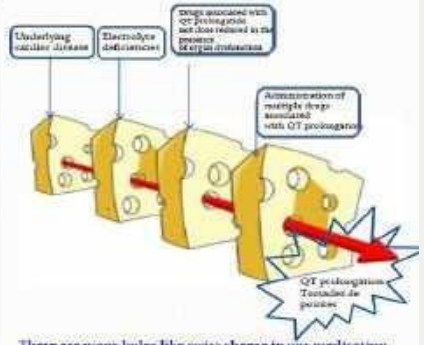
What factors should be considered before prescribing these antimicrobials?

Consider the following before prescribing an antimicrobial associated with QT interval prolongation

- **Risk factors** for QT prolongation:**
  These include
  - **female,**
  - **Cardiac disease**
  - **Electrolyte deficiencies**
  - **Use of ≥ 1 QT prolonging drug**
- **Drug interactions:**
  Avoid if possible co-administration of
  - **≥ 1 QT prolonging drug**
  - **inhibitor s of their metabolism**
- **Dose adjustments in the setting of organ dysfunction**
- **Is there an appropriate alternative antimicrobial**
- **Risk vs therapeutic benefit**
- **Additional monitoring**

** Risk increases in patients with multiple risk factors

Visit www.antibioticsmatch.org for more information



There are many holes like swiss cheese in our medication safety defenses but very rarely do the holes line up to create a clear passage through the cheese. In the same way, the contributing factors to error exist at all times within healthcare.

Approved by D&T Dec 2021, slides not to be altered

Amphotericin B –
Prescribing, dispensing and administration

Formulation and Brand name matched

Liposomal Amphotericin B	Ambisome*
Conventional Amphotericin B (As sodium deoxycholate Complex)	Fungizone
Amphotericin B (Lipid complex)	Abelcet**

Medication Safety Message

Different formulations of Amphotericin B are NOT INTERCHANGEABLE

Serious harm and fatal overdoses have occurred globally following confusion between liposomal, lipid complex and conventional formulations of the same drug substance.

For example where Fungizone is administered when the medicine intended was Ambisome.

To reduce the risk of confusion between formulations:

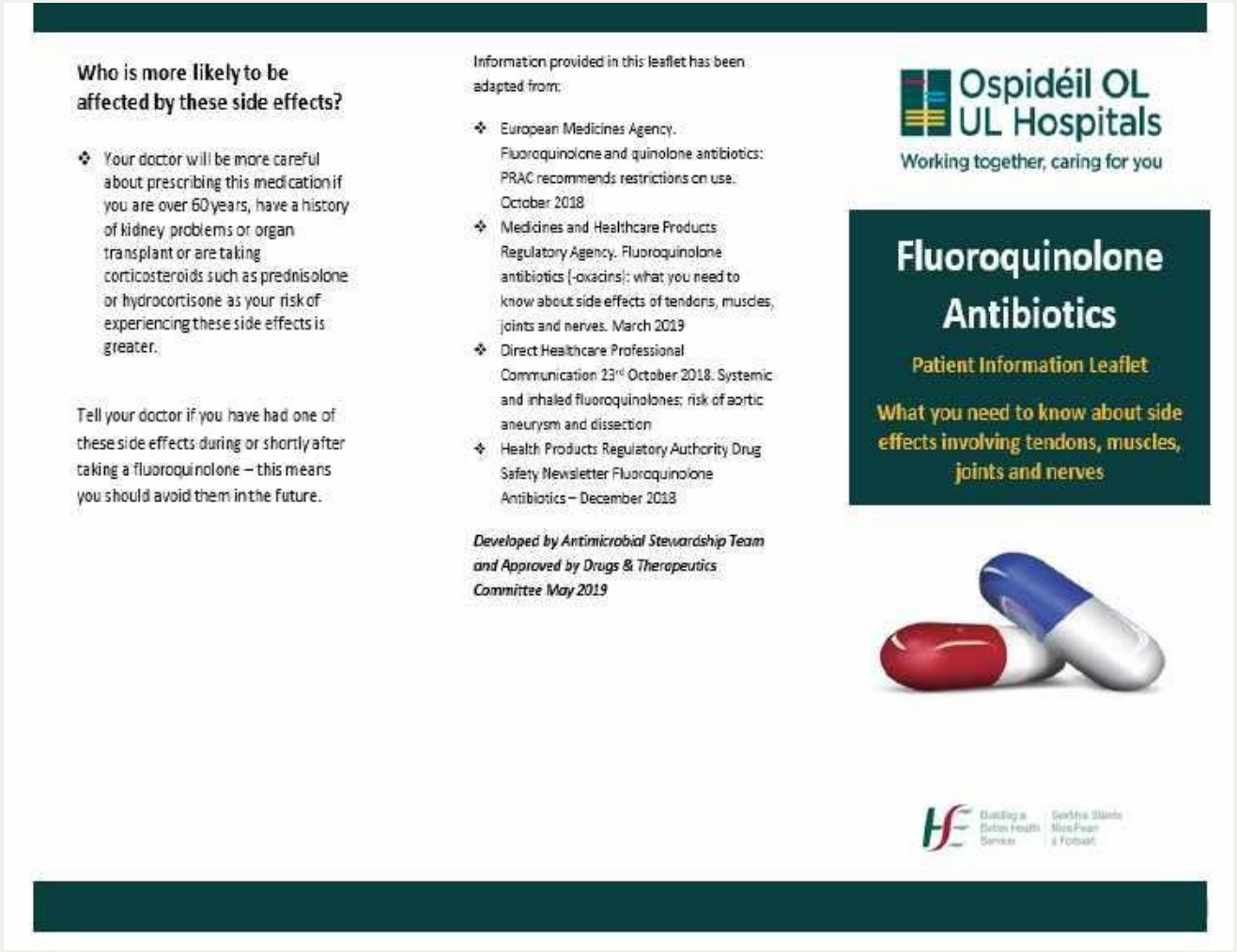
- ✓ When prescribing Amphotericin B prescribe by **Formulation and Brand name**
- ✓ When dispensing- Double check the prescription and dose, always ensure you select the correct product
- ✓ When communicating- specify brand and formulation in all communications
- ✓ When administering- ensure you choose the correct product and administration instructions for the formulation prescribed

N.B Seek advice regarding appropriate formulation from Micro/ID/Pharmacy.

*This is a generic presentation. All prescribers must be familiar with Ambisome ** This product is not on the UHL formulary

Approved by D&T Dec 2021, slides not to be altered

Patient Information Leaflet for Fluoroquinolones



Who is more likely to be affected by these side effects?

- Your doctor will be more careful about prescribing this medication if you are over 60 years, have a history of kidney problems or organ transplant or are taking corticosteroids such as prednisolone or hydrocortisone as your risk of experiencing these side effects is greater.

Tell your doctor if you have had one of these side effects during or shortly after taking a fluoroquinolone – this means you should avoid them in the future.

Information provided in this leaflet has been adapted from:

- European Medicines Agency. Fluoroquinolone and quinolone antibiotics: PRAC recommends restrictions on use. October 2018
- Medicines and Healthcare Products Regulatory Agency. Fluoroquinolone antibiotics (-oxacins): what you need to know about side effects of tendons, muscles, joints and nerves. March 2019
- Direct Healthcare Professional Communication 23rd October 2018. Systemic and inhaled fluoroquinolones: risk of aortic aneurysm and dissection
- Health Products Regulatory Authority Drug Safety Newsletter Fluoroquinolone Antibiotics – December 2018

Developed by Antimicrobial Stewardship Team and Approved by Drugs & Therapeutics Committee May 2019

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Fluoroquinolone Antibiotics

Patient Information Leaflet

What you need to know about side effects involving tendons, muscles, joints and nerves

- Recent audit of F-quinolones UHL
- Overall 62% compliance with guidelines
- Use of the patient information not evident in audit
  - ❖ Education and awareness underway

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Areas for Improvement

- Retention and recruitment of Pharmacists –threat to AMS program
  - ❖ Significant issue nationally

- Root cause analysis and lessons learned from IV line associated infections

- Lack of electronic prescribing significant deficit

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Interactive session:

Local governance, structures and supports required for AMS

RESIST

Antimicrobial Resistance & Infection Control Programme

Interactive session

1. Go to Slido.com

2. Enter the event code: #2556078

Hotel wifi:
Hilton Honours

RESIST
Antimicrobial Resistance & Infection Control Programme

Interactive session

- Three questions focusing on local governance, structures and supports required for AMS
- If anyone has ideas that are not an option on slido please raise your hand and you can contribute by microphone

RESIST
Antimicrobial Resistance & Infection Control Programme

slido

What is your profession?

ⓘ Start presenting to display the poll results on this slide.

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What are the current AMS governance gaps in your area of work?

ⓘ Start presenting to display the poll results on this slide.

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What do you think the reasons are for these AMS governance gaps?

ⓘ Start presenting to display the poll results on this slide.

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How do you suggest to overcome these AMS governance gaps?

ⓘ Start presenting to display the poll results on this slide.

Thank you

RESIST

Antimicrobial Resistance & Infection Control Programme