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BRITISH SOCIETY FOR ANTIMICROBIAL CHEMOTHERAPY

UKHSA Start Smart Then Focus Antimicrobial Stewardship: Effective Implementation During the COVID-19 Pandemic at an NHS Foundation Trust in the UK

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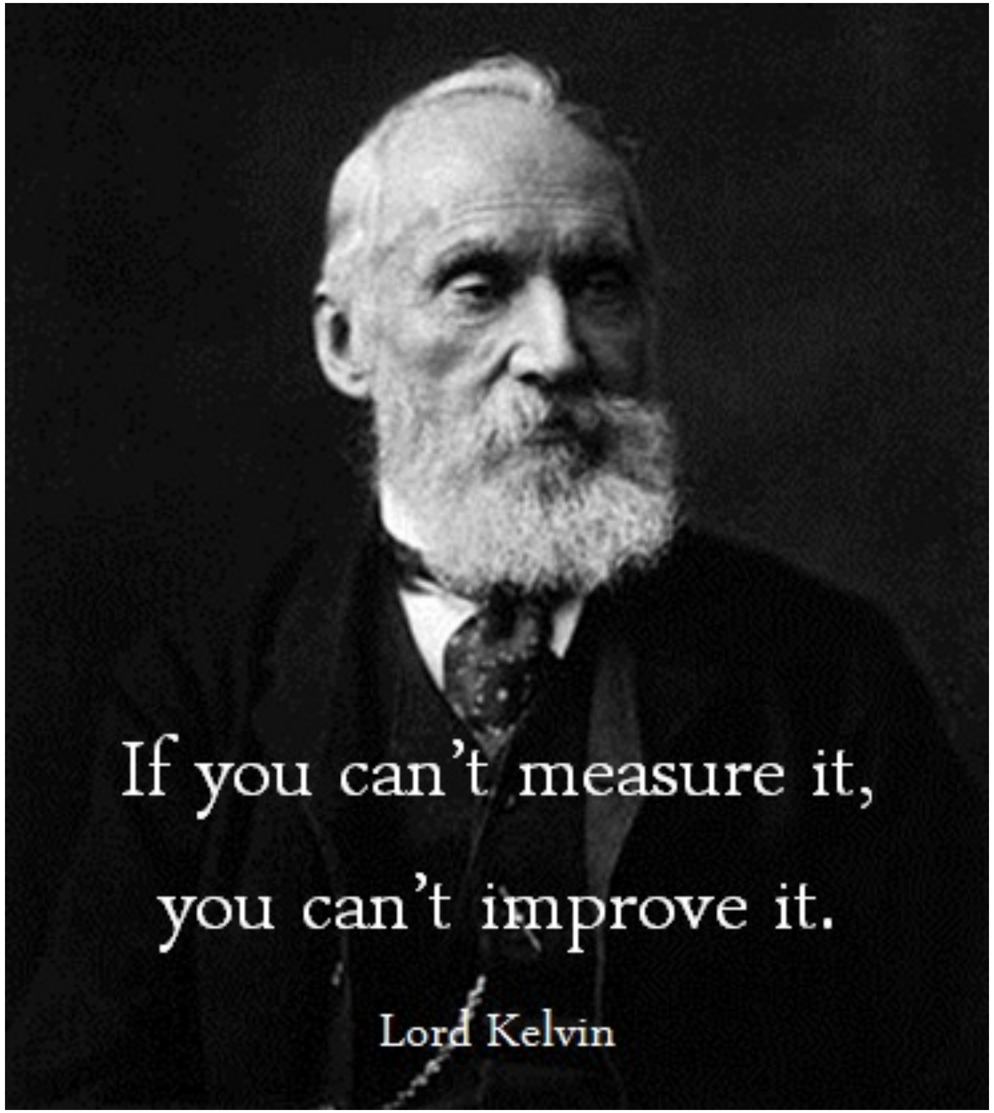
Conflict of Interest

I have no conflict of interest.

- As Lord Kelvin said, **'If you cannot measure it, you cannot improve it.'**
- **Measurement** is essential for effective management and continuous improvement in antimicrobial stewardship implementation.



Objectives

By the end of this presentation, you should be able to:

- Delve into the AMS research study conducted to investigate the application of 'Start Smart, Then Focus' at Bedfordshire Hospitals NHS Foundation Trust during the pandemic.
- Evaluate the impact of the COVID-19 pandemic on AMS.
- Introduce move-forward AMS publications for future stewardship initiatives in response to public health crises.

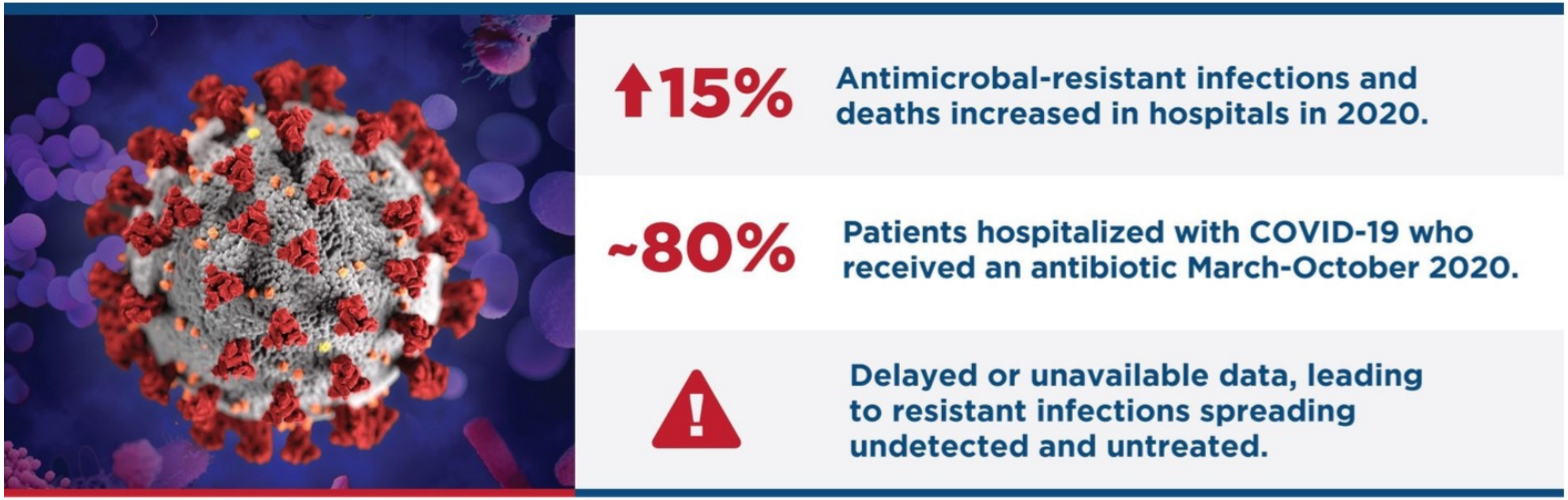
Introduction

Antimicrobial resistance (AMR), a major global public health threat that has caused 1.2 million deaths, calls for immediate action.

Antimicrobial stewardship (AMS) promotes judicious antibiotic use, but the COVID-19 pandemic increased AMR by 15%.

In June 2023, the global estimate for the number of deaths from COVID-19 was about 6 million, 10% of the 60 million worldwide deaths.

The COVID-19 pandemic has taught us hard lessons and reminded us that AMS is the best way to prevent a looming AMR silent pandemic.



CDC Report (2023). The Impact of the COVID-19 Pandemic on Antimicrobial Resistance and Management of Bloodstream Infections

There is an urgent need to understand the pandemic's impact on AMS implementation and to provide an in-depth understanding of AMS practices.

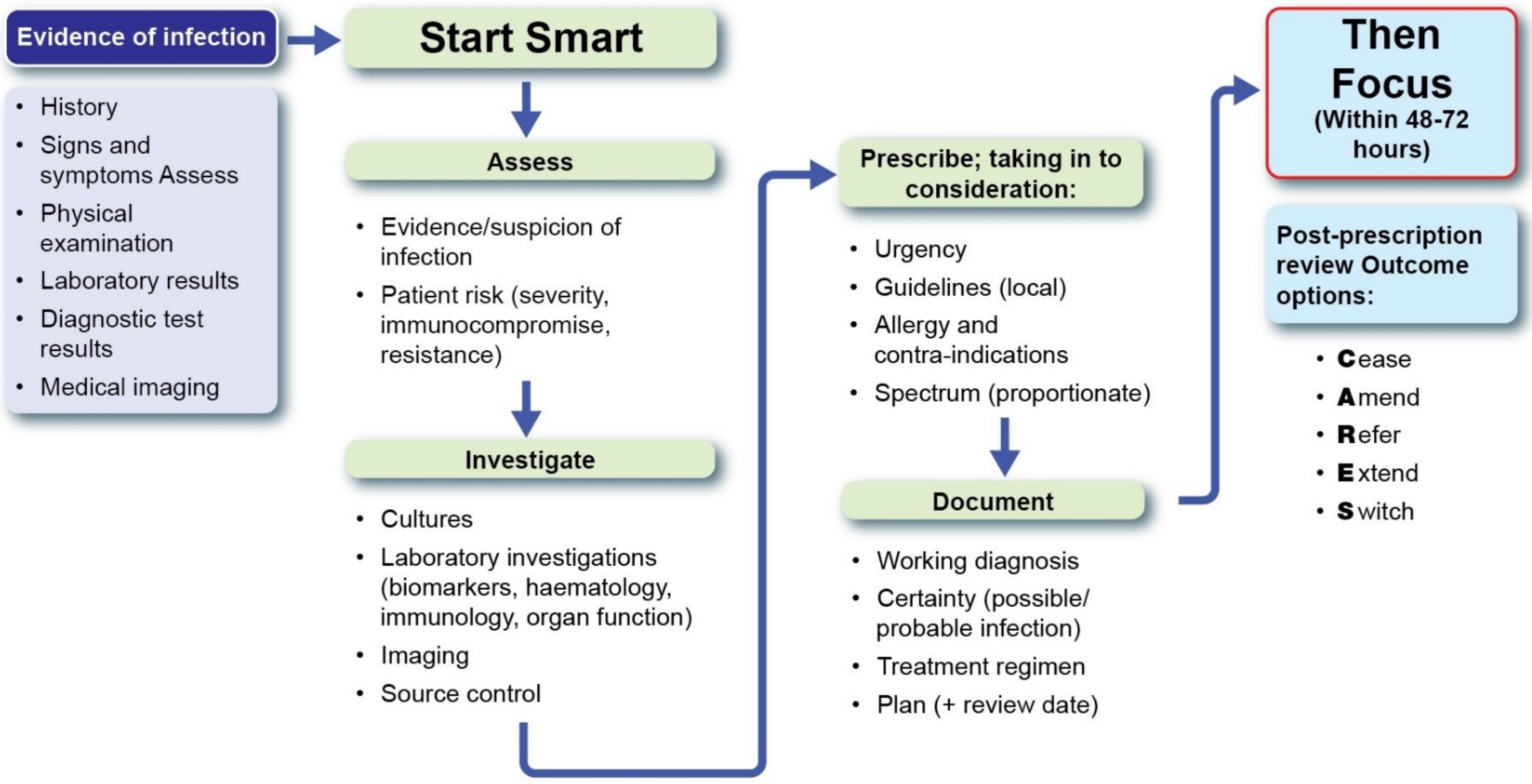
A research project was conducted from 2020-2024

Antimicrobial Stewardship :Start Smart Then Focus Toolkit

- The ‘Start Smart Then Focus’ (SSTF) antimicrobial stewardship toolkit was initially published in 2011, updated in 2015 and last updated in 2023.

UKHSA Antimicrobial Stewardship Clinical Management Algorithm

Start Smart, Then Focus



UKHSA. "Antimicrobial Stewardship: Start Smart - Then Focus." GOV.UK, 2023. www.gov.uk/government/

Impact of COVID-19 on 'Start Smart, Then Focus' Antimicrobial Stewardship at One NHS Foundation Trust in England Prior to and during the Pandemic.

Rasha Abdelsalam Elshenawy, Nkiruka Umaru, Zoe Aslanpour

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Impact of COVID-19 on 'Start Smart, Then Focus' Antimicrobial Stewardship at One NHS Foundation Trust in England Prior to and during the Pandemic

by Rasha Abdelsalam Elshenawy *, Nkiruka Umaru and Zoe Aslanpour

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Aim and Objectives

This study aimed to investigate antibiotic prescribing and AMS implementation prior to the pandemic (PP) in 2019 and during the pandemic (DP) in 2020 at one NHS Foundation Trust in England.

The objectives were as follows:

1. To evaluate AMS implementation between PP and DP periods using the SSTF toolkit;
2. To determine the prevalence of inappropriately prescribed antibiotics PP and DP;
3. To identify factors influencing antibiotic prescribing and AMS implementation in both PP and DP.

Methods

- This cross-sectional retrospective study was undertaken to estimate the prevalence of inappropriate antibiotic prescribing, focusing on adult patients treated for respiratory tract infections (RTIs).
- It investigates antibiotic prescribing practices for RTI conditions such as pneumonia and COVID-19-related RTIs in 2020.

Methods

- A total of 640 patient records, 320 in each year, were retrospectively analysed using the UK Health Security Agency’s (UKHSA) 'Start Smart, Then Focus' (SSTF) AMS toolkit.
- Ethical approval was secured, and public and patient involvement through the Citizens Senate was integral, registered in ISRCTN related to WHO criteria and Octopus open research database.

Methods

Data extraction tool from the individual patient medical record.

Each medical record takes about 45 minutes to extract the required data.

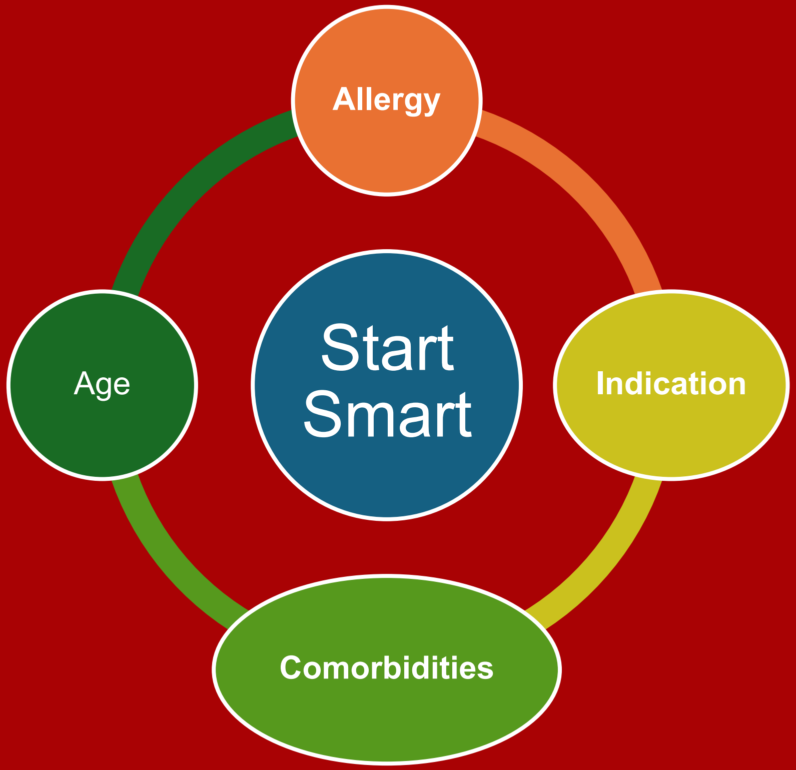
Patient Demography	
Patient Study ID number:	Patient hospital number:
Patient age:	Gender:
Start Smart	
Allergies:	Date of admission:
Main diagnosis/Clinical Indication:	Medical history / Co-morbidities:
Name of Initial antibiotic: (dose, frequency, route, and duration)	Is the duration/stop date documented (Y/N)?
Is complies with local guidelines (Y/N)?	Did culture send to Mic prior to Abx (Y/N)
Clinical investigations: • X-Ray finding: • Blood culture results: • WBCs count: • CRP result: • D Dimer result: • PCT result: • Urea result:	Other relevant clinical information: • Symptoms on admission • Confusion (Y/N): • Others:
Then Focus	
Is abx clinically reviewed? (Y/N)	If yes, what is the review day, e.g., D1, D2, D3...?
If yes, who reviewed the Antibiotics? • Prescribing Doctor • Pharmacist	What type of AMS intervention: • Continue Antibiotics • Change Antibiotics • Escalation • De-Escalation • IV-to-Oral Switch • Stop Antibiotics • No Intervention
Antibiotic change (Escalation/De-escalation)	
What are the cultural results?	What is culture sensitivity results (S/R/I/NA)?
What is the name of the antibiotic changed after the culture results?	Is the changed antibiotic appropriately selected (Y/N)?
IV-to-Oral Switch	
Name of changed Oral Antibiotics?	Is the changed antibiotic appropriately selected (Y/N)?
Abx Stop	
When the antibiotic has been stopped?	Is antibiotic stop complying with the local guidelines (Y/N)?
Infection Control / Healthcare-associated infection (If the patient developed Secondary infection)?	
MRSA bacteremia (Y/N)	CDI (Y/N)
MDRO (Y/N)	COVID-19 (Y/N)
Antibiotic Safety Alert	
Is there any antibiotic allergic reaction? (Y/N)?	Is the antibiotic prescribed comply with the 5Rs, i.e. Right drug, dose, duration, route, and frequency)?
Patient Outcome	
What is the patient outcome(Discharged=1, Deceased=2)?	If discharged, what is the discharge date?
What is the Length of Stay (LOS)?	

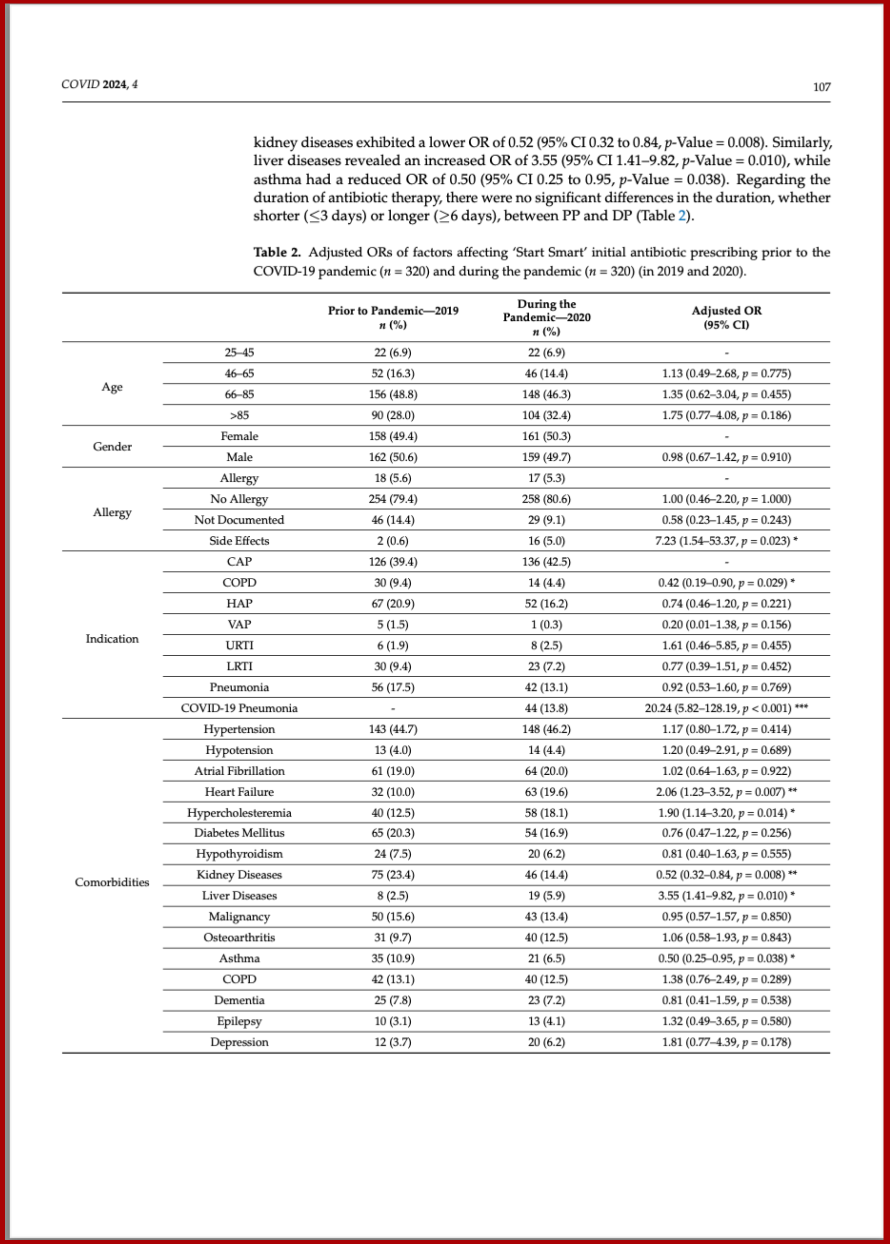
Results

- The predominant age group in both groups remained 66–85 years old.
- The average length of hospital stay decreased from 13.7% to 12.3%.
- Mortality rates remained constant at 15%.
- Notably, 'side effects' as an antibiotic allergy classification changed significantly ($p = 0.023$).
- Community-acquired pneumonia was the primary diagnosis, with uncertain admission diagnoses influencing antibiotic choice.

Factors Affecting ‘Start Smart’ Prescribing

- Factors affecting empirical or initial antibiotic prescribing include the following:





COVID 2024, 4 — 107

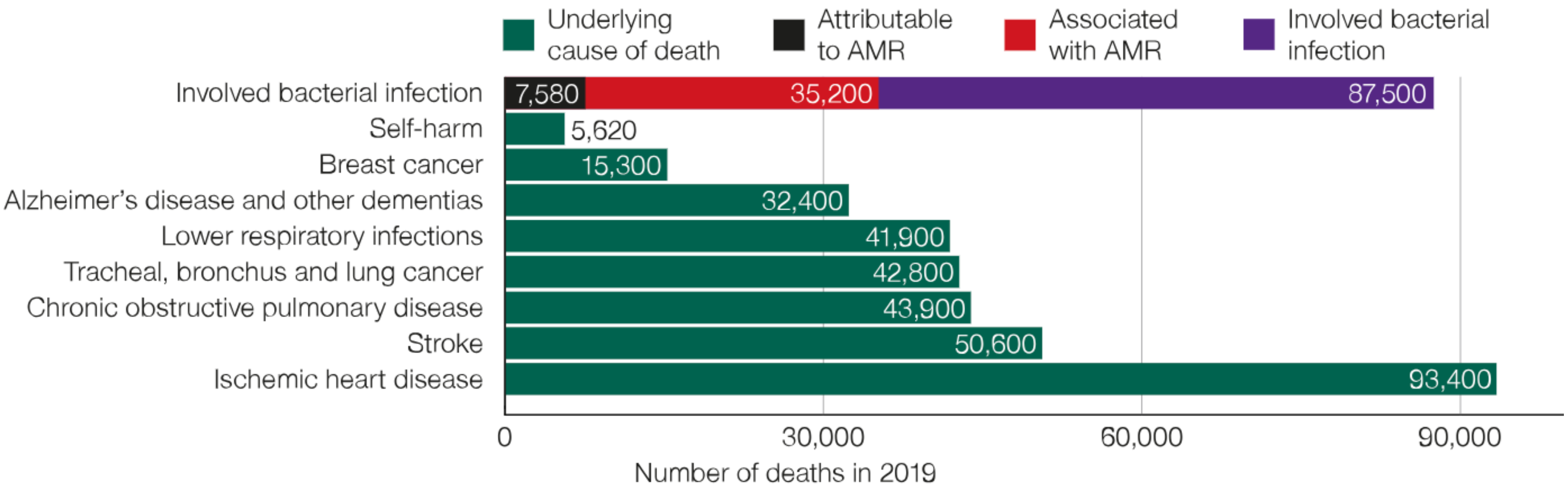
kidney diseases exhibited a lower OR of 0.52 (95% CI 0.32 to 0.84, p-Value = 0.008). Similarly, liver diseases revealed an increased OR of 3.55 (95% CI 1.41–9.82, p-Value = 0.010), while asthma had a reduced OR of 0.50 (95% CI 0.25 to 0.95, p-Value = 0.038). Regarding the duration of antibiotic therapy, there were no significant differences in the duration, whether shorter (≤3 days) or longer (≥6 days), between PP and DP (Table 2).

Table 2. Adjusted ORs of factors affecting ‘Start Smart’ initial antibiotic prescribing prior to the COVID-19 pandemic (n = 320) and during the pandemic (n = 320) (in 2019 and 2020).

		Prior to Pandemic—2019 n (%)	During the Pandemic—2020 n (%)	Adjusted OR (95% CI)
Age	25–45	22 (6.9)	22 (6.9)	-
	46–65	52 (16.3)	46 (14.4)	1.13 (0.49–2.68, p = 0.775)
	66–85	156 (48.8)	148 (46.3)	1.35 (0.62–3.04, p = 0.455)
	>85	90 (28.0)	104 (32.4)	1.75 (0.77–4.08, p = 0.186)
Gender	Female	158 (49.4)	161 (50.3)	-
	Male	162 (50.6)	159 (49.7)	0.98 (0.67–1.42, p = 0.910)
Allergy	Allergy	18 (5.6)	17 (5.3)	-
	No Allergy	254 (79.4)	258 (80.6)	1.00 (0.46–2.20, p = 1.000)
	Not Documented	46 (14.4)	29 (9.1)	0.58 (0.23–1.45, p = 0.243)
	Side Effects	2 (0.6)	16 (5.0)	7.23 (1.54–53.37, p = 0.023) *
Indication	CAP	126 (39.4)	136 (42.5)	-
	COPD	30 (9.4)	14 (4.4)	0.42 (0.19–0.90, p = 0.029) *
	HAP	67 (20.9)	52 (16.2)	0.74 (0.46–1.20, p = 0.221)
	VAP	5 (1.5)	1 (0.3)	0.20 (0.01–1.38, p = 0.156)
	URTI	6 (1.9)	8 (2.5)	1.61 (0.46–5.85, p = 0.455)
	LRTI	30 (9.4)	23 (7.2)	0.77 (0.39–1.51, p = 0.452)
	Pneumonia	56 (17.5)	42 (13.1)	0.92 (0.53–1.60, p = 0.769)
	COVID-19 Pneumonia	-	44 (13.8)	20.24 (5.82–128.19, p < 0.001) ***
Comorbidities	Hypertension	143 (44.7)	148 (46.2)	1.17 (0.80–1.72, p = 0.414)
	Hypotension	13 (4.0)	14 (4.4)	1.20 (0.49–2.91, p = 0.689)
	Atrial Fibrillation	61 (19.0)	64 (20.0)	1.02 (0.64–1.63, p = 0.922)
	Heart Failure	32 (10.0)	63 (19.6)	2.06 (1.23–3.52, p = 0.007) **
	Hypercholesteremia	40 (12.5)	58 (18.1)	1.90 (1.14–3.20, p = 0.014) *
	Diabetes Mellitus	65 (20.3)	54 (16.9)	0.76 (0.47–1.22, p = 0.256)
	Hypothyroidism	24 (7.5)	20 (6.2)	0.81 (0.40–1.63, p = 0.555)
	Kidney Diseases	75 (23.4)	46 (14.4)	0.52 (0.32–0.84, p = 0.008) **
	Liver Diseases	8 (2.5)	19 (5.9)	3.55 (1.41–9.82, p = 0.010) *
	Malignancy	50 (15.6)	43 (13.4)	0.95 (0.57–1.57, p = 0.850)
	Osteoarthritis	31 (9.7)	40 (12.5)	1.06 (0.58–1.93, p = 0.843)
	Asthma	35 (10.9)	21 (6.5)	0.50 (0.25–0.95, p = 0.038) *
	COPD	42 (13.1)	40 (12.5)	1.38 (0.76–2.49, p = 0.289)
	Dementia	25 (7.8)	23 (7.2)	0.81 (0.41–1.59, p = 0.538)
	Epilepsy	10 (3.1)	13 (4.1)	1.32 (0.49–3.65, p = 0.580)
	Depression	12 (3.7)	20 (6.2)	1.81 (0.77–4.39, p = 0.178)

UK Five Year Action Plan (2024-2029)

- There were an estimated 7,600 deaths directly from infections resistant to antibiotics in 2019, similar to the number of deaths in the UK due to stomach cancer, as well as 35,200 deaths as an indirect result of infections resistant to antibiotics.



UK.GOV (2024b). Confronting antimicrobial resistance 2024 to 2029. [online] GOV.UK. Available at: https://www.gov.uk/government/publications/2024-to-2029.

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	[illegible]	[illegible]	[illegible]	[illegible]
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	Osteoarthritis	31 (9.7)	40 (12.5)	1.06 (0.58–1.93, *p* = 0.843)
	Asthma	35 (10.9)	21 (6.5)	0.50 (0.25–0.95, *p* = 0.038) *
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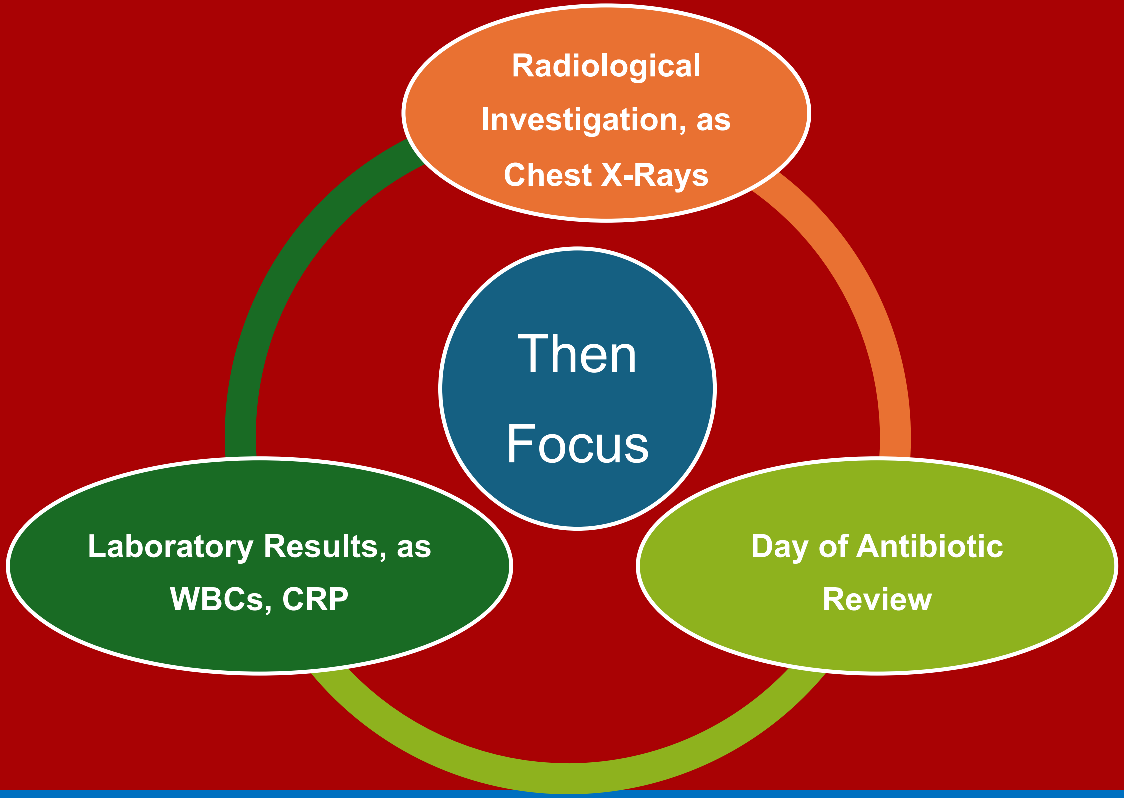
	Depression	12 (3.7)	20 (6.2)	1.81 (0.77–4.39, *p* = 0.178)

Factors Affecting ‘Then Focus’ prescribing

- Factors affecting pathogen-directed antibiotic prescribing include the following:



3.3. Antibiotic Prescription: ‘Then Focus’ Approach

Table 3 provides an overview of factors impacting ‘Then Focus’ antibiotic prescribing or pathogen-directed therapy in patients with RTIs prior to and during the COVID-19 pandemic. No significant differences were observed in laboratory tests for white blood cells (WBCs), C-reactive protein (CRP), or serum creatinine. The incidence of positive chest X-ray results indicating pneumonia was higher in 2020 compared to 2019, showing a statistically significant difference with an odds ratio of 1.75 (95% CI 1.04 to 2.97, p-Value = 0.037).

Table 3. Adjusted ORs of factors affecting the ‘Then Focus’ criteria for antibiotic prescribing prior to the COVID-19 pandemic (n = 320) and during the pandemic (n = 320) (in 2019 and 2020).

		Prior to Pandemic—2019 n (%)	During the Pandemic—2020 n (%)	Adjusted OR (95% CI)
WBCs		12 (3.8)	11 (3.4)	
CRP		82 (25.6)	78 (24.4)	1.00 (1.00–1.00, p = 0.595)
Serum Creatinine		126 (39.4)	123 (38.4)	1.00 (1.00–1.00, p = 0.860)
Chest X-rays	Pneumonia %	39 (12.2)	54 (16.9)	1.75 (1.04–2.97, p = 0.037) *
	No Pneumonia %	82 (25.6)	65 (20.3)	-
	Not taken %	199 (62.2)	201 (62.8)	1.26 (0.86–1.85, p = 0.231)
Day of Antibiotic Review	Mean (SD)	4.2 (2.8)	4.4 (2.9)	1.02 (0.97–1.08, p = 0.461)
Type of AMS Intervention	Change Antibiotics (Substitution)	25 (7.8)	20 (6.3)	-
	Continue Antibiotics	14 (4.4)	19 (5.9)	3.36 (1.30–9.25, p = 0.015) *
	De-escalation	37 (11.6)	81 (25.3)	2.77 (1.37–5.70, p = 0.005) **
	Escalation	65 (20.3)	76 (23.8)	1.50 (0.76–2.99, p = 0.248)
	IV-to-Oral Switch	70 (21.9)	58 (18.1)	0.97 (0.48–1.96, p = 0.928)
	Stop Antibiotics	94 (29.4)	59 (18.4)	0.86 (0.44–1.71, p = 0.659)
	No Intervention	15 (4.6)	7 (2.2)	-

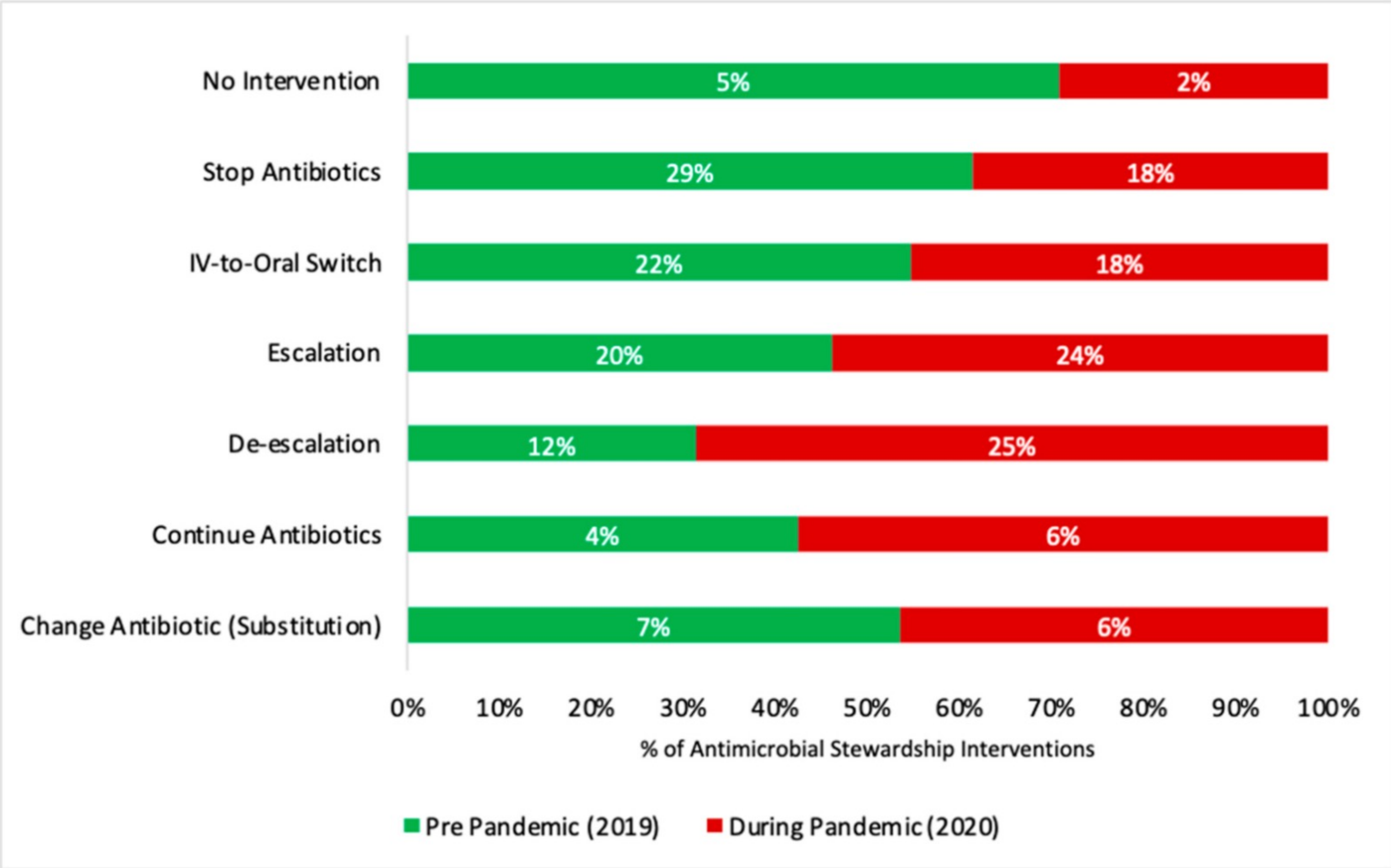
WBCs, white blood cells; CRP, C-reactive protein; AMS, antimicrobial stewardship. Notes: ** $0.001 \leq p < 0.01$; * $0.01 \leq p < 0.05$.

In terms of the timing for antibiotic review post-admission, it was noted that reviews were typically conducted within 48–72 h of admission. There was no significant difference in the timing of these reviews between 2019 and 2020, with an odds ratio of 1.02 (95% CI 0.97 to 1.08, p-Value = 0.461).

Regarding AMS interventions, significant changes were observed in only two interventions. The ‘Continue Antibiotics’ AMS intervention showed a significant difference during the pandemic, with an odds ratio of 3.36 (95% CI 1.30–9.25, p = 0.015). Additionally,

Results

- Antimicrobial stewardship interventions showed a notable rise in 'De-escalation' (p = 0.005), with guideline adherence dropping from 64% to 36% during the pandemic.



Graphical Abstract

Impact of COVID-19 on 'Start Smart, Then Focus' Antimicrobial Stewardship at One NHS Foundation Trust in England Prior to and During the Pandemic

Visual Abstract

COVID

Rasha Abdelsalam Elshenawy et al., 2024 | MDPI | COVID

Retrospective Cross-sectional Study

How COVID-19 Impacted Antibiotic Prescribing and Antimicrobial Stewardship for Respiratory Infections at NHS, England?

Antimicrobial Resistance: Global public health threat from resistant microorganisms, driven by antibiotic misuse.
COVID-19 increased antibiotic use, accelerating antimicrobial resistance development.

Objectives:

1) To evaluate AMS implementation between PP and DP periods using 'Start Smart, Then Focus' antimicrobial stewardship toolkit;
2) To determine the prevalence of inappropriately prescribed antibiotics PP and DP;
3) To identify factors influencing antibiotic prescribing and antimicrobial stewardship both PP and DP.

Prior to the Pandemic (PP) 2019
Records of 320 patients

During the COVID-19 Pandemic (DP) 2020
Records of 320 patients

Adult patients ≥ 25 years, admitted to one NHS Foundation Trust in England.

Results:

This study included 640 patients. The largest age group in the study was 66-85 years, comprising 156 individuals (48.8%) PP in 2019 and 148 (46.3%) DP in 2020. Community-acquired pneumonic was the predominant diagnosis, affecting approximately 126 (39.4%) PP and 136 (42.5%) DP patients. Regarding the timing of antibioticreview post-admission, reviews were typically conducted within 48-72 hours, with no significant difference between 2019 and 2020, with an odds ratio of 1.02 (95% CI 0.97 to 1.08, p-value = 0.461). During the COVID-19 pandemic, there was a significant difference in antimicrobial stewardship intervention 'De-escalation', with odds ratios of 2.77 (95% CI 1.37-5.70, p=0.005).

Conclusion:

This study emphasises the need for robust AMS to ensure adherence to guidelines. It acknowledges the impact of comorbidities and advocates for sustained stewardship efforts to combat resistance both during and post pandemic era.

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Moving Forward, Further Publication

"WHO AWaRe classification for antibiotic stewardship: tackling antimicrobial resistance – a descriptive study from an English NHS Foundation Trust prior to and during the COVID-19 pandemic"

frontiers | Frontiers in Microbiology

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WHO AWaRe classification for antibiotic stewardship: tackling antimicrobial resistance – a descriptive study from an English NHS Foundation Trust prior to and during the COVID-19 pandemic

Rasha Abdelsalam Elshenawy*, Nkiruka Umaru and Zoe Aslanpour

Department of Pharmacy, School of Life and Medical Sciences, University of Hertfordshire, Hatfield, United Kingdom

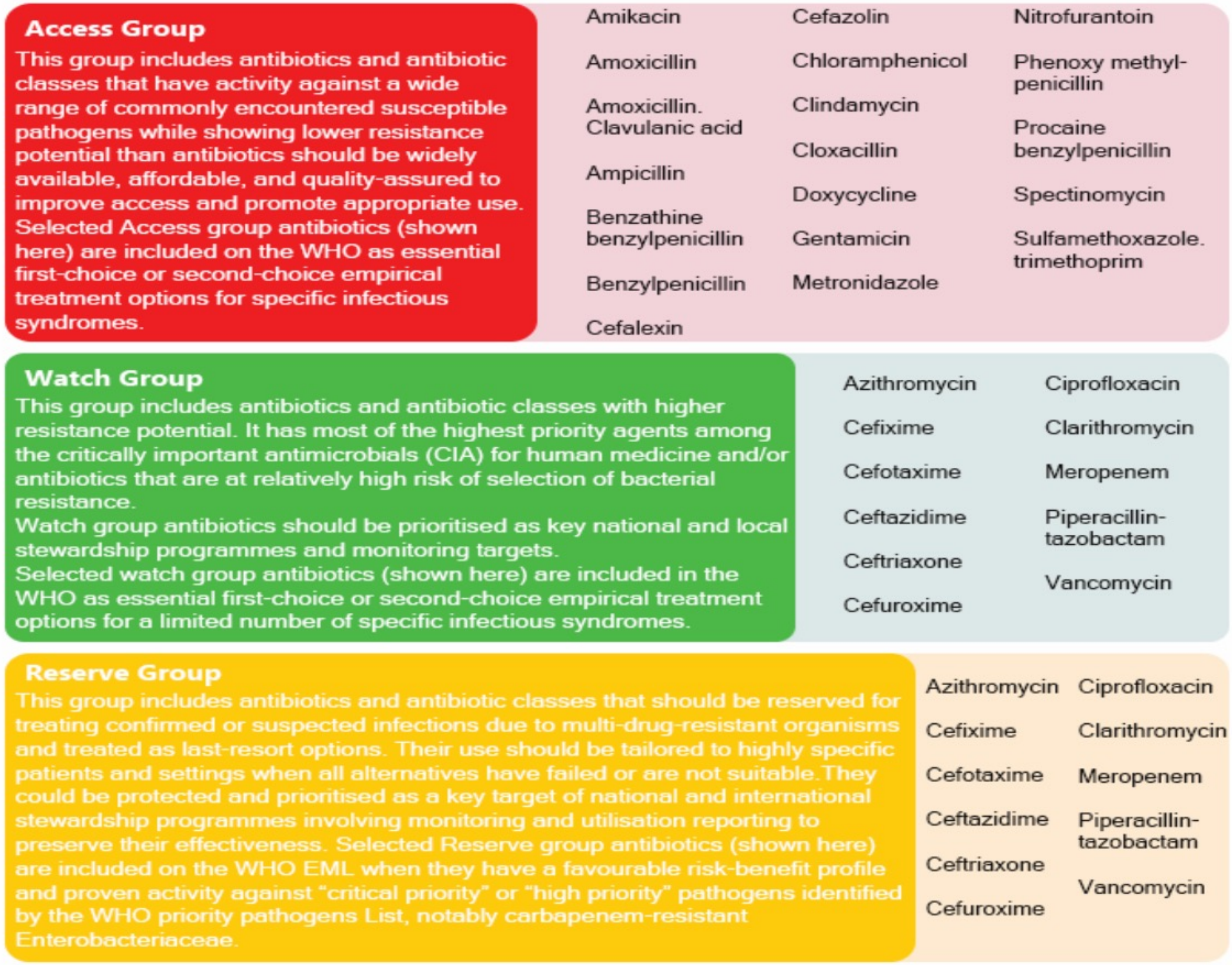
Antimicrobial resistance (AMR) is a silent and rapidly escalating pandemic, presenting a critical challenge to global health security. During the pandemic, this study was undertaken at a NHS Foundation Trust in the United Kingdom to explore antibiotic prescribing trends for respiratory tract infections (RTIs), including pneumonia, and the COVID-19 pandemic across the years 2019 and 2020. This study, guided by the WHO's AWaRe classification, sought to understand the impact of the pandemic on antibiotic prescribing and antimicrobial stewardship (AMS). The research methodology involved a retrospective review of medical records from adults aged 25 and older admitted with RTIs, including pneumonia, in 2019 and 2020. The application of the AWaRe classification enabled a structured description of antibiotic use. The study evaluated antibiotic use in 640 patients with RTIs. Notably, it observed a slight increase in the use of amoxicillin/clavulanic acid and a substantial rise in azithromycin prescriptions, highlighting shifts in prescribing trends. Despite these changes, some antibiotics displayed steady consumption rates. These findings highlight the importance of understanding antibiotic use patterns during the AMR threat. The increase in the usage of "Watch" category antibiotics during the pandemic emphasises the urgency of robust AMS measures. The research confirms that incorporating the AWaRe classification in prescribing decisions is crucial for patient safety and combating antibiotic misuse. This study provides essential insights into the changing landscape of antibiotic prescribing during a global health crisis, reinforcing the necessity for ongoing AMS vigilance to effectively address AMR challenges.

KEYWORDS
AWaRe, antibiotic stewardship, COVID-19, NHS, hospitals, antimicrobial resistance

Frontiers Microbiology (2023). Available at: https://www.frontiersin.org/journals/microbiology/articles/10.3389/fmicb.2023.1298858/full.

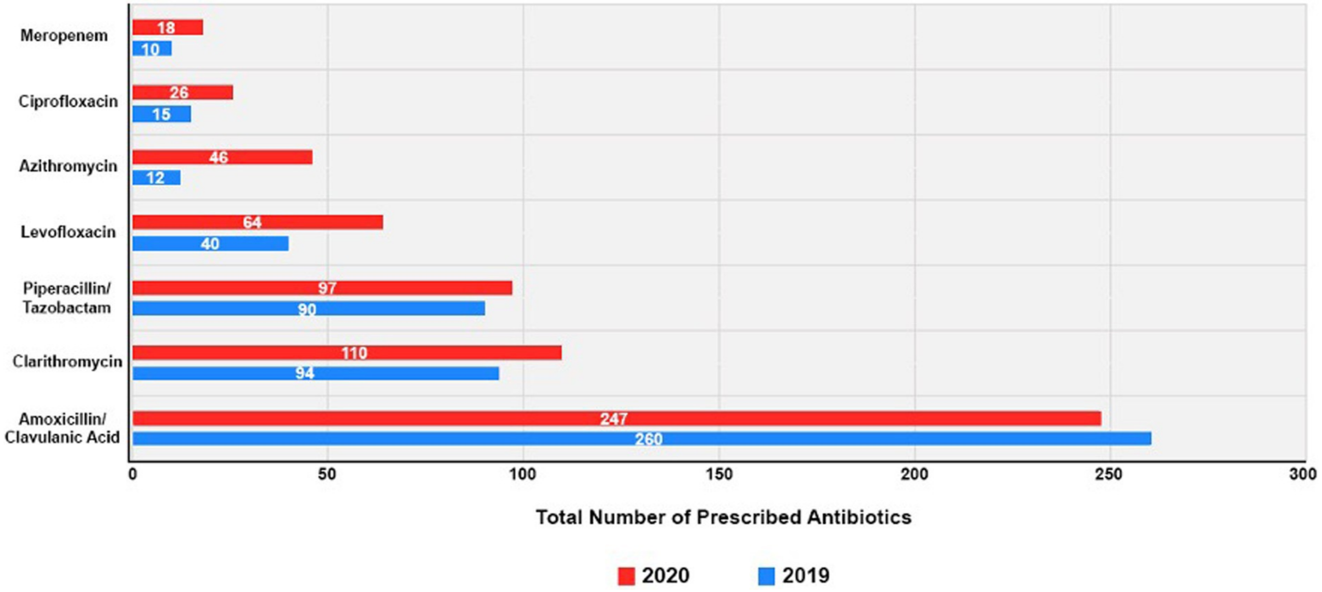
AWaRe Classification of Antimicrobials

- The AWaRe classification of antibiotics as a tool to support antibiotic stewardship efforts at local, national and global levels.
- Antibiotics are classified into three groups, Access, Watch and Reserve, to emphasise the importance of their appropriate use.



WHO, 2023. *AWaRe classification of antibiotics for evaluation and monitoring of use, 2023*. [online] www.who.int.

This paper provided a heatmap for antibiotic use in 2019 and 2020 according to AWaRe criteria and top prescribed antibiotics.



WHO Access, Watch, Reserve (AWaRe) classification for antibiotics evaluation and monitoring before and during the COVID-19 pandemic

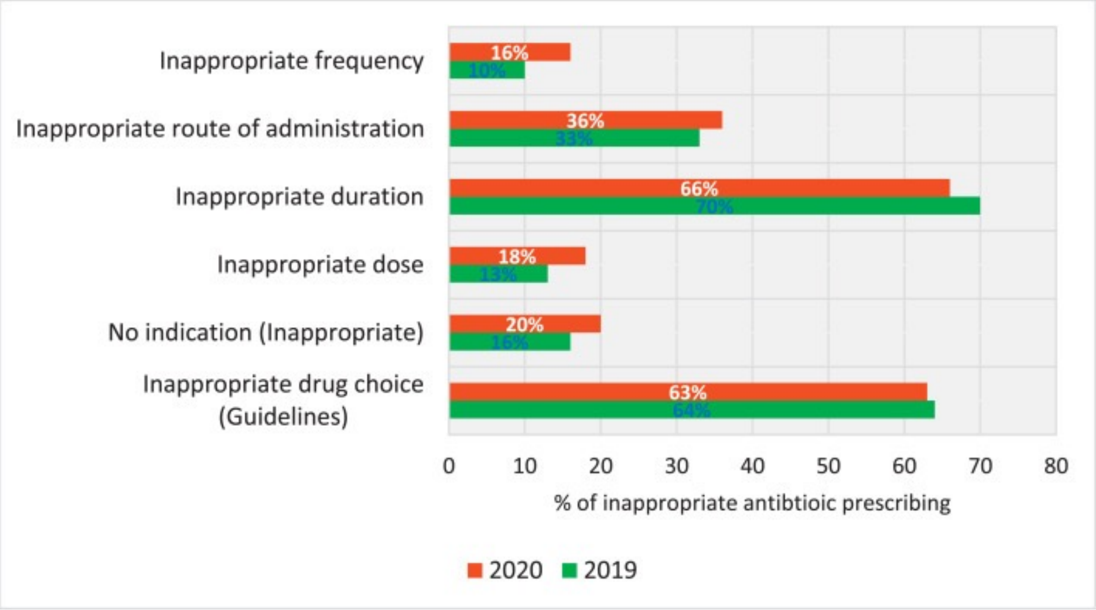
	Mar-19	Jun-19	Sep-19	Dec-19	Mar-20	Jun-20	Sep-20	Dec-20
Access								
Amoxicillin	2	1	2	3	6	6	0	1
Amoxicillin/clavulanic acid	67	61	56	76	25	70	86	66
Benzylpenicillin	1	0	2	0	3	0	0	0
Doxycycline	1	1	3	2	1	2	0	1
Flucloxacillin	2	2	3	2	0	5	2	1
Gentamicin	0	0	0	0	0	2	0	0
Metronidazole	3	7	2	0	4	4	2	4
Sulfamethoxazole/Trimethoprim	0	1	1	0	4	2	0	0
Clindamycin	1	0	0	0	0	0	0	0
Cephalexin	0	0	2	1	1	0	0	0
Watch								
Azithromycin	0	1	2	0	13	19	3	11
Ceftazidime	2	2	0	0	0	1	0	0
Ceftriaxone	0	0	0	1	1	0	1	0
Cefuroxime	0	0	1	0	0	0	0	0
Ciprofloxacin	3	3	1	8	7	5	9	5
Clarithromycin	14	21	26	33	32	21	25	32
Levofloxacin	12	9	8	11	14	13	14	23
Meropenem	2	0	1	1	5	4	4	5
Piperacillin/Tazobactam	29	30	15	16	29	21	22	25
Teicoplanin	0	0	1	0	3	0	0	0
Vancomycin	1	4	0	1	0	1	0	0
Reserve								
Aztreonam	0	0	0	0	0	1	0	0
Cefazidime/Azobactam	0	0	2	0	0	0	0	0
Linezolid	3	2	1	1	0	0	1	1

- 0: Absence of antibiotic usage
- 1 - 9: Minimal antibiotic consumption
- 10 - 29: Moderate level of antibiotic usage
- 30 and above: High level of antibiotic consumption

Frontiers Microbiology (2023). Available at: https://www.frontiersin.org/journals/microbiology/articles/10.3389/fmicb.2023.1298858/full.

Journal of Global Antimicrobial Resistance

- Evaluation of the **Five Rights Antibiotic Safety** in AMS.
- This could be used in quality improvement projects to maintain the sustainability of AMS implementation and mitigate AMR challenges.



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SARS CoV-2 Dispatches

An evaluation of the five rights antibiotic safety before and during COVID-19 at an NHS Foundation Trust in the United Kingdom

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A B S T R A C T

Introduction: Antimicrobial Resistance (AMR) poses a significant global health threat, with AMR-related deaths projected to reach 10 million annually by 2050. The COVID-19 pandemic has further exacerbated this crisis. This study focuses on evaluating the 'Five Rights of Antibiotic Safety' in an NHS Foundation Trust in England, assessing the impact of the COVID-19 pandemic on antibiotic prescribing and Antimicrobial Stewardship (AMS) practices in 2019 and 2020.

Methods: A cross-sectional retrospective study was conducted, focusing on adult patients aged 25 and older admitted to the NHS Foundation Trust and prescribed antibiotics for respiratory tract infections in 2019 and 2020. The study involved a retrospective review of 640 patient records, using descriptive analysis to evaluate the adherence to the 'Five Rights of Antibiotics' and assess the impact of COVID-19 on antibiotic safety practices.

Results: The study observed significant shifts in antibiotic prescribing practices during the study period. There was an increase in instances of inappropriate dosing and route of administration, alongside a slight improvement in prescribing durations. The study also noted a stable rate of appropriate antibiotic selection according to antimicrobial guidelines, indicating a concerning rise in inappropriate prescribing patterns during the COVID-19 pandemic.

Conclusion: The study revealed notable changes in antibiotic prescribing practices during the COVID-19 pandemic, advocating the importance of robust AMS to ensure appropriate use of antibiotics. The findings highlight the need for enhanced AMS educational initiatives and systematic oversight to combat AMR and protect public health in future health crises.

1. Introduction

By 2050, the annual death toll from multi-drug-resistant infections is projected to reach 10 million. In 2019, Antimicrobial Resistance (AMR) was responsible for 1.2 million deaths [1]. This number, exacerbated by the COVID-19 pandemic, is projected to reach 6 million by 2023. Antimicrobial Stewardship (AMS) advocates for judicious antibiotic use [2]. 'The Five Rights of Antibiotic Safety' ensure appropriate usage. It encompasses the right patient, drug, dose, time, and duration [3]. This study aimed to evaluate antibiotic safety and AMS practices in accordance with the 'Five Rights of Antibiotic Safety' at one English NHS Foundation Trust before and during the COVID-19 pandemic in 2019 and 2020. This evaluation is based on local antimicrobial guidelines ensuring appropriate and right antibiotic use, encompassing the patient, drug, dose, time, and duration.

2. Methods

While it is acknowledged that the COVID-19 pandemic significantly impacted antibiotic safety and AMS activities, there remains limited evidence regarding its precise effects. There was an immediate call for further studies to explore AMS implementation during the pandemic. A cross-sectional retrospective study was conducted, focusing on adult patients aged 25 and older who were admitted to one NHS Foundation Trust in the UK and prescribed antibiotics for respiratory tract infections, including pneumonia and COVID-19, during 2019 and 2020. The study excluded outpatients, individuals hospitalised for less than 48-72 hours, patients not prescribed antibiotics, and children. To ensure diversity, 640 patient records were reviewed using systematic and stratified sampling methods. Descriptive analysis was utilised to evaluate the 5Rs of

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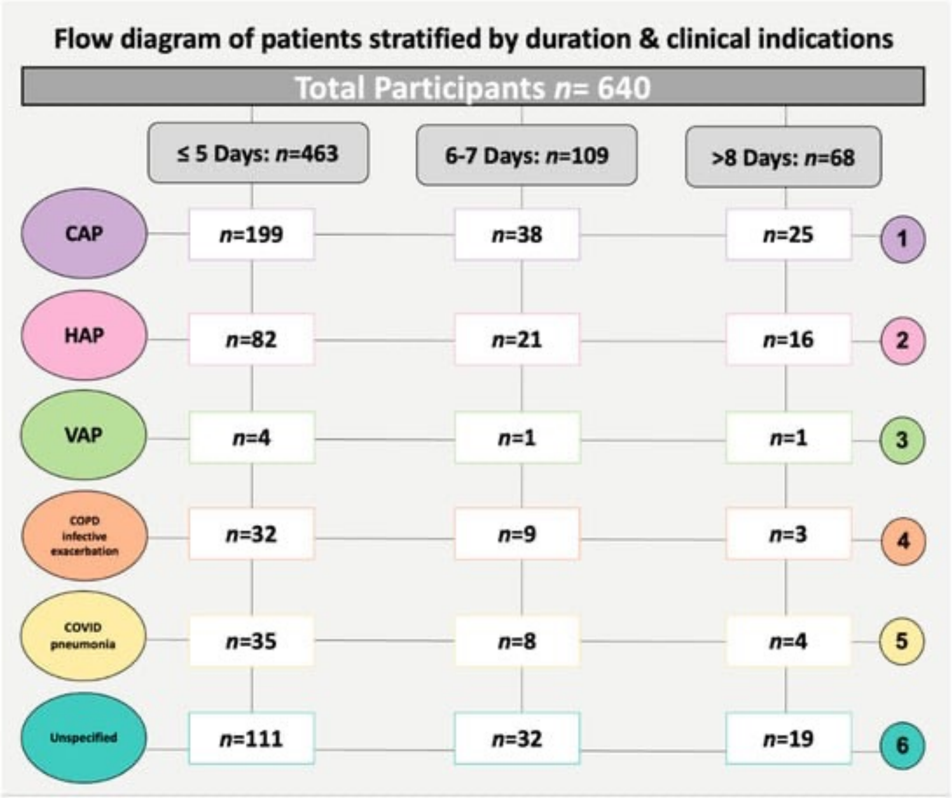
- Shorter and Longer Antibiotic Durations for Respiratory Infections: To Fight Antimicrobial Resistance—A Retrospective Cross-Sectional Study in a Secondary Care Setting in the UK.



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Article

Shorter and Longer Antibiotic Durations for Respiratory Infections: To Fight Antimicrobial Resistance—A Retrospective Cross-Sectional Study in a Secondary Care Setting in the UK

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Abstract: As antimicrobial resistance (AMR) escalates globally, examining antibiotic treatment durations for respiratory infections becomes increasingly pertinent, especially in the context of the COVID-19 pandemic. In a UK secondary care setting, this retrospective study was carried out to assess the appropriateness of antibiotic treatment durations—shorter (≤5 days) versus longer (6–7 days and >8 days)—for respiratory tract infections (RTIs) in 640 adults across 2019 and 2020, in accordance with local antimicrobial guidelines. The analysis employed these guidelines and clinical evidence to examine the effectiveness and suitability of antibiotic prescribing practices. This study considered the 'Shorter Is Better' approach, noting an increased rate of patient discharges associated with shorter antibiotic regimens (≤5 days). It further demonstrates that shorter treatments are as effective as longer ones for conditions such as COPD exacerbation, COVID-19 pneumonia, and hospital-acquired pneumonia (HAP), except in cases of community-acquired pneumonia (CAP) and unspecified diagnoses. Nevertheless, this study raises concerns over an observed increase in mortality risk with shorter treatment durations. Although these mortality differences were not statistically significant and might have been influenced by the COVID-19 pandemic, the need for extended research with a larger sample size is highlighted to confirm these findings. This study also emphasises the critical need for accurate and specific diagnoses and considering risk assessments at admission, advocating for tailored, evidence-based antibiotic prescribing to ensure patient safety. It contributes to antimicrobial stewardship efforts by reinforcing the importance of adapting antibiotic use to current healthcare challenges and promoting a global commitment to fight antimicrobial resistance. This approach is crucial for enhancing patient outcomes and saving lives on a global scale.

Keywords: antimicrobial resistance; antibiotic duration; antibiotics; respiratory tract infections; COVID-19 pandemic; antimicrobial stewardship; antibiotic prescribing

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1. Introduction

In the face of rising antimicrobial resistance (AMR), the global health landscape is rapidly changing [1]. This resistance threatens the efficacy of conventional treatments such as antibiotics, chemotherapy, and various pharmaceuticals [2]. Recognising the severity of AMR, the World Health Organisation (WHO) has classified it among the ten global threats to health worldwide, calling for the prudent use of antibiotics [3]. To address this crisis, the development of novel strategies and the reinforcement of existing treatments are at the forefront of scientific research [4]. With infectious diseases becoming more prevalent and pathogens increasingly outpacing current treatments, the necessity for diverse approaches in combating AMR has never been more crucial [5,6].

In response to this crisis, antimicrobial stewardship (AMS) initiatives have become crucial, promoting the responsible use of antibiotics to mitigate the risks associated with AMR [7,8]. The importance of AMS programs is highlighted by the rapid spread of AMR, which complicates the management of infectious diseases [9,10]. This increase in resistance

Rasha Abdelsalam Elshenawy, Nkiruka Umaru, Aslanpour Z. Shorter and Longer Antibiotic Durations for Respiratory Infections: To Fight Antimicrobial Resistance—A Retrospective Cross-Sectional Study in a Secondary Care Setting in the UK. Pharmaceuticals. 2024 Mar 6;17(3):339–9.

Summary of the UK Next Five - Year Action Plan

Confronting Antimicrobial Resistance

Conclusions

- The study highlights how AMS practices, such as 'De-escalation', have been pivotal in antimicrobial management during the pandemic.
- The resilience of AMS in this crisis indicates that sustainable, adaptable AMS measures are essential in the post-pandemic era to continue saving lives.
- The impact of this research study is significant, offering insights that enrich the global conversation on antimicrobial stewardship.
- It delves into the core aspects of AMS, emphasising its vital role in everyday healthcare and its increased importance during public health crises, demonstrating the potential to save lives by reducing antimicrobial resistance.

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