ANTIBIOTIC PRESCRIBING: A RETROSPECTIVE STUDY FROM ONE ENGLISH NATIONAL HEALTH SERVICE (NHS) FOUNDATION TRUSTS BEFORE AND DURING THE COVID-19 PANDEMIC

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Introduction

The global increase in multi-drug-resistant infections presents a substantial health risk, leading to heightened disease, death, and economic impact. A UK review in 2016 estimated a devastating 10 million deaths annually by 2050 due to Antimicrobial Resistance (AMR). This study seeks to understand the antibiotic prescribing practices and Antimicrobial Stewardship (AMS) before and during the COVID-19 pandemic in acute care settings within the context of the growing threat posed by AMR.

Method

In an English NHS Trust, a cross-sectional retrospective study was carried out to assess antibiotic prescribing practices. The study analysed data retrieved from the electronic medical records of adult patients diagnosed with Respiratory Tract Infections (RTIs). In order to evaluate antibiotic prescribing and determine the impact of COVID-19 on such practices, data were drawn from eight-time points across 2019 and 2020 before and during the COVID-19 pandemic. The gold standard, Access, Watch, Reserve (AWaRe) classification of the World Health Organisation (WHO), which provides short clinical guidance on the management of common infections, is used in this study to analyse antibiotic categorisation (www.who.int, 2021).
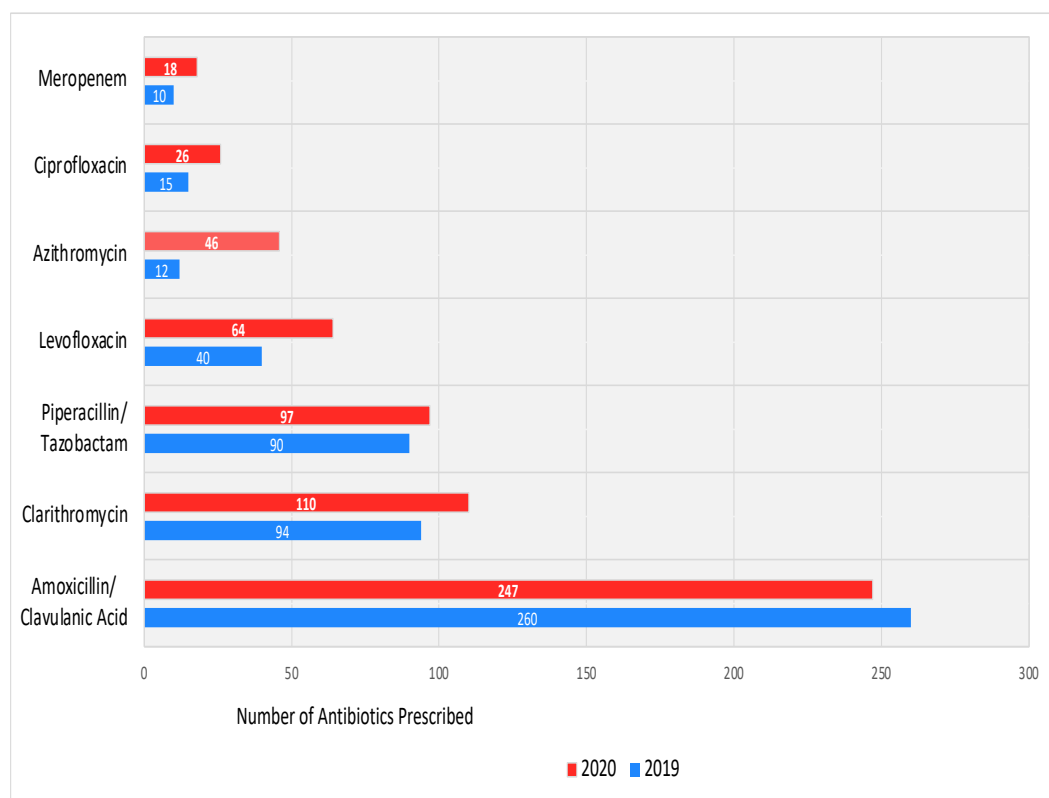
Result

Table 1. The heatmap for antibiotic use in 2019 and 2020 is based on AWaRe criteria.

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	
0 - 29: Moderate level of antibiotic usage	
30 and above: High level of antibiotic consumption	

Figure 1. The Seven Most Commonly Prescribed Antibiotics Before and During the COVID-19 Pandemic

Meropenem: 2020 = 18, 2019 = 10
Ciprofloxacin: 2020 = 26, 2019 = 15
Azithromycin: 2020 = 46, 2019 = 12
Levofloxacin: 2020 = 64, 2019 = 40
Piperacillin/Tazobactam: 2020 = 97, 2019 = 90
Clarithromycin: 2020 = 110, 2019 = 94
Amoxicillin/Clavulanic Acid: 2020 = 247, 2019 = 260

Number of Antibiotics Prescribed

■ 2020 ■ 2019

Conclusion

The COVID-19 pandemic has influenced antibiotic prescription patterns, leading to increased use of specific antibiotics, such as Azithromycin and Amoxiclav. Such shifts in practice, if unchecked, may potentiate antimicrobial resistance and endanger patient lives. Therefore, the continuous implementation of antimicrobial stewardship measures is paramount to sustain the judicious use of antibiotics and mitigate the associated risks.

Reference

www.who.int. (2021). 2021 AWaRe classification. [online] Available at: https://www.who.int/publications/i/item/2021-aware-classification.