Duration of antibiotic treatment for common infections at Wollaton Park Medical Centre: comparison with guidelines

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Abstract

OBJECTIVE

To evaluate the duration of antibiotic prescriptions, over a 4-week period, for the treatment of common infections at Wollaton Park Medical Centre compared to local guideline recommendations.

SETTING

General Practice – Wollaton Park Medical Centre.

PARTICIPANTS

144 consultation that resulted in an antibiotic prescription for one of several indications: acute otitis media, cellulitis, pharyngitis, lower respiratory tract infection, urinary tract infection, community acquired pneumonia.

MAIN OUTCOME MEASURES

The percentage of antibiotic prescriptions with a duration exceeding the guideline recommendation, and the total number of days beyond the recommended duration for each indication.

RESULTS

The most common reasons for antibiotics being prescribed were for urinary tract infections (56, 38.9%), lower respiratory tract infections (29, 20.1%), tonsillitis (14, 9.7%) and cellulitis (14, 9.7%). Antibiotic treatment for respiratory tract indications and urinary tract infections accounted for more than half of the total prescriptions considered, and only 10.6% of these treatment course exceeded guidelines recommendations. 7.8% of prescriptions for cellulitis exceeded seven days. More than 28% of the antibiotic prescriptions were for durations other than 1st line guidelines recommended for tonsillitis. The percentage of antibiotic prescriptions exceeding the recommended duration was highest for otitis media, 85% and lower respiratory tract infection, 57.1%. For the 144 included consultations resulting in antibiotic prescriptions, approximately 79 days were beyond the durations recommended by guidelines.

CONCLUSION

For most common infections treated at Wollaton Park Medical Centre, a substantial proportion of antibiotic prescriptions met durations recommended in guidelines. Further reductions in antibiotic exposure can be accomplished by aligning antibiotic prescription durations with Nottinghamshire APC guidelines, notably for lower respiratory tract infections and otitis media.

Introduction

Antibiotic resistance is a global threat and one that is growing at alarming speed. The link between antibiotic prescribing and resistance is clear[1,9]. The government published their 5-year action plan and 20-year vision in 2019 which details how the UK will tackle antimicrobial resistance. Reducing human antibiotic use by 15% and cutting the number of resistant infections by 10% before 2025[2,9] are a few of the aims.

Reducing unnecessary antibiotic use can be achieved by starting antibiotic treatments only when clearly indicated, changing the choice of drug for specific conditions, or avoiding unnecessarily long durations of treatment[3,9].

This study aims to assess durations of antibiotic courses prescribed for common infections, over a 4-week period, at Wollaton Park Medical Centre and establish if they are in line with relevant local guidelines. If there is a significant discrepancy this could highlight the potential to consider reducing the total antibiotic use by altering prescribing practice and habits.

Methods

Data was obtained from Wollaton Park Medical Centre from the 4-week period beginning 14th of August 2019. Only prescriptions for oral antibiotics linked to one of several indications were included: acute otitis media, cellulitis, pharyngitis, lower respiratory tract infection, urinary tract infection, community acquired pneumonia. Prescriptions for chronic and recurrent conditions were excluded, this was achieved by excluding consultations where patients received antibiotics for a condition of the same system in the 30 days before the current antibiotic prescription. In addition, repeat antibiotic prescriptions were also excluded. Actual durations of the antibiotic prescriptions for the indications were compared with durations recommended in the Nottinghamshire Area Prescribing Committee [APC] Antimicrobial Prescribing Guidelines for Primary Care 2019[4].

Data Analysis

For each indication, the proportion of prescription longer than the recommended duration separately for children (<16 years) and for patients aged 16 years or older was calculated[5]. Separate analysis was performed for males and females for the treatment of urinary traction infection as guidelines recommended longer antibiotic courses for males.
The total number of excess antibiotic days was calculated. This is defined as the total number of days beyond the recommended duration in the guidelines.

Results

Between 14th August 2019 and 11th September 2019, 144 consultations for the included indications led to antibiotic prescription. The most common indications were urinary tract infections (56, 38.9%), lower respiratory tract infections (29, 20.1%), tonsillitis (14, 9.7%) and cellulitis (14, 9.7%), otitis media (7, 4.9%), and community acquired pneumonia (5, 3.5%).

As a whole, duration of antibiotic treatment for the included indications demonstrated good guideline adherence for several indications.

For the conditions collectively, approximately 79 days were beyond the durations recommended by the Nottinghamshire APC guidelines. Majority of the excess days were due to respiratory indications including otitis media. Antibiotic treatments for lower respiratory tract infections, including otitis media, contributed to 25% of the total prescriptions considered, and over 60% of these prescriptions exceeded guideline recommendations.

57% of antibiotic prescriptions for lower respiratory tract infections, and 85% of antibiotic prescriptions for otitis media exceeded guideline recommendations, accounting for 31 days and 12 days beyond durations recommended, respectively.

60% of antibiotic prescriptions for community acquired pneumonia exceeded the 5 day guideline recommendations, resulting in 9 extra days.

Only 10% of prescriptions for tonsillitis, 14% for urinary tract infections and 7% for cellulitis were longer than the recommended guidance. Significantly fewer prescriptions exceeded recommended durations for non-respiratory tract indications, 13 out of 35 (37%). There was no clear correlation of over prescribing for children when compared to adults.

Table 1 | Antibiotic treatment durations for first line antibiotics recommended by Nottinghamshire Area Prescribing Committee [APC] Antimicrobial Prescribing Guidelines for Primary Care 2019

Antibiotic	Strength	Dose	Duration [days]
Community Acquired Pneumonia [CAP]			
Amoxicillin	500mg	TDS	5
Clarithromycin	500mg	BD	5
Urinary Tract Infection [UTI]			
Nitrofurantoin	100mg M/R	BD	W: 3 / M: 7
Trimethoprin	200mg	BD	W: 3 / M: 7
Lower Respiratory Tract Infection [LRTI]			
Doxycycline	100mg	200mg STAT, 100mg OD	5
Amoxicillin	50mmg	TDS	5
Cellulitis			
Flucloxacillin	500mg	QDS	7
Clarithromycin	500mg	BD	7
Tonsillitis			
Phenoxymethylpenicillin	500mg	QDS	10
Clarithromycin	250mg	BD	5
Otitis Media			
Amoxicillin	500mg	TDS	5
Clarithromycin	250mg	BD	5

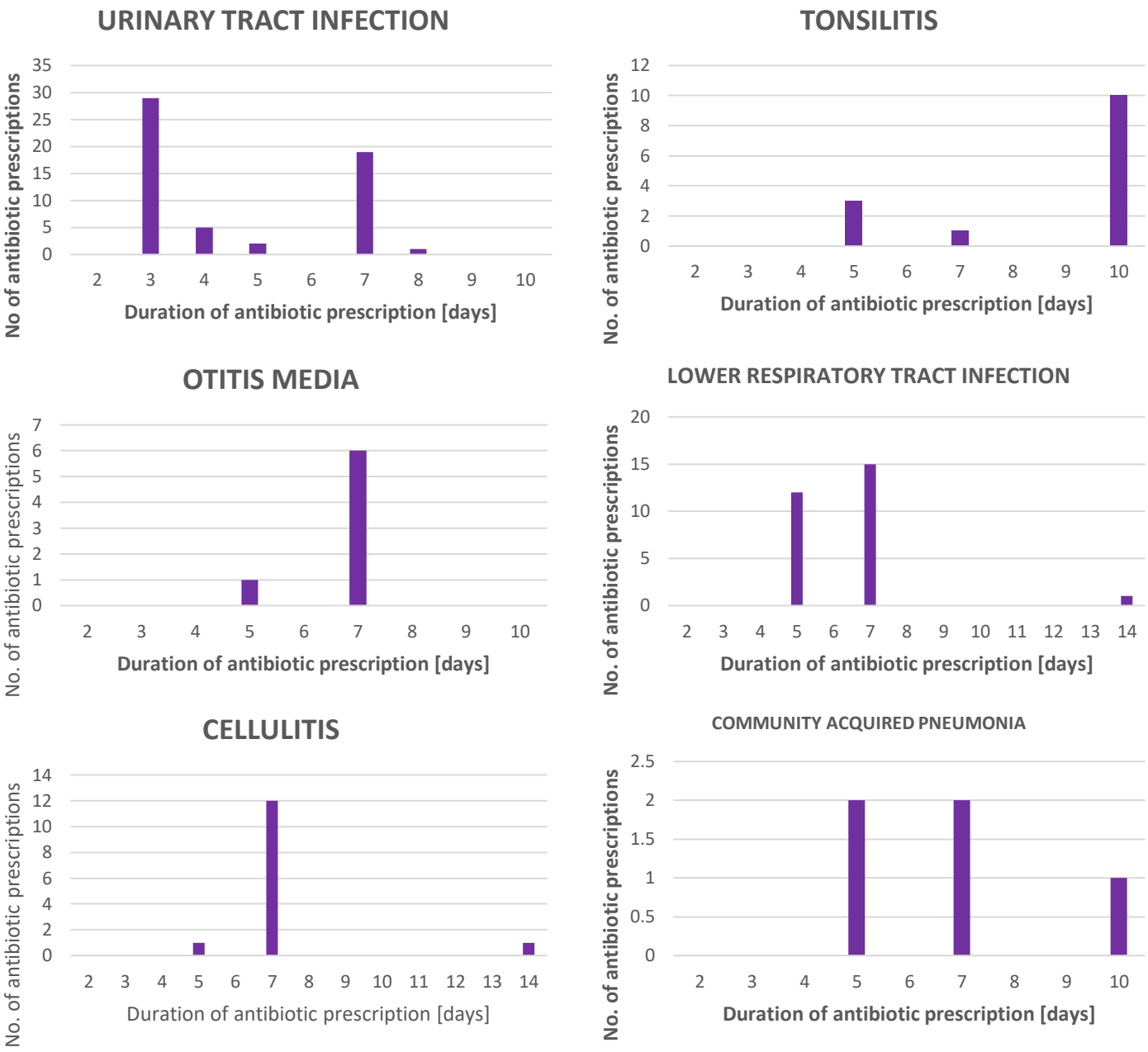


Fig 1 | Durations of antibiotic prescriptions for various indications

Table 2 | Percentage of antibiotics with a duration exceeding guideline recommendations for all patients and antibiotics

Recommended treatment duration (days) by condition	No. with condition	No. of antibiotic prescriptions with duration exceeding recommendations	Excess days (% of total days)
Urinary Tract Infection			
3 (females) / 7 (males)	56	8	18
Acute otitis media:			
5	7	6	12
Tonsillitis:			
5 / 10	10	1	2
Cellulitis:			
7	14	1	7
Lower respiratory tract infection:			
5	28	16	31
Community acquired pneumonia:			
5	5	3	9

Discussion

As a whole, the most common infections treated with antibiotics at Wollaton Park Medical Centre, have durations recommended by the Nottinghamshire APC prescribing guidelines. This is most noticeable for most urinary tract infection prescriptions.

However, antibiotic prescribing for lower respiratory infections [LRTI] and otitis media at the Medical Centre demonstrates a greater variation in prescribing durations. A total of 43 extra days of antibiotics for LRTIs and otitis media were prescribed in a 4-week period. This suggests there may be some potential for reducing antibiotic prescribing through better adherence to recommended guidelines for LRTI's. Nottingham APC guideline recommends a 5-day antibiotic course for these conditions, with majority of the prescriptions for 7 days. As a result, there may scope for improving prescribing practices for these conditions.

Non-respiratory condition prescribing at the surgery demonstrated good adherence to guideline recommendations. 84.7% of the prescriptions adhered to the guidelines, and accounting for only 36 extra days out of the 79.

Limitations of the study

Recurrent and prophylactic treatments were excluded in the study; however, it was not possible to account for patient factors that may underlie decisions to prolong treatment. The study was also not able to take into consideration practitioner considerations that could result in greater durations of antibiotic prescribing.

As this study only measures prescribed antibiotics, it cannot determine or conclude how often patients did not take or complete their prescribed course. Other research suggests this is between one in ten and one in four patients[9].

The time period, and data pool only considers a 4-week period. A greater length of time, and greater number of antibiotic prescriptions must be considered in order to draw significant and more accurate conclusions in regard to the antibiotic prescribing practices of Wollaton Park Medical Centre.

Conclusion

Unnecessary exposure to antibiotics can be substantially reduced by aligning the course duration with antibiotic prescribing guidelines. Highlighting the importance of this can play a meaningful role in antibiotic stewardship. Greater understanding and insight are needed to explain why practitioners may prescribe courses longer than the guidelines[7,9].

Overall prescribing practices within Wollaton Park Medical Centre are satisfactory. However, longitudinal studies and continuous data analysis should be considered to make any significant conclusions and recommendations to antibiotic prescribing practices within the medical centre.

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