

Research Round up May 2024- Antibiotic Prescribing

Introduction

Last month the research round-up provided you with an overview of articles looking prescribing in allergic rhinitis. This month we look at three articles and examine a range of prescribing practices around antibiotics. The first article is a systematic review that looks at the knowledge and attitudes of health care professionals around the prescribing of antibiotics for the treatment of urinary tract infections. In the second article, another systematic review, we see how early career general practitioners are prescribing antibiotics for acute infections. Finally, in our third article looks at prescribing patterns in respiratory tract infections.

Health care professionals' knowledge and attitudes towards antibiotic prescribing for the treatment of urinary tract infections: A systematic review

A Kabulo Mwape, KA Schmidtke, & C Brown (2024) *Health care professionals' knowledge and attitudes towards antibiotic prescribing for the treatment of urinary tract infections: A systematic review* British Journal of Health Psychology 00:1-18

This article published in the British Journal of Health Psychology was a systematic review to garner health care professionals' knowledge and attitudes towards antibiotic prescribing for urinary tract infections. They start by acknowledging that much research has concluded that knowledge and attitude factors have been identified as influencing prescribing behaviour. This review was aimed at building information around antibiotic prescribing in urinary tract infections and was conducted using robust and expected methodology and searching appropriate databases. The search strategy was restricted to March 2021 and September 2022 with key search terms used that replicated previous searches. Appropriate inclusion and exclusion criteria were applied to the search and the PICO framework identified the population as healthcare professionals, an instrument as a written assessment with the outcome as knowledge and attitudes about antibiotic prescribing and comparison studies were included. After all quality and screening was carried out, seven articles met the criteria for inclusion. Of the included studies, the instruments used to assess varied but in six, closed ended items such as a Likert scale were used, three studies included multiple choice questions with a single response required and one study used multiple choice questions with multiple response options. With regard to knowledge the areas assessed included knowledge of condition, knowledge of scientific rationale and that of the task environment. In terms of attitude, areas assessed were lack of complacency, fear, lack of ignorance, lack of indifference, lack of responsibility of others, confidence, and finally patient non-medical factors. Across studies, knowledge levels were generally poor, for example, professionals' 'knowledge of condition' was low, and their knowledge of 'task environment' negatively influenced their choices. However, their attitudes varied, for example, while their attitude of confidence in providing optimal patient care and fear towards the problem of antibiotic resistance were moderate, they expressed a poor attitude of complacency by giving in to patient pressure to prescribe antibiotics. A potentially worrying finding involves health care professionals' moderate 'confidence' levels despite their poor overall knowledge. An encouraging finding was that health care professionals were concerned that antibiotics contributed to antibiotic resistance. The acknowledge the limited number of studies and the instruments used to assess may mean this is not generalisable to real-life clinical practice and suggest further work is needed to develop a comprehensive, reliable, and valid measure of knowledge and attitudes as factors in antibiotic prescribing for urinary tract infections.

<https://bpspsychub.onlinelibrary.wiley.com/doi/epdf/10.1111/bjhp.12721>

Early-career general practitioners' antibiotic prescribing for acute infections: a systematic review
E J Baillie, G Merlo, M L Van Driel, P J Magin and L Hall (2024) *Early-career general practitioners' antibiotic prescribing for acute infections: a systematic review* Journal of Antimicrobial Chemotherapy 79:512-525

This article published in the Journal of Antimicrobial Chemotherapy sought to determine the antibiotic prescribing patterns of early career General Practitioners (GPs) for common acute infections. This was done by means of a systematic review of the literature following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines (Page MJ, McKenzie JE, Bossuyt PM et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Syst Rev 2021; 10: 89. <https://doi.org/10.1186/s13643-021-01626-4>). Eligibility criteria for inclusion were that the studies were set in general practice, included early career GPs, were observational studies or control arms of randomised control studies and that they examined antibiotic prescribing for common acute infections, such as respiratory, ear nose and throat, urinary tract and skin or soft tissue infections. Early career GPs were those with 10 years or less experience. The main outcome sought was antibiotic prescribing rates with a secondary outcome of associations between experience of the prescribing GP and antibiotic prescribing. After screening and quality assessment 41 studies were deemed eligible for inclusion.

Early-career GPs were less likely to prescribe antibiotics compared with their more experienced colleagues. Their antibiotic prescribing rates for respiratory infections ranged from 14.6% to 52%, and for upper respiratory tract infections from 13.5% to 33%. Other areas of prescribing varied geographically and was possibly influenced by guidelines. This may be encouraging for future antibiotic stewardship if these lower antibiotic prescribing rates of newer generations of GPs reflect increased awareness of the importance of antimicrobial resistance over the past decade. Of the 27 studies examining secondary outcomes, 17 found a statistically significant relationship between experience and reduced prescribing, eight found no statistically significant difference, and two found more experience resulted in less prescribing.

The authors found limited international data on early-career GPs' antibiotic prescribing, and this varied by country. They state that antimicrobials continue to be overprescribed, even by early-career GPs, who have had recent medical education. They suggest that as antimicrobial resistance is a global problem, it is important to achieve a greater understanding of early-career GPs' prescribing in a wider range of settings and further research is required.

<https://academic.oup.com/jac/article/79/3/512/7585193>

Antibiotic Prescribing Patterns for Respiratory Tract Illnesses Following the Conclusion of an Education and Feedback Intervention in Primary Care

J J Harrigan, K W Hamilton, L Cressman, W B Bilker, K O Degnan, M Z David, D Tran, D A Pegues, L Dutcher (2024) *Antibiotic Prescribing Patterns for Respiratory Tract Illnesses Following the Conclusion of an Education and Feedback Intervention in Primary Care* Clinical Infectious Diseases

This article published in the journal, Clinical Infectious Diseases, aimed to assess the long-term effects of an educational intervention and peer comparison feedback session on antibiotic prescribing for respiratory tract infections. This was to build on a previous study looking at immediate impact of the interventions on prescribing practice. The study was based in 31 primary care clinics in the University of Pennsylvania Health System and looked at the prescribing of resident physicians and other prescribers who encountered respiratory tract diagnoses between July 2016–December 2019. The researchers included the same pre-intervention and intervention periods (the comparison periods) of the initial trial, which consisted of a pre-intervention period starting 1 July 2016 up until the month each cluster was given the education intervention, and an intervention period beginning the month after each cluster received the education intervention continuing through 31 October 2018. The primary outcome of interest was the presence of an antibiotic prescription during the encounter. Analyses were to determine the appropriateness of the antibiotic prescription using a tiered appropriateness assessment strategy. Encounters were assigned to 1 of 3 tiers based on how frequently antibiotic therapy would be justified for a particular diagnosis, as assessed by ICD-10-CM codes assigned at the encounter. Tier 1 included diagnoses for which antibiotic prescribing is almost always appropriate (eg, bacterial pneumonia); tier 2 included diagnoses for which antibiotics are sometimes appropriate (eg, sinusitis); and tier 3 included diagnoses for which antibiotics are rarely indicated (eg, asthma, viral upper respiratory tract infection). This led to the analysis of 260 900 encounters from 29 of the primary care clinics. These encounters represented approximately 24.9% of all in-person visits during the pre-intervention period, 22.9% during the intervention period, and 23.9% during the post-intervention period.

Antibiotic prescribing was more frequent in the post-intervention period than in the intervention period (28.9% vs 23.0%, $P < .001$) but remained lower than the 35.2% pre-intervention rate ($P < .001$). In multivariable analysis, the odds of prescribing were higher in the post-intervention period than the intervention period for tier 2 (odds ratio [OR], 1.19; 95% confidence interval [CI]: 1.10–1.30; $P < .05$) and tier 3 (OR, 1.20; 95% CI: 1.12–1.30) indications but was lower compared to the pre-intervention period for each tier (OR, 0.66; 95% CI: 0.59–0.73 tier 2; OR, 0.68; 95% CI: 0.61–0.75 tier 3). The authors conclude that the intervention effects appeared to last beyond the intervention period. They suggest that future studies are needed to determine optimal strategies to sustain intervention effects and that ongoing interventions may be required as part of active antimicrobial stewardship.

<https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciad754/7588896>

Conclusion

Antibiotic prescribing is a large part of prescribing activity globally. With increasing resistance and the lack of new antibiotics to the market there is a need for judicious prescribing in line with guidelines and need. Antimicrobial stewardship is an essential part of a prescribers activity and should be considered during every potential antibiotic prescribing encounter.

Additional reference

Page MJ, McKenzie JE, Bossuyt PM et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Syst Rev 2021; 10: 89. <https://doi.org/10.1186/s13643-021-01626-4>