

# Harnessing the 'wisdom of crowds' can help combat antibiotic over prescription

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A new study has demonstrated that using the 'wisdom of crowds' (also known as collective intelligence) of three or more medical prescribers, can improve decisions about antibiotic prescribing and help combat rising levels of antibiotic resistance.

Published in *Scientific Reports*, an international group of researchers led by Dr. Eva Krockow at the University of Leicester tested a novel approach to antibiotic stewardship using the concept of the 'wisdom of crowds', which argues that a group's collective judgment often outperforms the average individual.

The team investigated whether pooling treatment durations recommended by different prescribers can improve decisions about [antibiotic prescribing](#). Using international survey data from 787 expert antibiotic prescribers, the team ran [computer simulations](#) to test the performance of the wisdom of crowds by comparing three data aggregation rules across different clinical cases and group sizes, and identified patterns of prescribing bias in recommendations about antibiotic treatment durations to quantify current levels of overprescribing.

Their results suggest that pooling the treatment recommendations (using the median) could improve guideline compliance in groups of three or more prescribers.

Dr. Eva Krockow, Lecturer and Lead of the Health and Wellbeing Research Strand at the Department of Neuroscience, Psychology and Behaviour, University of Leicester, said:

"Antimicrobial overuse is widespread and presents a major public health threat. It promotes the emergence of drug-resistant infections, which—without action—are predicted to incur annual costs of more than 10 million lives by 2050, more than all cancer deaths combined.

"Collecting and aggregating independent judgements of medical prescribers in line with the concept of the [wisdom of crowds](#) appears to be a promising decision technique to improve guideline compliance in the context of antibiotic decision making and reduce antibiotic overuse."

Current evidence suggests that around 30-40% of antibiotic prescriptions for [hospital patients](#) and up to 60% of antibiotic prescriptions in primary care are inappropriate, although it has to be acknowledged that inappropriate prescribing is often context-dependent and measuring it thus presents a challenge.

To improve [antibiotic use](#) and preserve drug effectiveness for [future generations](#), a crucial step is therefore to support doctors in their decision making and encourage guideline adherence to curb inappropriate prescribing.

This simulation study provided evidence for the respective benefits of different group aggregation techniques to reduce inappropriate choices about antibiotic prescribing durations. Overall, using the median group judgment appeared to yield the largest benefits.

While decision accuracy increased with group size, improvements were found for groups as small as three prescribers. Follow-up research is necessary to explore the potential of collective decision making across a larger variety of prescriber samples and decision contexts.

Hospital ward rounds and larger, multidisciplinary team meetings, where complex patient cases are discussed and existing guidelines provide limited guidance, were considered most likely to benefit from such an approach.

**More information:** Eva M. Krockow et al, Harnessing the wisdom of crowds can improve guideline compliance of antibiotic prescribers and support antimicrobial stewardship, *Scientific Reports* (2020). [DOI: 10.1038/s41598-020-75063-z](https://doi.org/10.1038/s41598-020-75063-z)

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