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Emphasizing the importance of prudent antibiotic use decreases unrealistic perceptions of new antibiotic discoveries

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Background: The 2024 discovery of a new class of antibiotics is cause for cautious celebration. However, media coverage of this discovery shows overstated optimism, potentially leading to a false sense of safety in the general public.

Objectives: We investigated whether informing participants about the discovery of new antibiotics changes their perceptions of new antibiotics as a solution to antimicrobial resistance and their expectations for receiving antibiotics for a hypothetical illness.

Methods: In two preregistered online experiments, participants read a fictional newspaper article. In the *Optimistic news* condition, participants read about antimicrobial resistance and the discovery of new antibiotics. In the *Cautious news* condition, they additionally received a message about the importance of prudent antibiotic use. In the *Control* condition, participants read about antimicrobial resistance only. In Study 1 ($n=404$), participants encountered the article in a hypothetical doctor's consultation and indicated their expectations to receive antibiotics before and after reading the article, as well as their perception of the new antibiotics. Study 2 ($n=443$) was a partial replication in a neutral context, independent of a doctor's consultation.

Results: Antibiotic expectations decreased in all conditions after reading the article, which always provided information about antimicrobial resistance. However, unrealistic perceptions to solve antimicrobial resistance were higher in the *Optimistic news* condition (versus *Control*). This negative effect was mitigated in the *Cautious news* condition.

Conclusions: News about the development of new antibiotics can influence public perceptions about antimicrobial resistance. Balanced communication is important to prevent a false sense of safety.

Introduction

With the rising threat of antimicrobial resistance (AMR),[1,2] developing new antibiotics is key to sustaining modern medicine and global health. The 2024 discovery of a new class of antibiotics marks a milestone in combating AMR.[3,4] Although this discovery is a cause for cautious celebration, recent media coverage reflects an overly optimistic view,[5,6] potentially affecting people's perceptions and fostering a false sense of safety. Specifically, it might increase the belief that such discoveries provide a silver bullet against the threat of AMR, potentially reinforcing patients' expectations to receive antibiotics in primary care.[7–10] Hence, despite the need for and hope due to the discovery of new antibiotics, the effects on patients' perceptions and behavioural intentions could undermine efforts to promote appropriate antibiotic use.

To manage unrealistic perceptions and expectations, we propose that articles on newly discovered antibiotics should emphasize the ongoing need for prudent use of existing antibiotics. This caution is vital as developing, testing and producing new antibiotics typically takes several years[11] and resistance will eventually undermine their effectiveness as well. Therefore, emphasizing human behaviour's role in driving AMR[12] and promoting prudent antibiotic use could help mitigate the unintended negative effects of communicating about new antibiotic discoveries, placing these breakthroughs in a more balanced context.

The present research examined the effect of communicating the discovery of new antibiotics to the general public. Specifically, we investigated whether such information influences their perceptions of the new antibiotics' potential to solve the AMR threat and their expectations for receiving antibiotics when they fall ill. Our objective was to test whether emphasizing prudent antibiotic use alongside articles on new antibiotic discoveries can help mitigate a false sense of security.

Materials and methods

Study 1

We used a pre–post measure intervention–control design with three experimental between-participants conditions. We investigated how patients' perceptions of and expectations for antibiotics in a hypothetical primary care setting (see Procedure and Online supplement, available as Supplementary data at *JAC-AMR* Online) differ when they are informed about the discovery of new antibiotics (condition *Optimistic news*) compared with when this was paired with information on prudent antibiotic use (condition *Cautious news*). Both experimental conditions included an explanation of AMR. A *Control* condition, where new antibiotics were not mentioned, included only information on AMR.

We hypothesized that expectations to receive antibiotics would be higher when information about newly discovered antibiotics was provided compared with the control condition (Hypothesis 1). We further hypothesized that when patients are informed about newly discovered antibiotics that these expectations would decrease if the communication additionally emphasized the importance of prudent antibiotic use (Hypothesis 2). In other words, highlighting the necessity of responsible antibiotic use could counterbalance the increased expectations created by articles about new antibiotics. Additionally, we explored participants' perceptions of the new antibiotics and their potential impact on the AMR threat.

Participants

The preregistered power analysis for detecting a medium effect size ($f = 0.25$) with an alpha level of 0.05 and power of 0.8 varied by analysis type. For a one-way ANOVA assuming no pre-intervention differences, the required sample size was 210. This was multiplied by 1.5 for the third condition and increased by 10% for exclusions, resulting in 350 participants. For a mixed ANOVA assuming pre-intervention differences and detecting an attenuation effect, the required sample size was 22. This was adjusted by multiplying by 1.5 for the third condition, then by 16 for the attenuation effect, and increasing by 10% for exclusions, resulting in 600 participants. We based our sample on the more demanding analysis, recruiting a gender-balanced UK sample of 600 participants through Prolific, an online recruitment platform. Participants had to be UK residents, at least 18 years old, and native English speakers. Following preregistered criteria, we excluded participants who had prior knowledge of the new antibiotics or provided inappropriate open-text summaries of the intervention text, indicating inattentive responding.

Table 1. Item texts from the measure 'Perception of new antibiotics'

1. The current and forthcoming discoveries of new antibiotics will solve the problem of antibiotic resistance.
2. The discovery of new antibiotics will be sufficient to tackle the issue of antibiotic resistance.
3. The discovery of new antibiotics will make the current worries about antibiotic resistance unnecessary.
4. Restricting access to antibiotics is necessary. (R)
5. Identifying new antibiotics is more important than enforcing regulations on the present use of antibiotics.
6. New antibiotics will make the future regulation of antibiotic usage unnecessary.

The scale used a 7-point Likert-type scale (1 = 'Strongly disagree' to 7 = 'Strongly agree'). (R) indicates reverse-scored items, with higher scores reflecting a lower level of the measured construct.

Measures

Expectations to receive antibiotics in the hypothetical scenario was measured twice, once before the intervention (i.e. reading a medical news article) and once after. It was measured using six items on a 7-point Likert-type scale (1 = 'Strongly disagree' to 7 = 'Strongly agree') adapted from Thorpe *et al.*[13] and Sievert *et al.*[14] A sample item is 'I would expect that my doctor will prescribe antibiotics'. The analyses used the difference in score between post- and baseline measurements as the main dependent variable, with positive values indicating increased and negative values decreased antibiotic expectations.

For the explorative analyses, we assessed additional measures that all used the same 7-point Likert-type scale. We measured perceptions of the new antibiotics using a self-constructed scale with six items. A sample item is 'The discovery of new antibiotics will make the current worries about antibiotic resistance unnecessary' (see Table 1 for all perception items). Higher mean scores indicate a belief that the newly discovered class of antibiotics can sufficiently counteract AMR, reducing the perceived urgency to limit antibiotic use.

Additionally, we assessed participants' threat appraisal and coping appraisal of AMR using a scale by Plechatá *et al.*,[15] each assessed with four items, and the expectation that the new antibiotics will be available to the participants using a single item. We further assessed demographic variables and information on the participants' previous antibiotic use. An overview of all additional measures including the exact item wording and their reliability can be found in the Online supplement.

The scales all had satisfactory reliability (Cronbach's $\alpha > 0.75$). The analyses were conducted using the mean values of the items for each scale.

Procedure

The experiment was conducted online on 15 February 2024, using SoSci-Survey (a non-commercial web survey application). Participants received a renumeration of £0.60 (approximately US $0.76) for completing the 5 min survey. They were randomly allocated to the experimental conditions via the survey application.

After providing informed consent and completing a demographics questionnaire, participants were introduced to a fictitious scenario involving a doctor's consultation for an acute ear infection (see Online supplement). They answered a baseline measure of expectations to receive antibiotics. While waiting for the doctor to document the examination results, they proceeded to read a medical article. The text differed across the experimental conditions.

In the *Control* condition, participants read a text explaining AMR and its impact on healthcare and society (e.g. deaths, treatment difficulties and

infection prevention in surgeries). In the *Control* condition, participants were asked about their perceptions of potential new antibiotics without knowing that there has been a recent discovery of a novel class of antibiotics. The same informational text on AMR was included in all conditions. In the *Optimistic news* condition, participants received additional information about the discovery of a new class of antibiotics and their potential to treat resistant infections. In the *Cautious news* condition, participants read the same texts as the *Optimistic news* condition but also received information on the importance of prudent antibiotic use.

As a manipulation check and to ensure participants read the intervention texts, they wrote brief summaries of each text section (AMR, the new discovery, and the importance of prudent antibiotic use). Two researchers reviewed these summaries, indicating overall good comprehension. Participants who failed to demonstrate that they attentively read the texts were excluded from the analysis (see preregistration). We did not exclude participants whose answers referenced the intervention text but contained minor inaccuracies, assuming they had read but not fully understood it. Given the complexity of AMR, we did not expect all participants to fully understand its mechanisms. Finally, participants answered the post-intervention measure for expectations, perceptions about new antibiotics, threat and coping appraisal, perceived availability of the new antibiotics, and their previous antibiotic use.

Study 2

Study 2 aimed to replicate the effect of different communication about newly discovered antibiotics on participants' perception of them as a solution to the AMR crisis. Unlike Study 1, where explorative scales followed the expectations scale, Study 2 measured perceptions as the main outcome and increased statistical power to detect differences between conditions. This study provides a better assessment of the effect of communicated news on the perception of new antibiotics as a solution to AMR, as the absence of a hypothetical illness scenario and antibiotic expectations prevents potential attenuation of the manipulation's effect on the outcome variable. Additionally, we enhanced external validity by simulating how people encounter such information through newspapers or online articles, rather than in a clinical setting.

Therefore, in Study 2, information was presented as part of a newspaper without the context of a doctor's consultation. The study design and experimental conditions were identical to Study 1: *Optimistic news* versus *Cautious news* versus *Control*. We expected that optimistic perceptions of the newly discovered class of antibiotics would be more pronounced in the *Optimistic news* condition than in the *Control* condition (Hypothesis 1). Furthermore, we hypothesized that the perception would be more realistic (less optimistic) when additionally communicating the importance of prudent use of antibiotics in the *Cautious news* condition compared with only informing about the newly discovered antibiotics in the *Optimistic news* condition (Hypothesis 2).

Participants

The preregistered power analysis to detect an effect of $d = 0.35$ with a power of 0.9 and an alpha level of 0.025 (adjusted for multiple testing) indicated a required sample size of 346 for a one-tailed *t*-test with two independent conditions (173 per condition). This was multiplied by 1.5 to account for the third condition and we rounded up the number of the target sample size to 600 (i.e. 200 participants per condition) to account for possible exclusions. The sampled participants had to be UK residents, at least 18 years old, and native English speakers. We preregistered exclusion of participants who failed the attention check or provided inappropriate open-text summaries of the intervention text, indicating inattentive responding.

Measures

Perceptions of new antibiotics were measured using the same scale used in Experiment 1. Additionally, we measured threat appraisal and coping appraisal, as well as the expectation that the new antibiotics will be available to the participant, and previous antibiotic use (same as in Study 1, see Online supplement). All scales had satisfactory reliability (Cronbach's $\alpha > 0.68$). We used the mean value across items of all measures for the analyses.

Procedure

The experiment was conducted online on 3 April 2024, using SoSci-Survey. Participants were renumerated with £0.60 (approximately US $0.76) for completing the 5 min survey. They were randomly allocated to the experimental conditions via the survey application.

After providing informed consent and completing a demographics questionnaire, participants were asked to imagine reading an article from a trusted newspaper. They proceeded to read the article with the text depending on their experimental condition. The article texts were the same as in Study 1 with minor adjustments to fit newspaper language (see Online supplement). As in Study 1, participants wrote brief summaries of each section as a manipulation check, which were reviewed by two researchers and showed good comprehension. Participants who failed to show that they had attentively read the texts were excluded from the analysis (see preregistration). Finally, they provided their perceptions of the new antibiotics, threat and coping appraisal, perceived availability of the new antibiotics, and previous antibiotic use.

Ethics

Study 1 and Study 2 received ethical approval from the Institutional Review Board of the University of Vienna, Department of Occupational, Economic, and Social Psychology (reference no. 2024/W/004). Study 1 was preregistered via the Open Science Framework (https://osf.io/829kr).

Study 2 was preregistered via the Open Science Framework (https://osf.io/xsjyf). The materials, data and the analysis code for Study 1 and Study 2 are also accessible via the Open Science Framework (https://osf.io/dpf9w/?view_only=d007181752544f20bbee181df52e0739).

Results

Study 1

We excluded 196 participants based on preregistered criteria, resulting in a sample of 404 for the analyses. Due to the large number of exclusions, we repeated all analyses using the full sample, which did not yield different interpretations (see Online supplement). In the following analyses, we used the reduced sample according to preregistered exclusions (see Online supplement for analyses without exclusions). Participants were 19 to 79 years old (mean = 43.4, SD = 14.1); 43.3% identified as men, 55% as women, and 1.7% identified as non-binary or other; 57.7% had a Bachelor's degree or higher education. Table 2 provides an overview of the participants' characteristics.

Antibiotic expectations by experimental condition are displayed in Figure 1, and perceptions of the new class of antibiotics by experimental condition are shown in Figure 2. All three conditions showed lower expectations to receive antibiotics in the post measure versus the baseline measure, $t(295) = 14.72$, $P < 0.001$, $d = -0.55$. This indicates that the mere explanation of AMR reduced antibiotic expectations.

Confirmatory analyses

The different messages in the experimental conditions had no effect on participants' antibiotic expectations, neither between the conditions in which the new class of antibiotics was mentioned (pooled *Optimistic news* and *Cautious news)* versus *Control*,

Table 2. Participant characteristics of Study 1 per condition and overall sample

	Control ($n=130$)	Optimistic news ($n=142$)	Cautious news ($n=132$)	Overall ($n=404$)
Age				
Mean (SD)	42.9 (14.7)	44.3 (14.3)	43.1 (13.5)	43.4 (14.1)
Median (min–max)	40.5 (19–76)	42.5 (20–79)	41.0 (20–75)	41.0 (19–79)
Gender, *n* (%)				
Man	53 (40.8)	62 (43.7)	60 (45.5)	175 (43.3)
Woman	75 (57.7)	77 (54.2)	70 (53.0)	222 (55.0)
Non-binary	1 (0.8)	2 (1.4)	1 (0.8)	4 (1.0)
Prefer to self-describe	1 (0.8)	0 (0)	0 (0)	1 (0.2)
Prefer not to say	0 (0)	1 (0.7)	1 (0.8)	2 (0.5)
Education, *n* (%)				
No schooling completed	0 (0)	0 (0)	0 (0)	0 (0)
Some high school, no diploma	3 (2.3)	9 (6.3)	4 (3.0)	16 (4.0)
High-school graduate, diploma or the equivalent (for example: GED)	20 (15.4)	25 (17.6)	25 (18.9)	70 (17.3)
Some college credit, no degree	15 (11.5)	12 (8.5)	9 (6.8)	36 (8.9)
Trade/technical/vocational training	10 (7.7)	14 (9.9)	15 (11.4)	39 (9.7)
Associate's degree	4 (3.1)	4 (2.8)	2 (1.5)	10 (2.5)
Bachelor's degree	45 (34.6)	58 (40.8)	55 (41.7)	158 (39.1)
Master's degree	26 (20.0)	14 (9.9)	15 (11.4)	55 (13.6)
Professional degree	2 (1.5)	3 (2.1)	3 (2.3)	8 (2.0)
Doctorate degree	2 (1.5)	2 (1.4)	4 (3.0)	8 (2.0)
Other	3 (2.3)	1 (0.7)	0 (0)	4 (1.0)

GED, General Education Development.

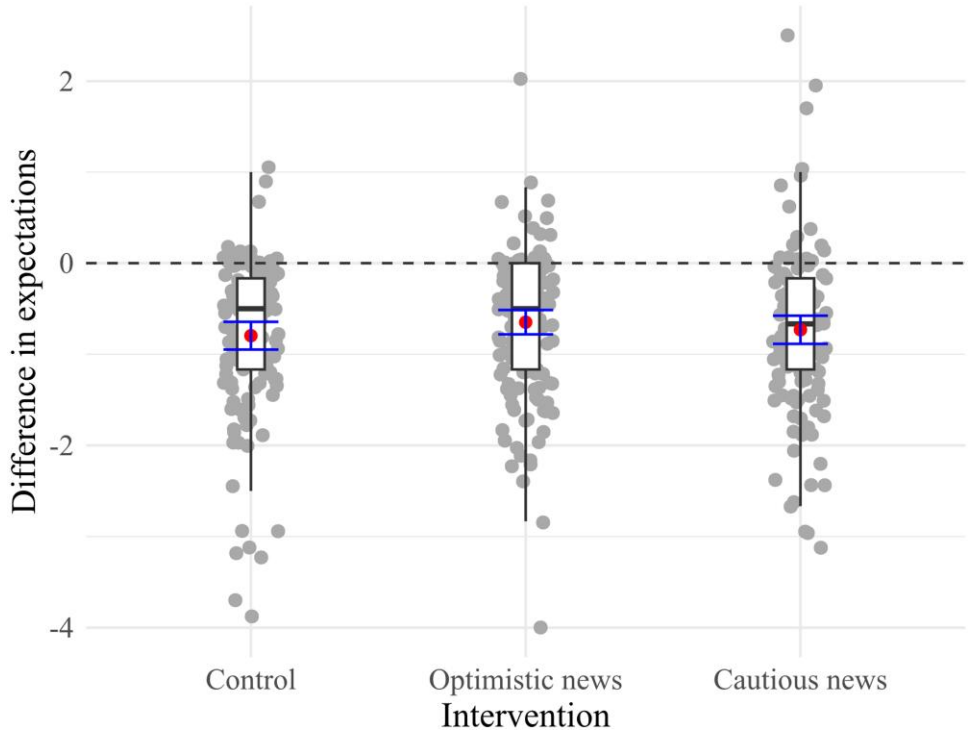

Figure 1. Effect of *Optimistic news*, *Cautious news* and *Control* information about the discovery of new antibiotics on antibiotic expectations for a hypothetical illness in Study 1. Negative scores indicate a lower expectation after reading the intervention text. Red dots show the mean, blue whiskers show the 95% CI.

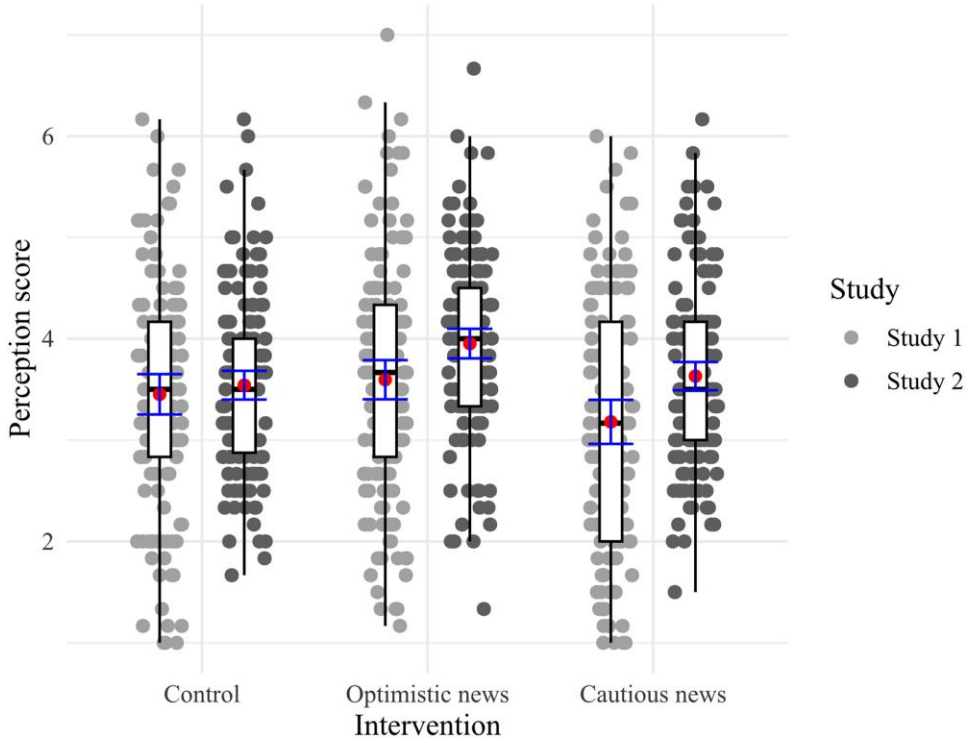

Figure 2. Effect of *Optimistic news*, *Cautious news* and *Control* information about the discovery of new antibiotics on perceptions of antibiotic discovery solving AMR in Study 1 and Study 2. Higher scores indicate a more optimistic view of the new antibiotics' potential to solve the AMR threat. Red dots show the mean, blue whiskers show the 95% CI.

Table 3. Mean (SD) of expectations to receive antibiotics pre-, post-intervention, and difference score by condition in Study 1

Expectations	Control ($n=130$)	Optimistic news ($n=142$)	Cautious news ($n=132$)	Overall ($n=404$)
Pre-intervention	4.09 (1.29)	4.05 (1.34)	3.91 (1.29)	4.02 (1.31)
Post-intervention	3.30 (1.27)	3.41 (1.36)	3.18 (1.29)	3.30 (1.31)
Difference in score	−0.80 (0.88)	−0.65 (0.80)	−0.73 (0.90)	−0.72 (0.86)

Across conditions (including the *Control* condition), participants read a text explaining AMR.

$F(1, 402)=1.40$, $P=0.238$, $d=0.12$, nor between the *Optimistic news* versus *Cautious news* conditions, $F(1, 272)=0.65$, $P=0.420$, $d=0.09$ (see Figure 1). We therefore rejected both Hypothesis 1 and Hypothesis 2. Simple contrasts also showed no differences between individual treatment conditions versus *Control*, *Optimistic news* versus *Control*: $t(401)=1.42$, $P=0.312$, $d=0.18$; *Cautious news* versus *Control*: $t(401)=0.61$, $P>0.999$, $d=0.07$. The pre- and post-intervention expectation scores can be viewed in Table 3.

Exploratory analyses

There was a significant difference between the conditions *Optimistic news* versus *Cautious news* on the perceptions of the new class of antibiotics, $F(1, 272)=8.06$, $P=0.005$, $d=-0.35$. Participants who received information on the importance of prudent antibiotic use showed a less idealized perception (see Figure 2), perceiving the new class of antibiotics as a less definitive solution to the AMR threat. There was no difference between the treatment conditions pooled together and the *Control* condition though; $F(1, 402)=0.20$, $P=0.659$, $d=0.05$.

We found no significant differences between the conditions in either of the contrasts regarding participants' threat appraisal. In contrast, participants indicated a higher coping appraisal in the pooled treatment conditions versus *Control*, $F(1, 402)=4.15$, $P=0.042$, $d=0.22$, but there was no difference between the treatment conditions. We also did not find a difference between the conditions in participants' expectations that the new antibiotics would be available to them (see Online supplement for all detailed test statistics).

Study 2

We excluded 157 participants based on preregistered criteria, resulting in an analytical sample of 443. Due to the large number of exclusions, we repeated all analyses for the full sample, which

Table 4. Participant characteristics of Study 2 per condition and overall sample

	Control ($n=146$)	Optimistic news ($n=144$)	Cautious news ($n=153$)	Overall ($n=443$)
Age				
Mean (SD)	46.1 (13.4)	43.9 (14.0)	42.5 (14.4)	44.1 (14.0)
Median (min–max)	46.5 (20–82)	41.0 (21–72)	41.0 (18–83)	42.0 (18–83)
Gender, *n* (%)				
Man	81 (55.5)	74 (51.4)	75 (49.0)	230 (51.9)
Woman	60 (41.1)	69 (47.9)	78 (51.0)	207 (46.7)
Non-binary	1 (0.7)	0 (0)	0 (0)	1 (0.2)
Prefer to self-describe	2 (1.4)	0 (0)	0 (0)	2 (0.5)
Prefer not to say	2 (1.4)	1 (0.7)	0 (0)	3 (0.7)
Education, *n* (%)				
No schooling completed	0 (0)	0 (0)	0 (0)	0 (0)
Some high school, no diploma	5 (3.4)	1 (0.7)	6 (3.9)	12 (2.7)
High school graduate, diploma or the equivalent (for example: GED)	15 (10.3)	26 (18.1)	27 (17.6)	68 (15.3)
Some college credit, no degree	13 (8.9)	10 (6.9)	19 (12.4)	42 (9.5)
Trade/technical/vocational training	17 (11.6)	18 (12.5)	11 (7.2)	46 (10.4)
Associate's degree	5 (3.4)	3 (2.1)	0 (0)	8 (1.8)
Bachelor's degree	56 (38.4)	59 (41.0)	64 (41.8)	179 (40.4)
Master's degree	23 (15.8)	18 (12.5)	19 (12.4)	60 (13.5)
Professional degree	2 (1.4)	2 (1.4)	4 (2.6)	8 (1.8)
Doctorate degree	9 (6.2)	7 (4.9)	3 (2.0)	19 (4.3)
Other	1 (0.7)	0 (0)	0 (0)	1 (0.2)

GED, General Education Development.

showed no different interpretations. In the following reported analyses, we used the reduced sample according to the preregistered exclusions (see Online supplement for analyses without exclusions). Participants were 18 to 83 years old (mean = 44.1, SD = 14.0); 51.9% were men, 46.7% women, and 1.4% identified as non-binary or other; 60.2% had a Bachelor's degree or higher education. Table 4 provides an overview of the participants' characteristics. Due to multiple testing the alpha level for the following analyses was adjusted to 0.025. Perceptions of the new class of antibiotics by experimental condition are displayed in Figure 2.

Confirmatory analyses

In line with Hypothesis 1, perceptions about the new antibiotics were more positive in the *Optimistic news* condition compared with the *Control* condition, $t(287.61) = -3.99$, $P < 0.001$, $d = 0.47$. This suggests that participants who heard about the newly developed antibiotics perceived this discovery to be a solution to AMR and therefore had more optimistic perceptions of new antibiotics than participants in the *Control* condition.

We found support for Hypothesis 2 that perception of new antibiotics was less positive in the *Cautious news* condition compared with the *Optimistic news* condition, $t(293.19) = 3.14$, $P = 0.002$, $d = -0.37$, suggesting that messages emphasizing prudent antibiotic use can mitigate unrealistically optimistic perceptions.

Exploratory analyses

There were no differences between the conditions in participants' threat appraisal and coping appraisal (see Online supplement for detailed test statistics). However, there was a significant difference between the conditions in participants' expectations of the availability of the new antibiotics: expected availability was higher in the *Optimistic news* versus *Control* condition, $t(282.14) = 2.48$, $P = 0.014$, $d = 0.29$, and lower in the *Cautious news* versus *Optimistic news* condition, $t(284.55) = -2.39$, $P = 0.017$, $d = -0.28$.

Discussion

In Study 1, describing AMR reduced participants' antibiotic expectations in a hypothetical primary care setting, even when new antibiotics were presented as a potential solution. However, we did not find support for our hypothesis that learning about newly discovered antibiotics affects antibiotic expectations.

Nevertheless, the results suggest that perceptions about the potential role of new antibiotics in fighting AMR differ depending on the information provided. Specifically, adding information about the importance of prudent antibiotic use alongside the discovery of new antibiotics helped mitigate unrealistic perceptions of such new antibiotics.

We replicated and extended the results of Study 1 on participants' perceptions, showing that solely informing participants about newly discovered antibiotics exaggerates their perceptions of such new antibiotics as the panacea for AMR. However, combining reports about new antibiotics with information about the importance of prudent use mitigated a false sense of security.

We showed that optimistic messaging surrounding the discovery of a new class of antibiotics,[5,6] as seen in global newspaper

and online articles in January 2024, could undermine efforts to reduce or delay AMR. The false sense of safety when hearing about the newly developed antibiotics and their importance in addressing AMR may stem from the belief that technology can solve societal problems, similar to the overconfidence in technological solutions to the climate crisis. For example, communication about technological solutions to climate change has been linked to decreased support for mitigation efforts, especially when such technological advances are presented in a very optimistic fashion.[16,17] On the positive side, we found no negative effects of such communication on antibiotic expectations in a fictitious scenario of an acute illness. Nevertheless, the perception that AMR is 'solved' could have effects outside of a doctor's consultation, such as reduced support for antibiotic regulations and policies, as well as less cautious behaviour when encountering infectious diseases.

Other studies have not found a consistent link between communication about technological solutions for climate change and support for mitigation efforts.[18,19] Carrico *et al.*[19] proposed and found partial support for the Risk Salience Hypothesis, suggesting that highlighting technological solutions can increase mitigation support by emphasizing the problem's salience. This research indicates that the effect on mitigation support depends on how technological advances are communicated.[16,17,19] The most effective approach positions technology as part of the solution while emphasizing the need for additional mitigation strategies. Framing the technology 'as a small piece to solving a big puzzle' seems to be the best strategy to weaken this potential moral hazard.[17] This aligns with the messaging in our *Cautious news* condition, which discusses the discovery of new antibiotics while contextualizing the ongoing threat of AMR.

It is important to note that we observed a decrease in antibiotic expectations after participants read the newspaper article, which in all conditions included information on the threat of AMR. This supports previous findings that communicating about AMR helps to regulate patients' expectations.[14] The finding also indicates that patients' expectations can change based on rather minimal information and are not entirely dependent on the doctor's recommendation.

Limitations

Our studies have some limitations. First, they were only conducted with participants from the UK, a Western developed country where antibiotics are only accessible on prescription. Hence, it is not clear how our findings would apply to low- and middle-income countries (LMICs) and to countries where antibiotics can be purchased over the counter, or where they are difficult to access. However, if communication about AMR lowers expectations in these cases as well, it could also reduce actual antibiotic use in contexts without a doctor as intermediary. While expectations may not be the best measure, it would be valuable to explore whether newspaper articles influence perceptions and antibiotic intake in such contexts. Furthermore, participants with lower education levels were underrepresented in our sample. Although sensitivity analyses (see Online supplement) showed no significant changes in results when education was included as a moderator, both expectations to receive antibiotics and perceptions of the new antibiotics differed between education levels. This highlights the importance of considering education and other sociodemographic factors when communicating about complex medical topics.

Second, the use of vignettes with hypothetical scenarios and texts limits ecological validity. However, the information about new antibiotics was adapted from actual news articles from January 2024,[5,6] and all content was factually correct.

Conclusions

News about the development of new antibiotics can influence public perceptions of the threat of AMR. Therefore, it is important to balance communication to prevent creation of a false sense of safety regarding this medical discovery. Drawing parallels from climate change mitigation literature, the most effective strategy appears to be a combination of information about technological innovations while also emphasizing the importance of prudent behaviour. This may help in mitigating negative behavioural effects (e.g. for policy support or preventive behaviour) of such promising discoveries.

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No conflicts of interest to declare.

Author contributions

Conceptualization and methodology: all authors. Writing—original draft: Rian Gross, Miroslav Sirota, Robert Böhm. Writing—review and editing: all authors.

Supplementary data

Online supplement is available as Supplementary data at *JAC-AMR* Online.

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