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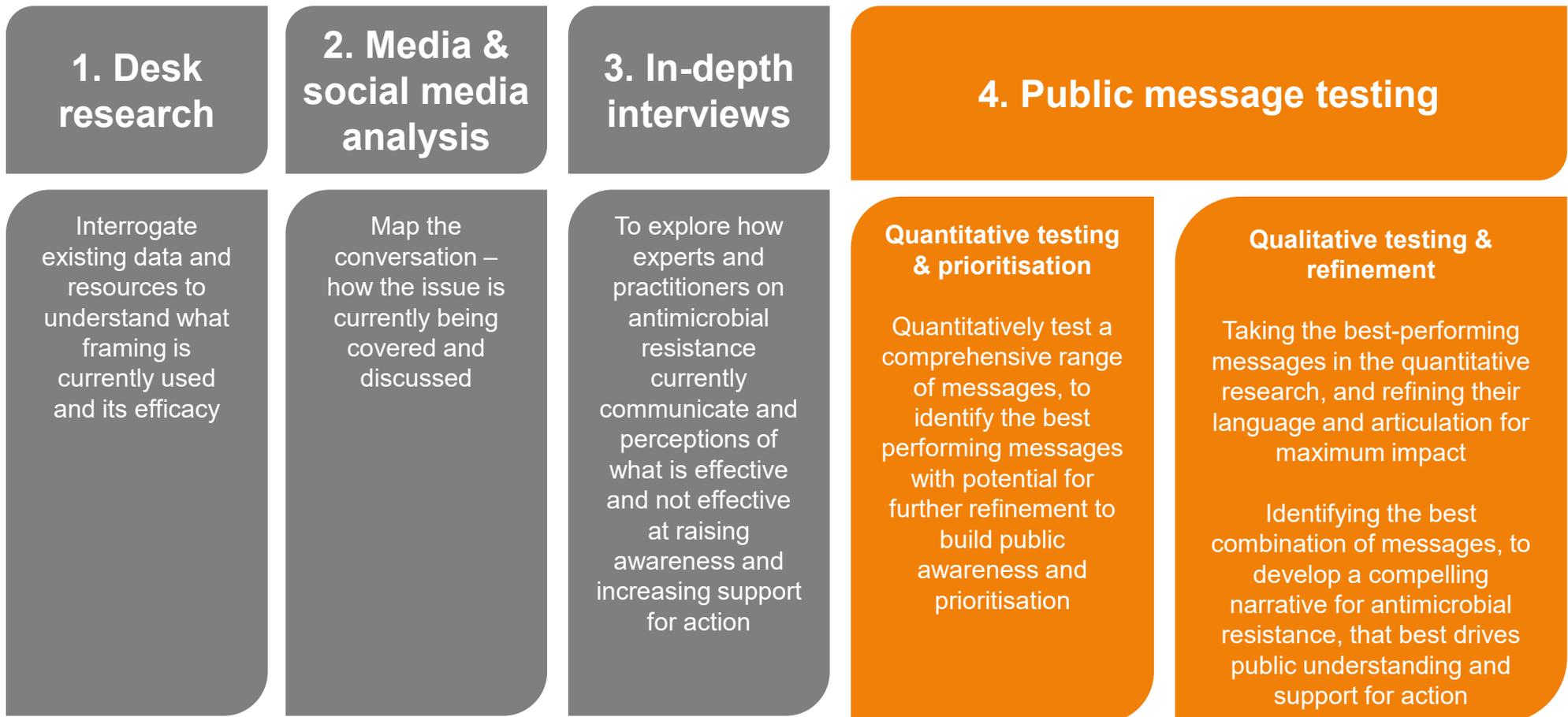
wellcome

Reframing resistance

Appendix C – Public Testing

Objectives: Public message testing

To test and evaluate the performance of different messages and frames, and to develop a new narrative for antimicrobial resistance



A. Quantitative testing & prioritisation

Quantitative testing & prioritisation – overview

Quantitative online surveys of the public were designed to identify the best-performing messages – both overall, as well as any notable differences between demographic, behavioural and attitudinal groups – in order that qualitative research could develop and refine them into a final set of messages and narrative for antimicrobial resistance.

Benchmark awareness & perceptions

- Measure existing levels of awareness and understanding around:
 - Health and science terms generally
 - Antimicrobial resistance terminology
 - Usage of antibiotics
 - The concept of antimicrobial resistance – what it is, and the perceived significance of the threat posed

Test messages

- Identify the messages that are most and least effective at increasing public understanding and support for action on antimicrobial resistance
- Highlight considerations for developing messages further in qualitative research

Global vs group-specific targeted messaging

- Evaluate the best performing messages at a global level, as well as analysing message performance by specific sub-groups:
 - Demographics – age, gender, education, country
 - Behaviours – usage and understanding of antibiotics
 - Attitudes – perceptions of antimicrobial resistance as a significant health issue

Quantitative testing & prioritisation – methodology

Methodology:

- Online quantitative survey of the public in seven countries (UK, US, Germany, Japan, India, Thailand, Kenya). Fieldwork dates: June 2019.

Audience:

- Nationally representative sample of adults by age, gender and region in US, UK, Germany, India, Thailand, Japan. Panel population representative sample of adults by age, gender and region in Kenya.

Sample profile & implications for analysis:

- An online survey by its nature will capture a more online and connected audience – a difference that is particularly acute in countries from the Global South. One key implication for this research was that the sample was more educated than a truly nationally representative sample – significantly so in the Global South:

	UK	US	DE	JP	IN	TH	KY
Non-degree	75%	50%	73%	50%	12%	27%	36%
Degree	25%	50%	27%	50%	88%	73%	64%
Actual tertiary education %*	15%	27%	13%	19%	5%	10%	3%

- This research was designed to identify the most effective framing of the issue for the public (and particularly the engaged public), to increase the effectiveness of communications on antimicrobial resistance, and to push antimicrobial resistance up the agenda to help galvanise policy action. Testing messages among a more 'engaged public' supports this objective, as they are more likely to engage in conversation on the issue – particularly in the Global South.
- When analysing results, particularly when comparing results geographically, it is important to take into account cultural differences in response patterns. Extensive academic research has shown that response styles vary between different countries due to cultural differences. E.g. in this study respondents in Japan were more likely give the answer 'don't know' than respondents in other countries. When analysing the findings, these differences have been taken into account.

Country	N-size	Margin of error at 95% confidence level
UK	2,023	±2.18%
US	2,040	±2.17%
Germany	2,010	±2.19%
Japan	2,057	±2.17%
India	2,020	±2.19%
Thailand	1,013	±3.08%
Kenya	1,006	±3.09%
Total	12,169	±0.89%

*Percentage shown is share of the population with completed tertiary education, aged +15 yrs. Source: Max Roser and Esteban Ortiz-Ospina (2019) - "Tertiary Education". Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/tertiary-education>' [Online Resource]

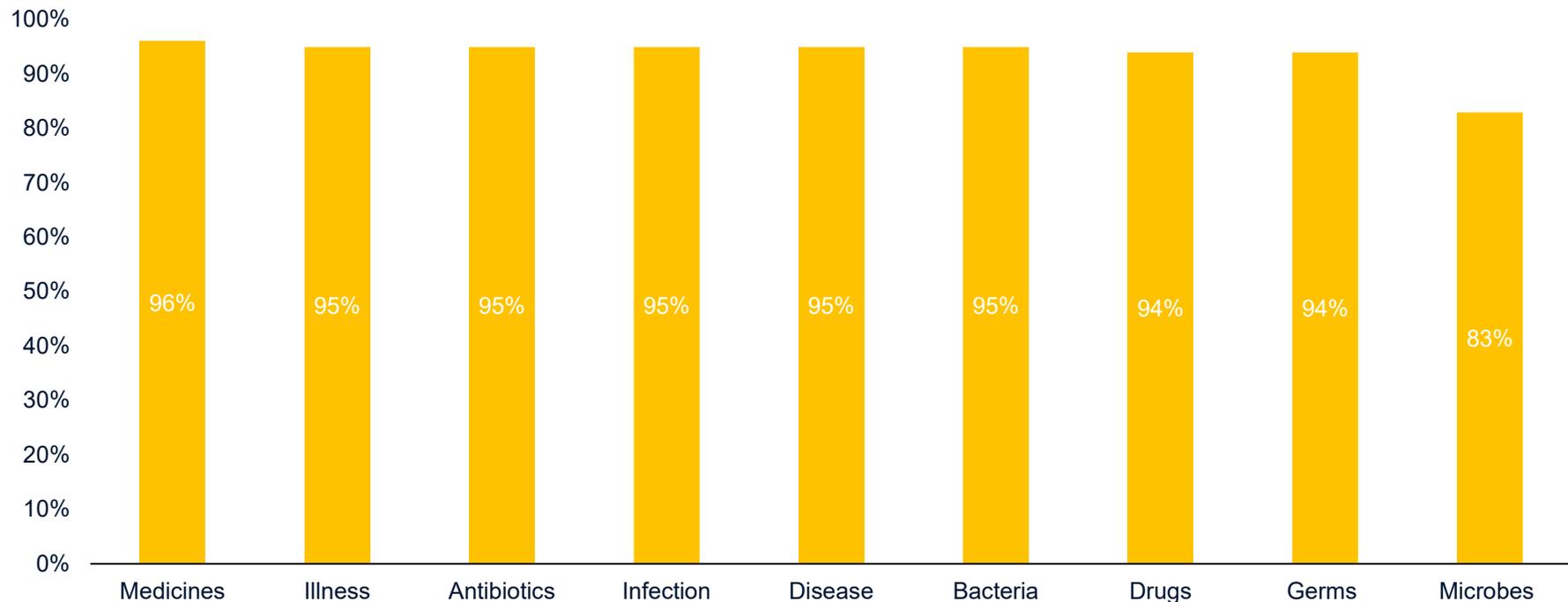
A. Quantitative testing & prioritisation

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i. Understanding & usage of antibiotics

Reported awareness of health terms

- There was broad reported awareness of terms relating to diseases and medicines across all countries, with the exception of the term 'microbes'.

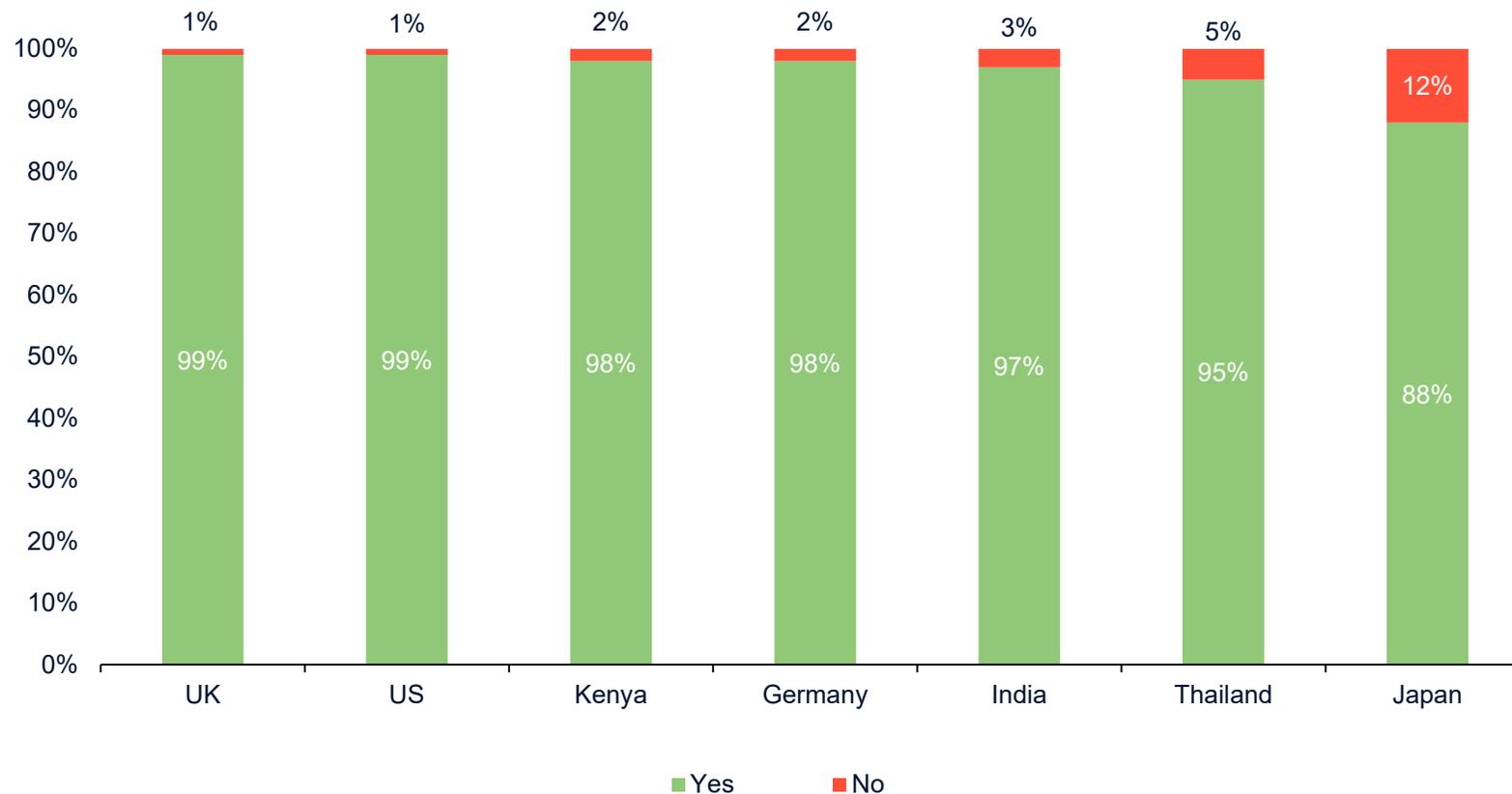


Q: Have you heard of any of the following terms? (% answering 'yes')

- The term 'microbes' was least likely to be recognised in Thailand (69%), India (72%) and Kenya (74%).
- Awareness of all terms was low in India compared with other countries.

Reported knowledge of antibiotics

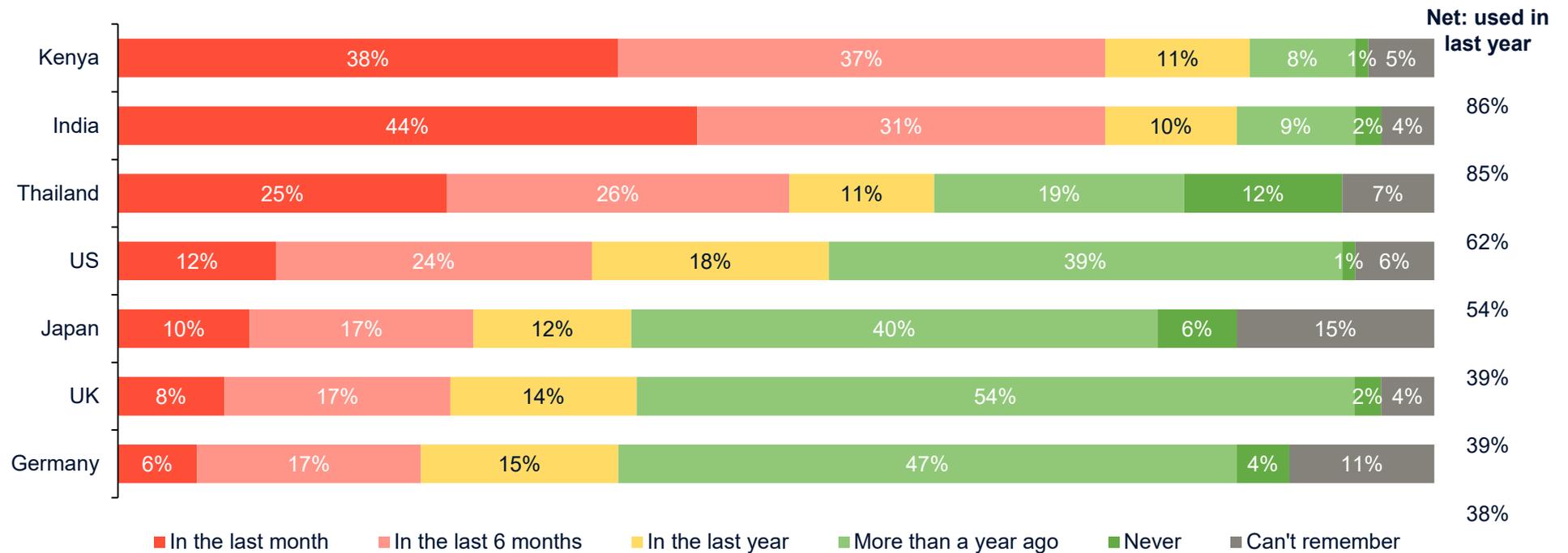
- There was high reported knowledge of what antibiotics are across all countries, although knowledge was relatively lower in Japan.
- This may support the hypothesis that most people have heard of antibiotics as a type of medicine, but that they are unclear on how antibiotics can and should be used (tested further in the qualitative research).



Q: Do you know what antibiotics are?

Reported use of antibiotics

- People in the Global South countries – Kenya, India and Thailand – were significantly more likely to report having used antibiotics in the last year than people in the Global North. However, given misunderstandings around what antibiotics are, these findings should be treated with caution.

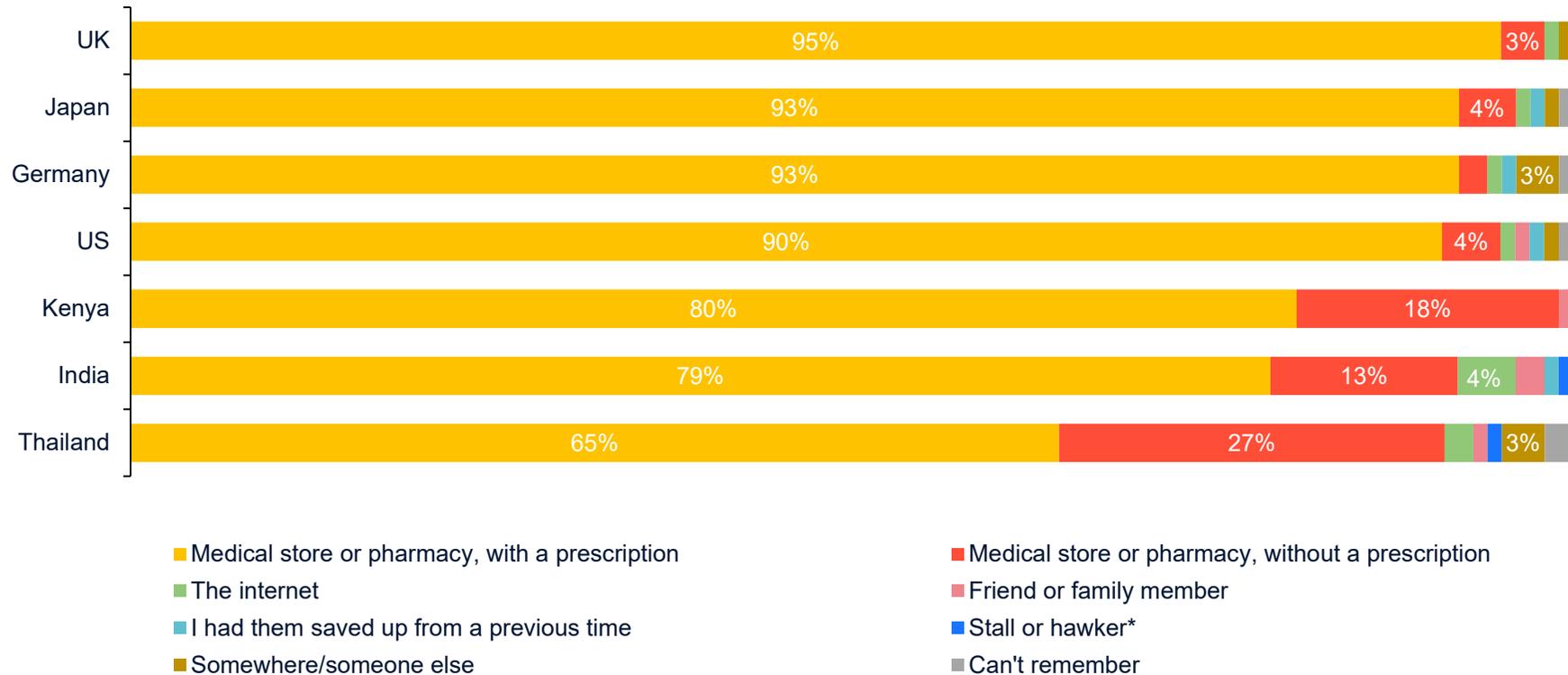


Q: When did you last take antibiotics?

- In the UK, US, India and Thailand, people with low antibiotic understanding were significantly more likely than those with higher understanding to report that they had taken antibiotics in the past year.

Reported source of antibiotics

- A majority in all countries reported having obtained antibiotics with a prescription. However, the proportion was lower in the Global South compared to the Global North.

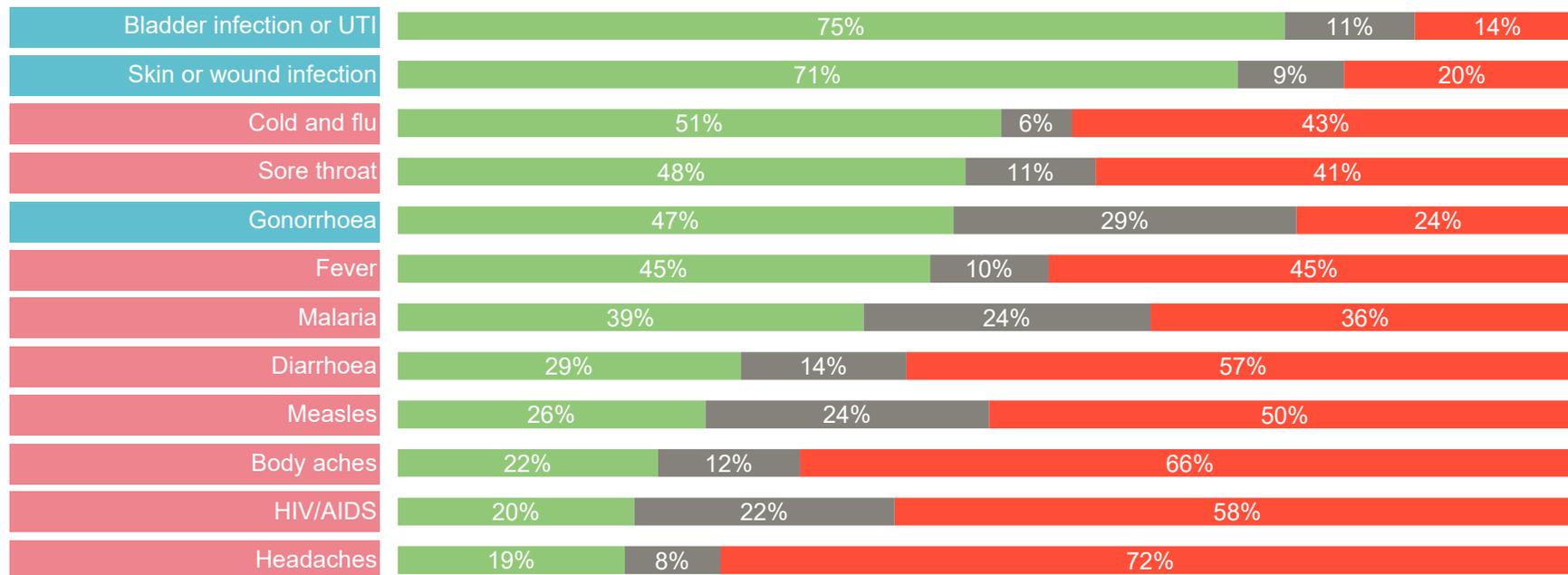


Q: Thinking back to when you last took antibiotics, where did you get the antibiotics from?

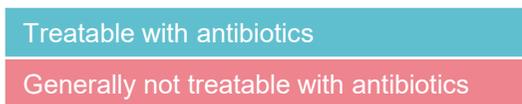
- Across demographic groups, there was little variation in where people source antibiotics.
- In several countries (UK, US, Germany, India), people with a high antibiotic understanding were more likely than those with lower understanding to have obtained antibiotics with a prescription.

Understanding of what antibiotics can treat

- There was significant misunderstanding of what antibiotics can treat.
- Although large majorities of the public could correctly identify that antibiotics can be used to treat certain conditions (UTIs, skin/wound infections), there was less certainty regarding Gonorrhoea. Many people also wrongly stated that antibiotics can be used against typically non-bacterial infections, like colds and sore throats, and other conditions.



Key:



■ Yes ■ Don't know ■ No

Q: Which of these conditions do you think can be treated with antibiotics?

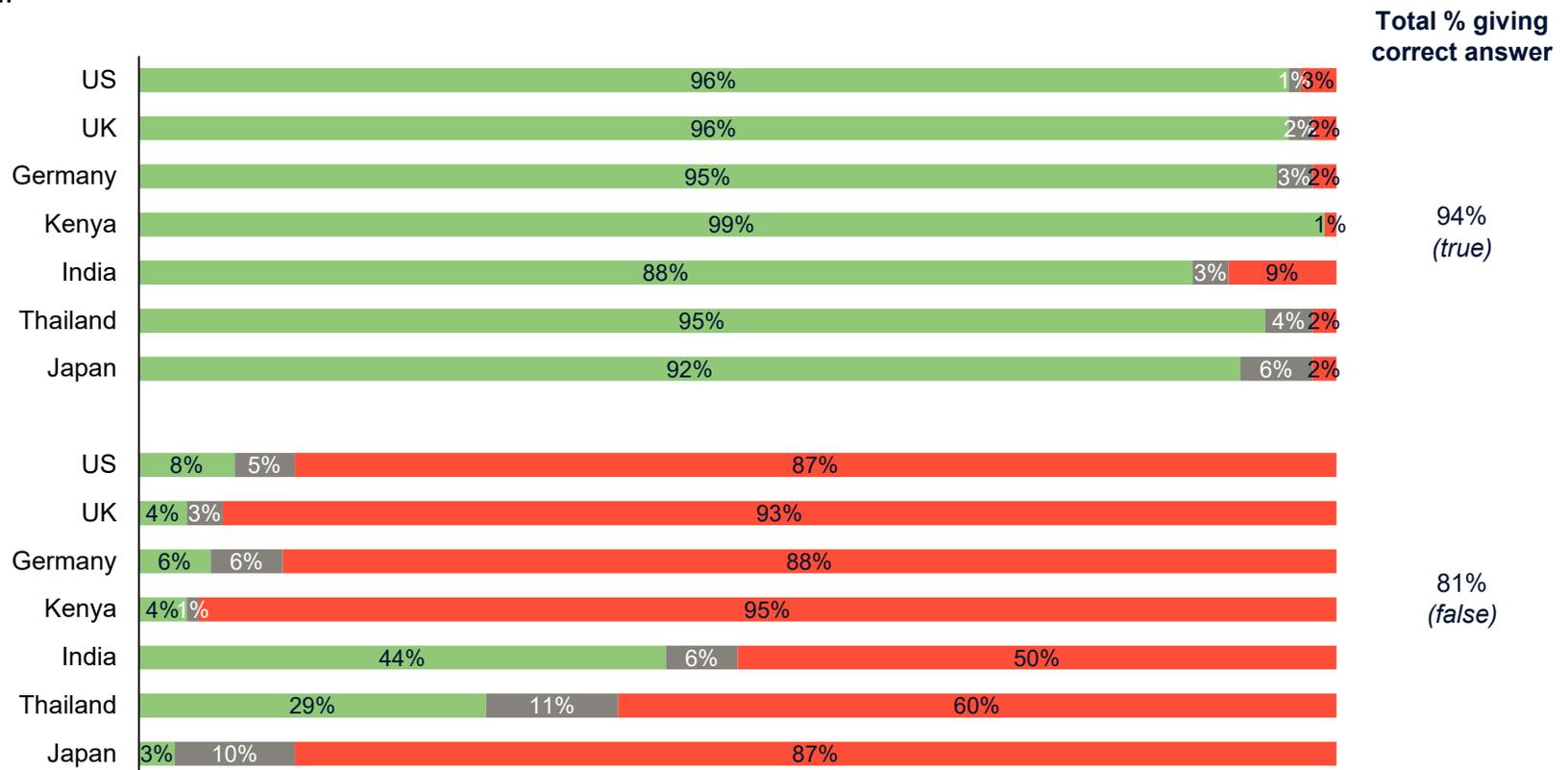
- Misconceptions were particularly prevalent in India, Kenya and Thailand – the countries in which self-reported antibiotic use was highest.

Understanding of appropriate use of antibiotics (1/2)

- The extent of misconceptions around the appropriate use of antibiotics varied significantly between countries.
- There was widespread appreciation across countries that it is important to consult a qualified healthcare professional before taking antibiotics.
- However, there was more confusion in Thailand and India over whether antibiotics prescribed to others for similar symptoms should be taken.

It is important to consult a qualified healthcare professional (doctor, nurse, pharmacist) before taking antibiotics

It's okay to use antibiotics that were previously given to a friend or family member, as long as they were used to treat the same illness



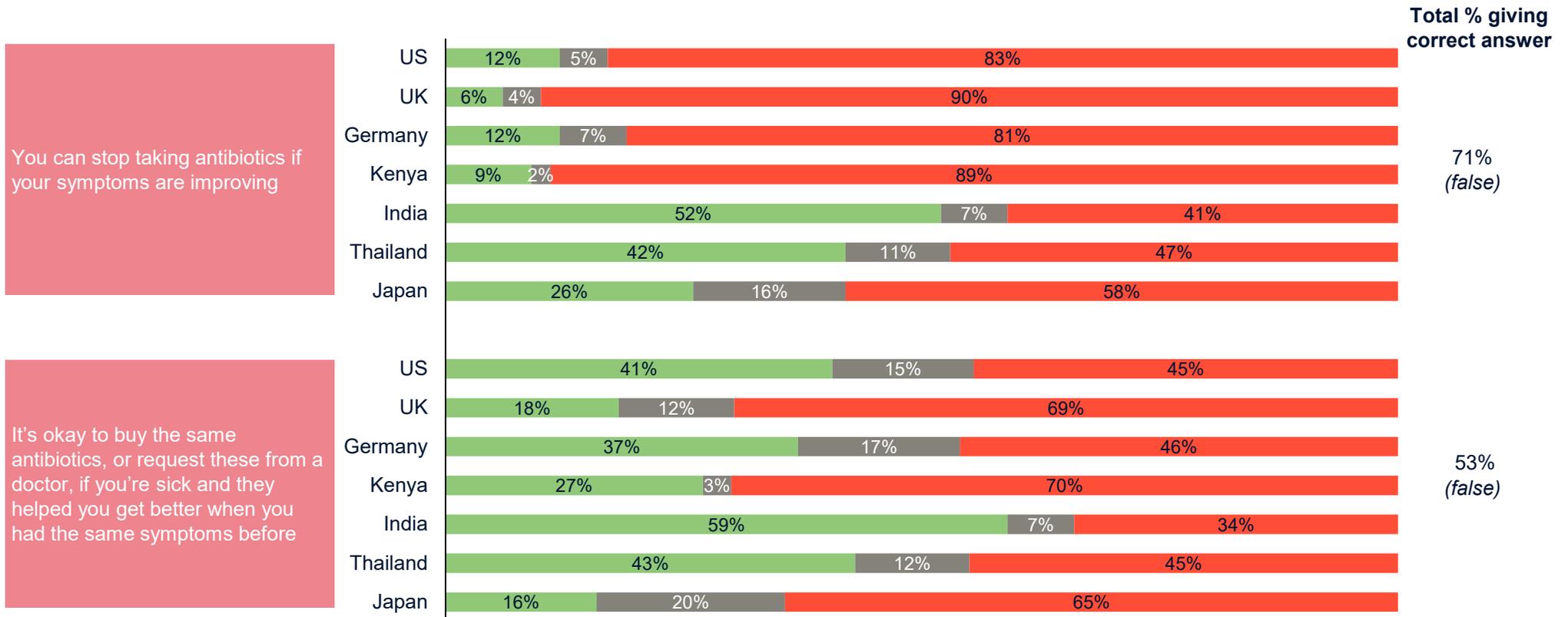
Key: True False

True Don't know False

Q: Please indicate whether you think the following questions are true or false.

Understanding of appropriate use of antibiotics (2/2)

- There was confusion across all countries around whether it is acceptable to request the same antibiotics again for the same symptoms as previously suffered.



Key: True False

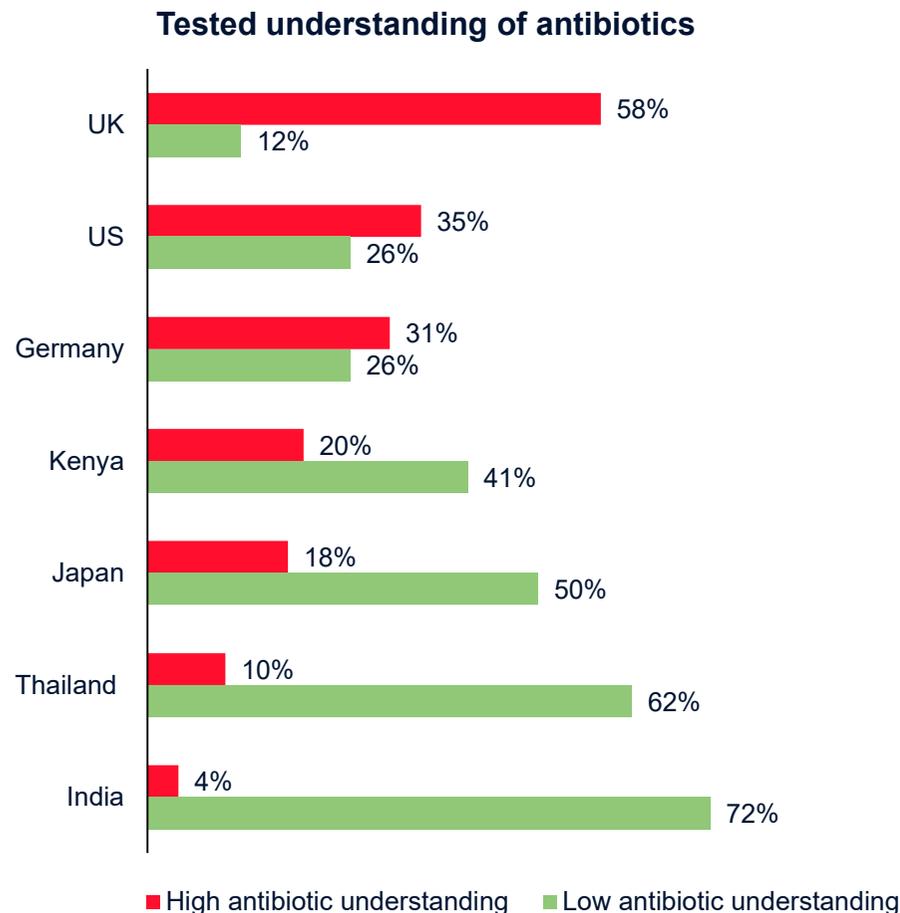
True Don't know False

Q: Please indicate whether you think the following questions are true or false.



Antibiotic understanding

- Despite high *reported* awareness of antibiotics, *tested* 'antibiotic understanding' differed significantly between countries.
- Understanding was highest in the Global North (most notably in the UK, but also in the US and Germany).
- Understanding was lowest in the Global South, most notably in Thailand and India.



Defining 'antibiotic understanding'

- To ensure terminology and messaging resonates among all groups, findings were analysed by levels of 'antibiotic understanding'.
- This was based on *tested* understanding, rather than *reported* understanding in order to ensure a more accurate assessment of true understanding.
- The calculation of level of understanding was based on responses to two questions in the survey
 - Q. Which of these conditions do you think can be treated with antibiotics? (shown on slide 11)
 - Q. Please indicate whether you think the following questions are true or false (statements relating to antibiotic use, shown on slides 12 and 13)
- Survey respondents were classified as having 'high antibiotic understanding' if at least three quarters of their responses to both questions were correct.
- Respondents were classified as having 'low understanding' if less than half of their responses to both questions were correct.

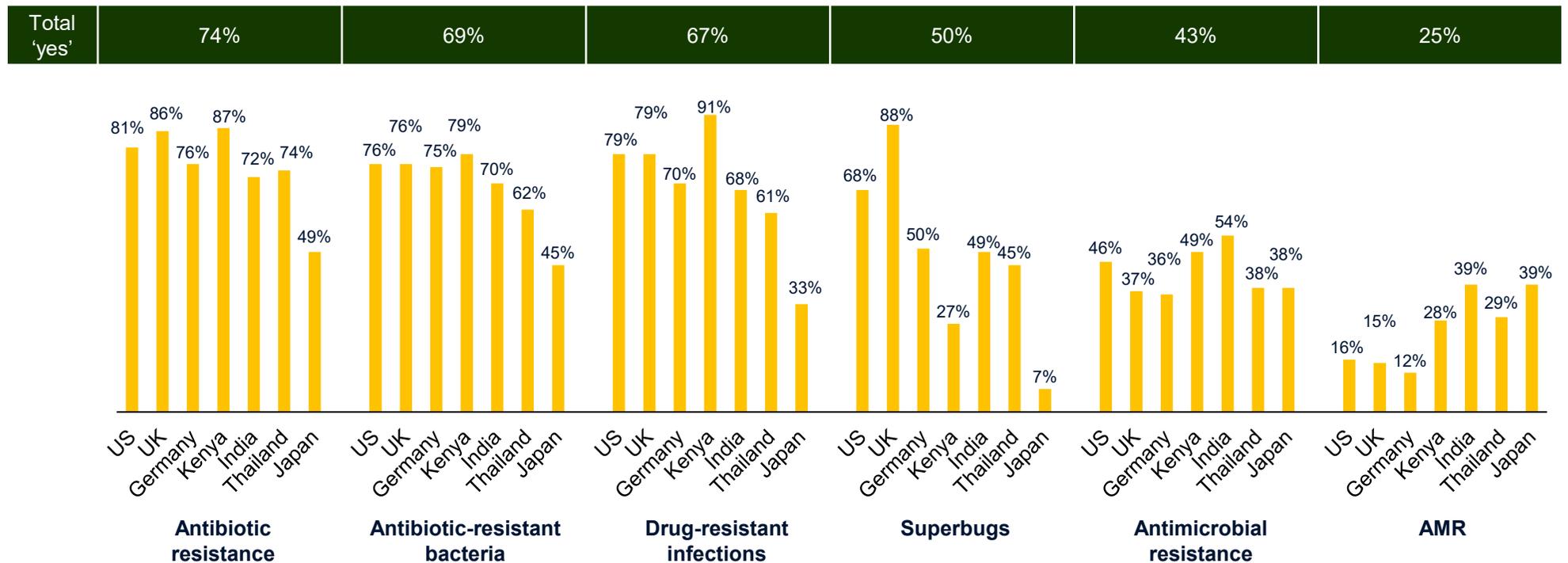
A. Quantitative testing & prioritisation

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**ii. Awareness & understanding
of antimicrobial resistance**

Reported awareness of antimicrobial resistance terms

- ‘Antibiotic resistance’ was the term most likely to have been heard across countries (whether this reflects recognition of the phrase or simply the individual words is tested in the qualitative research).
- Recognition of the terms ‘antibiotic-resistant bacteria’ and ‘drug-resistant infections’ was also relatively high.
- Familiarity with the term ‘superbugs’ varied significantly, with high awareness in the UK and US, but medium or low awareness in all other countries.



Q: Have you heard of any of the following terms?

- Respondents with high antibiotic understanding were more likely to report having heard of all terms, with the exception of the acronym ‘AMR’.

Reported source of awareness of antimicrobial resistance terms

- People in the Global North were more likely to have heard of these terms through the media. For the Global South, healthcare professionals were the primary source.
- In all countries, healthcare professionals or the media were cited as the two most frequent sources driving awareness of terms.
- However, this does not mean that these sources were the primary sources of information on healthcare, nor that they were the most trusted. Rather, findings indicate that the media and healthcare professionals are potential current drivers of awareness of antimicrobial resistance.

	US	UK	Germany	Kenya	India	Thailand	Japan
Antibiotic resistance	Media (55%)	Media (70%)	Media (63%)	HCP (53%) Media (47%)	HCP (60%) Media (56%)	HCP (70%)	Media (70%)
Antibiotic-resistant bacteria	Media (58%)	Media (72%)	Media (62%)	HCP (58%)	HCP (58%) Media (54%)	HCP (67%)	Media (70%)
Drug-resistant infections	Media (60%)	Media (74%)	Media (59%)	HCP (55%) Media (48%)	HCP (56%) Media (53%)	HCP (70%)	Media (70%)
Superbugs	Media (76%)	Media (82%)	Media (67%)	Media (60%)	Media (63%)	HCP (62%)	Media (67%)
Antimicrobial resistance	Media (54%)	Media (67%)	Media (56%)	HCP (48%) Media (48%)	Media (55%) HCP (55%)	HCP (68%)	Media (67%)
AMR	Media (49%) HCP (41%)	Media (63%)	Media (46%) HCP (38%)	HCP (55%) Media (51%)	Media (57%) HCP (57%)	HCP (66%)	Media (71%)

Q: Where did you hear about the term? (most frequently selected source(s) in each country)

- Older people were more likely than younger people to have heard all terms via the media, while younger people were more likely to have heard these terms from a healthcare professional.

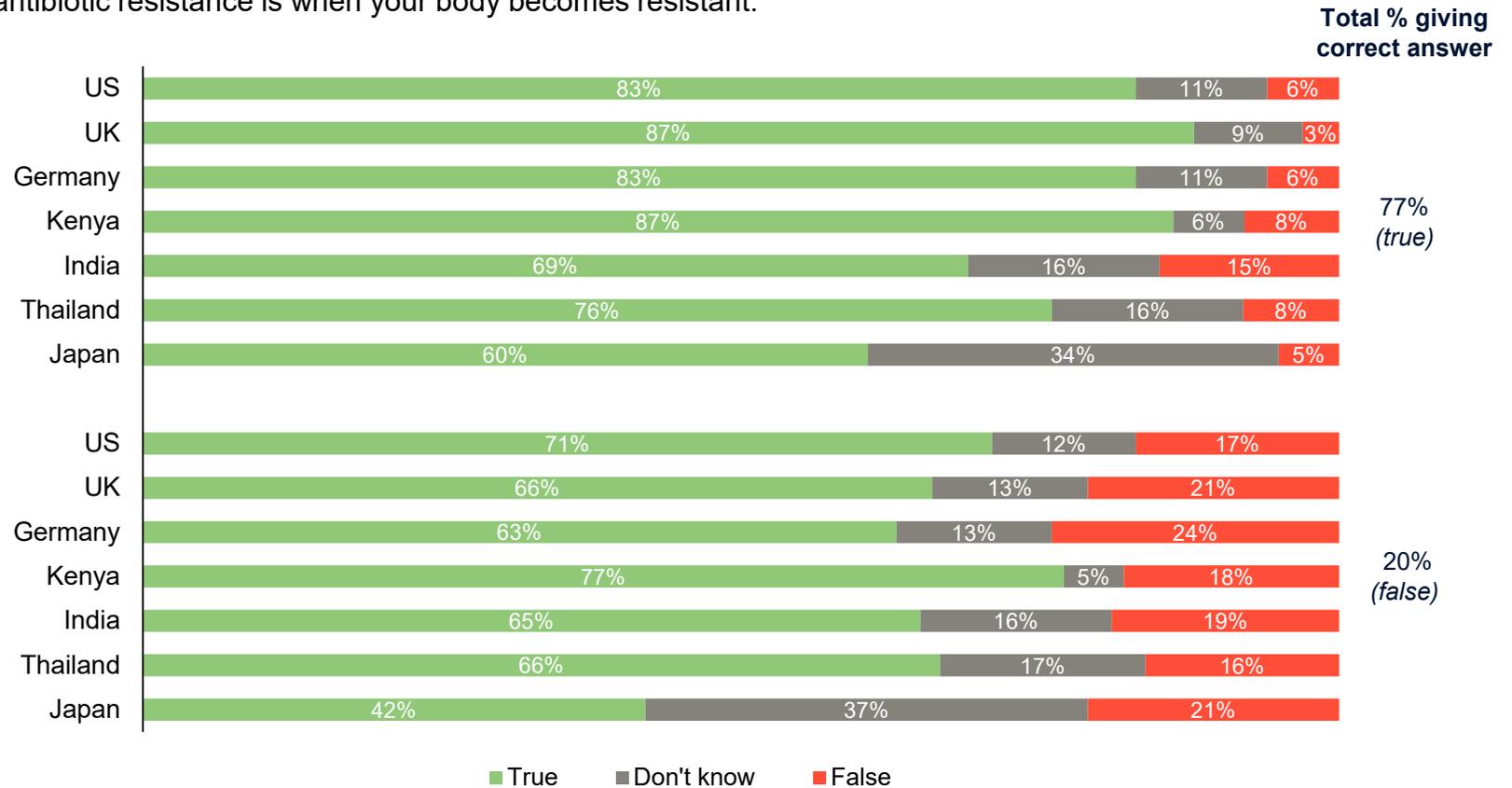
Understanding of antibiotic resistance (1/2)

- There was significant confusion over the nature of resistance – majorities in all countries said that antibiotic resistance is about bacteria becoming resistant, and significant majorities also said that antibiotic resistance is when your body becomes resistant.

Antibiotic resistance occurs when bacteria become resistant to antibiotics and they no longer work as well

Antibiotic resistance occurs when your body becomes resistant to antibiotics and they no longer work as well

Key: True False



Q: Please indicate whether you think the following statements are true or false. [Methodological note: all respondents asked both statements; order was rotated]

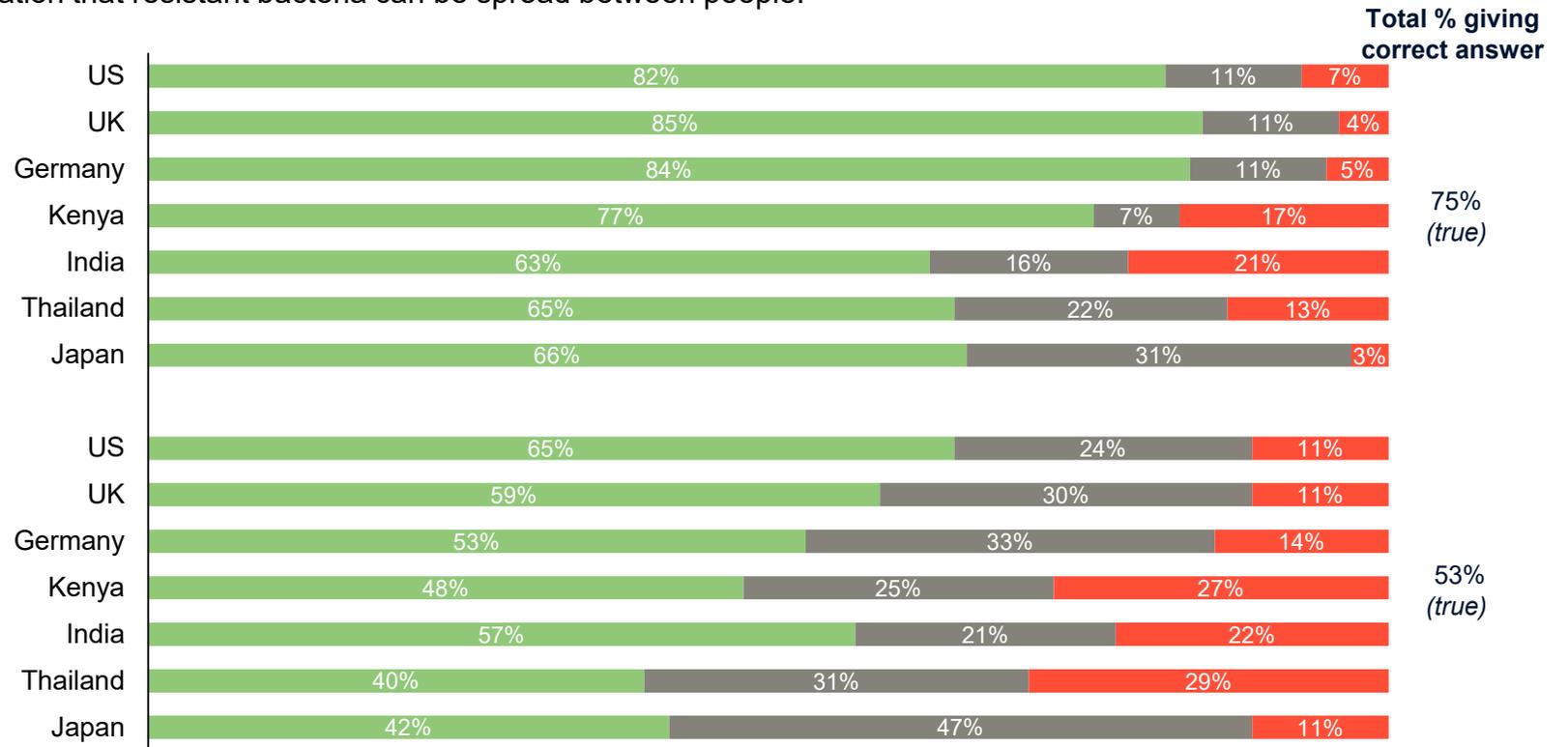
- NB: Although other terms were tested, 'antibiotic resistance' was used to refer to antimicrobial resistance later through the main body of the survey on the basis of findings from conversation mapping and feedback from interviews with experts and practitioners on antimicrobial resistance.

Understanding of antibiotic resistance (2/2)

- There was broad appreciation – when presented with the statement – that antibiotic resistance makes infections difficult or impossible to treat.
- There was lower appreciation that resistant bacteria can be spread between people.

If bacteria are resistant to antibiotics, it can be very difficult or impossible to treat the infections they cause

Bacteria which are resistant to antibiotics can be spread from person to person



Key: True False

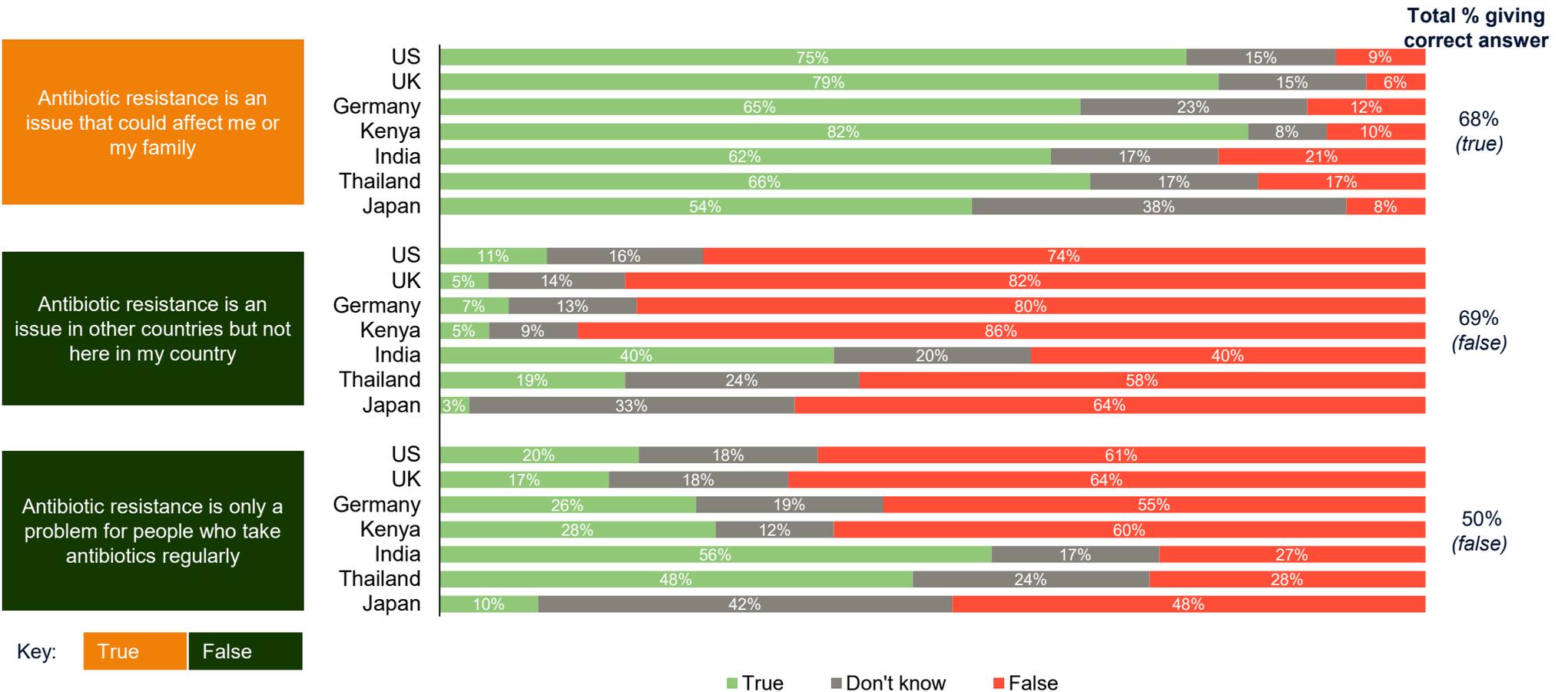
True Don't know False

Q: Please indicate whether you think the following statements are true or false.

- Those with high antibiotic understanding and those who rated antibiotic resistance as a significant threat were significantly more likely to say both statements are true than those with low understanding and those who did not rate it as a significant threat.

Understanding of who is affected by antibiotic resistance

- Across countries, there were widespread misconceptions over who antibiotic resistance affects. Misconceptions were most prevalent in Thailand and India – where misconceptions about appropriate antibiotic use were also highest.



Q: Please indicate whether you think the following statements are true or false.

Global health threats – comparison

- Large majorities rated antibiotic resistance as a significant health threat across all countries.
- However, global health threats is a crowded landscape, and antibiotic resistance tended to be viewed as a secondary threat compared to other major health concerns, such as cancer and air pollution.

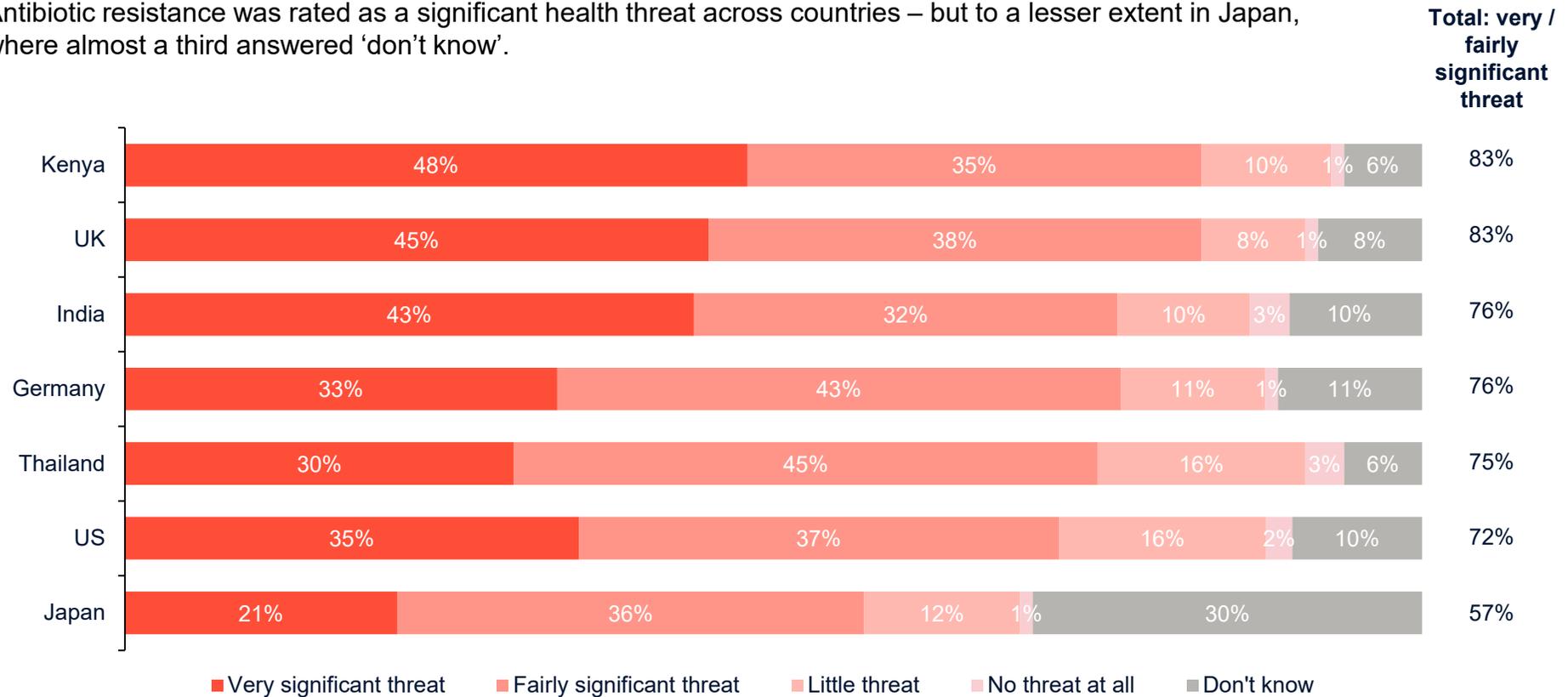
	US	UK	Germany	Kenya	India	Thailand	Japan
1 st	Cancer 89%	Cancer 88%	Air pollution 85%	Cancer 97%	Air pollution 89%	Air pollution 93%	Air pollution 83%
2 nd	Lack of access to clean water 85%	Air pollution 86%	Lack of access to clean water 85%	Air pollution 97%	Lack of access to clean water 87%	Epidemics & pandemics 91%	Cancer 77%
3 rd	Air pollution 83%	Antibiotic resistance 83%	Cancer 84%	Lack of access to clean water 96%	Cancer 83%	Cancer 90%	Lack of access to clean water 75%
4 th	Epidemics & pandemics 76%	Lack of access to clean water 82%	Antibiotic resistance 76%	Epidemics & pandemics 89%	Antibiotic resistance 76%	Lack of access to clean water 87%	Epidemics & pandemics 71%
5 th	Antibiotic resistance 72%	Epidemics & pandemics 78%	Epidemics & pandemics 70%	Antibiotic resistance 83%	Epidemics & pandemics 72%	Antibiotic resistance 75%	Antibiotic resistance 57%

Q: How significant or otherwise do you consider the threat to the world today from each of the following issues? (threats ranked based on % rating each issue as a very/fairly significant threat)

- Across countries, antibiotic resistance was ranked highest in the UK – reflecting its prominence in the media and social media analysis compared to other countries.
- There was a broadly consistent picture by sub-group (demographic, behavioural and attitudinal groups), with antibiotic resistance rated as a secondary threat compared to the other health concerns tested.

Global health threats – antibiotic resistance

- Antibiotic resistance was rated as a significant health threat across countries – but to a lesser extent in Japan, where almost a third answered ‘don’t know’.



Q: How significant or otherwise do you consider the threat to the world today from each of the following issues? (showing responses for antibiotic resistance)

- Older people and those with high antibiotic understanding were more likely to view antibiotic resistance as a significant health threat than younger groups or those with a low understanding.
- While antibiotic resistance was considered important, the public tended to view other risks as being more acute – cancer, air pollution and clean water were all rated by majorities (50%+) as a 'very significant' threat, compared to 36% for antibiotic resistance.

A. Quantitative testing & prioritisation

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iii. Message testing

Message testing approach

This section sets out the results of the quantitative message testing.

- For a full explanation of the process by which the frames and messages were developed for testing, please see [Appendix A: Approach and methodology \(Section 2 – Development of frames & messages\)](#).
- Appendix A also sets out the messages developed and tested at each stage of the project.

For the purposes of testing, messaging on antimicrobial resistance was split into three key themes:

What is happening	Messages explaining the problem of antimicrobial resistance
Why it is happening	Messages communicating the reasons why antimicrobial resistance is happening
Impact	Messages communicating the current or potential impact of antimicrobial resistance

What is happening – messages tested

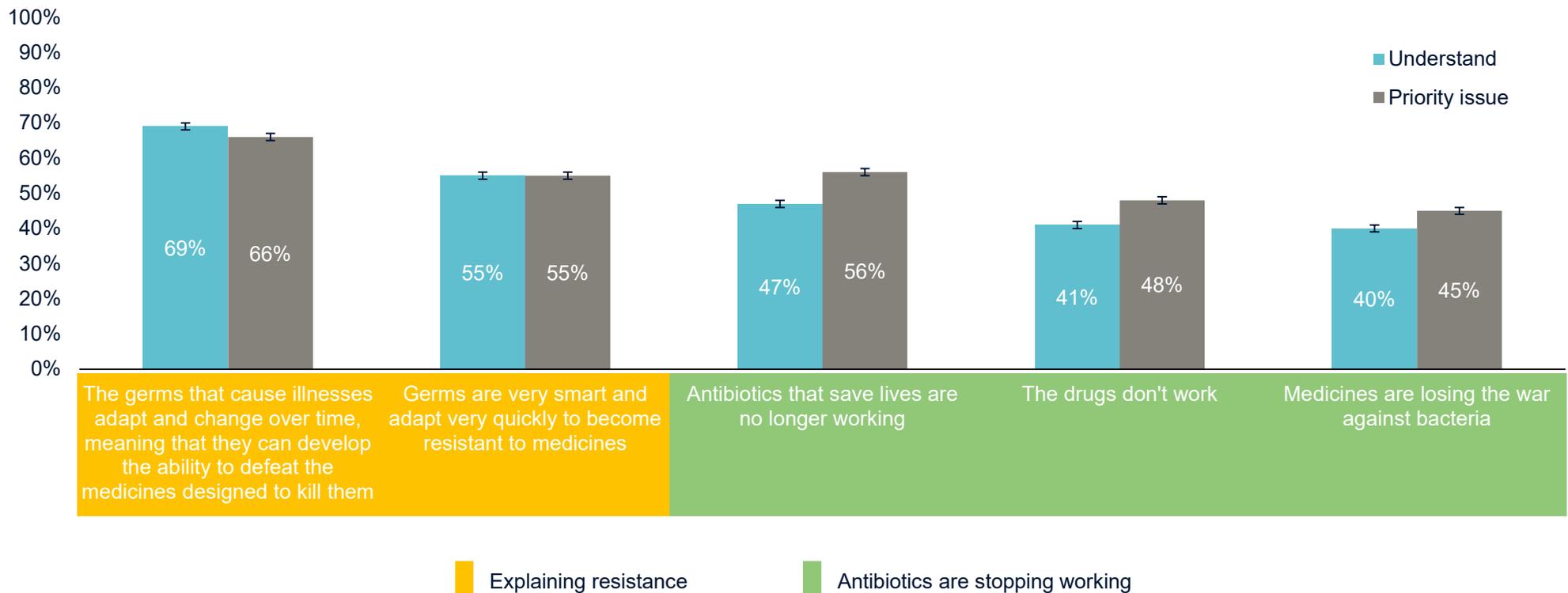
The below messages were tested for their:

- Efficacy in helping people understand what is happening with antibiotic resistance.
- Ability to help people feel that antibiotic resistance is a priority issue to be addressed – i.e. to increase support for action on antibiotic resistance.

Category	Message
Antibiotics are stopping working	Antibiotics that save lives are no longer working
	The drugs don't work
	Medicines are losing the war against bacteria
Explaining resistance	The germs that cause illnesses adapt and change over time, meaning that they can develop the ability to defeat the medicines designed to kill them
	Germs are very smart and adapt very quickly to become resistant to medicines

What is happening – global resonance

- Accessible factual explanations of antibiotic resistance were more effective at raising both understanding and prioritisation of the issue.
- This was consistent across all demographic, behavioural and attitudinal groups – being favoured equally by gender, age, antibiotic understanding and perceived significance of the threat from antibiotic resistance.



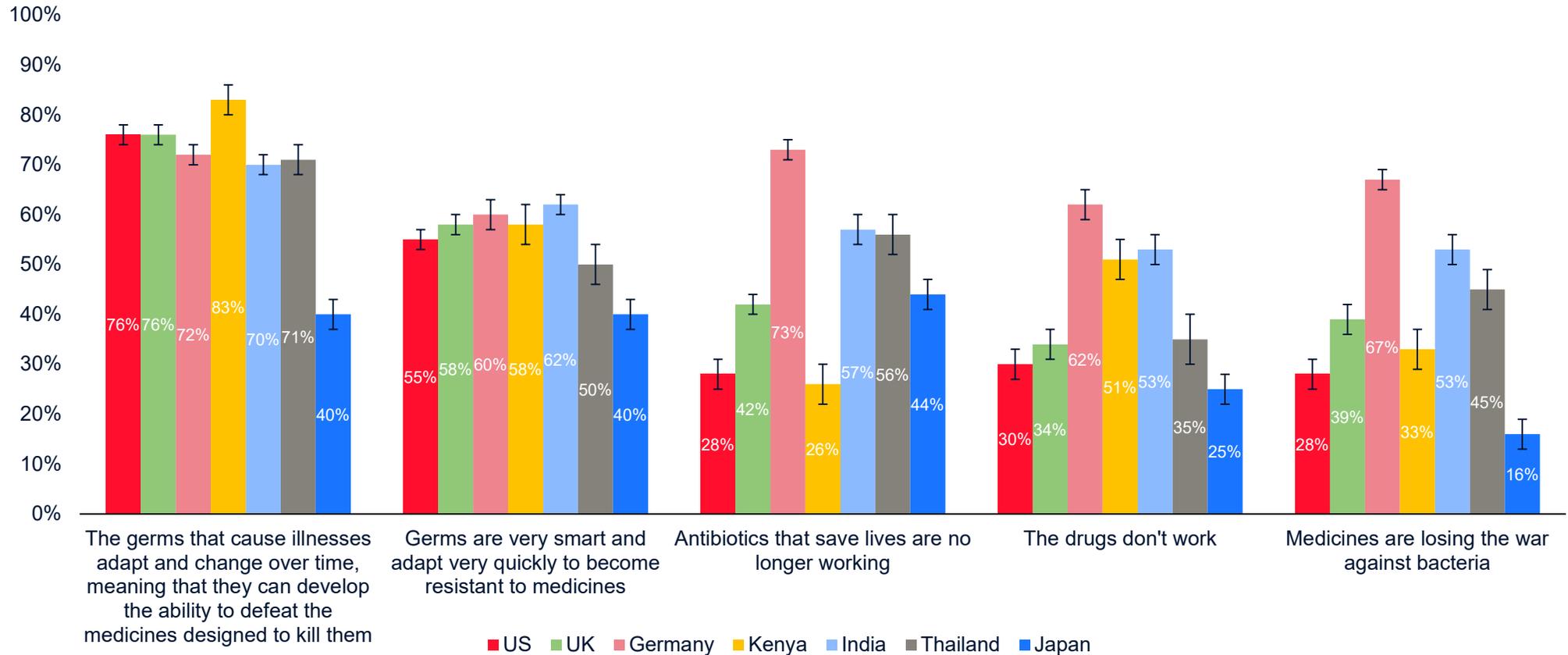
Q: To what extent does this statement help you understand what is happening with antibiotic resistance?

Q: To what extent does this statement make you feel that antibiotic resistance is a priority issue to be addressed?

(Showing nets - % great / some extent minus % a little / not at all)

What is happening – country resonance

- The longer accessible factual explanation of antibiotic resistance was consistently rated as compelling across countries.



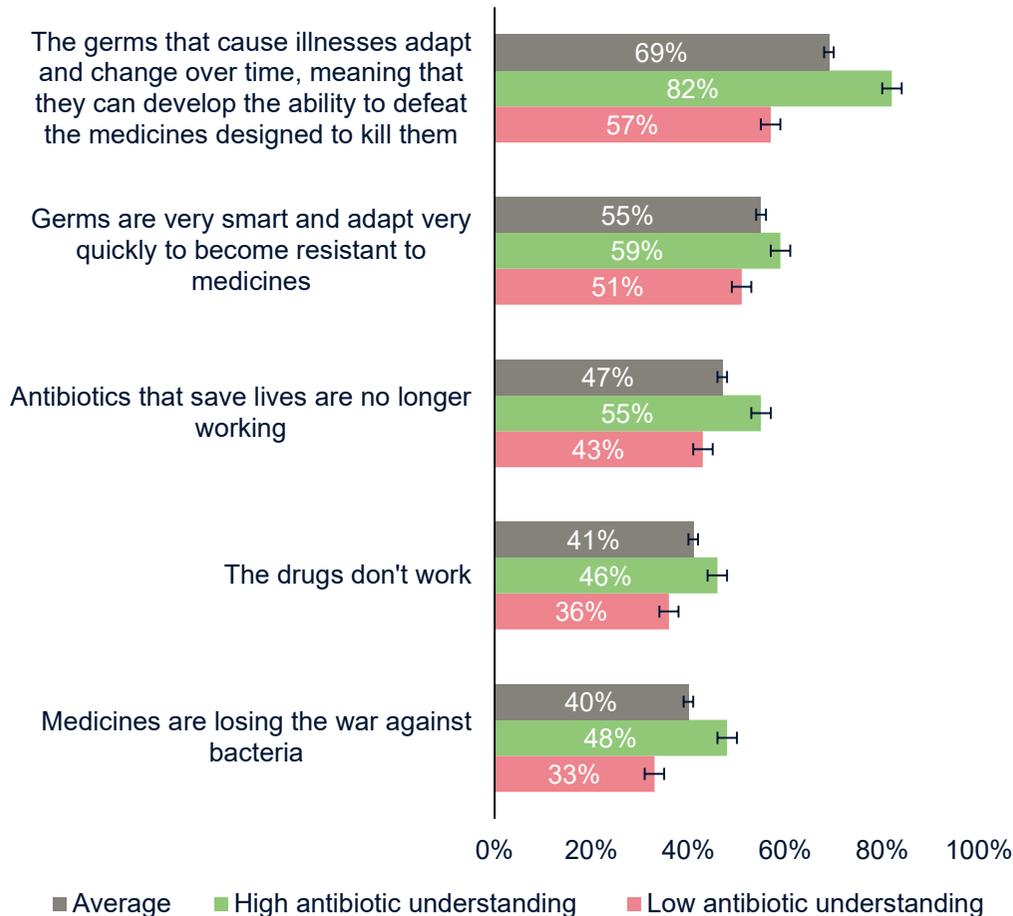
Q: To what extent does this statement help you understand what is happening with antibiotic resistance?

(Showing nets - % great / some extent minus % a little / not at all)

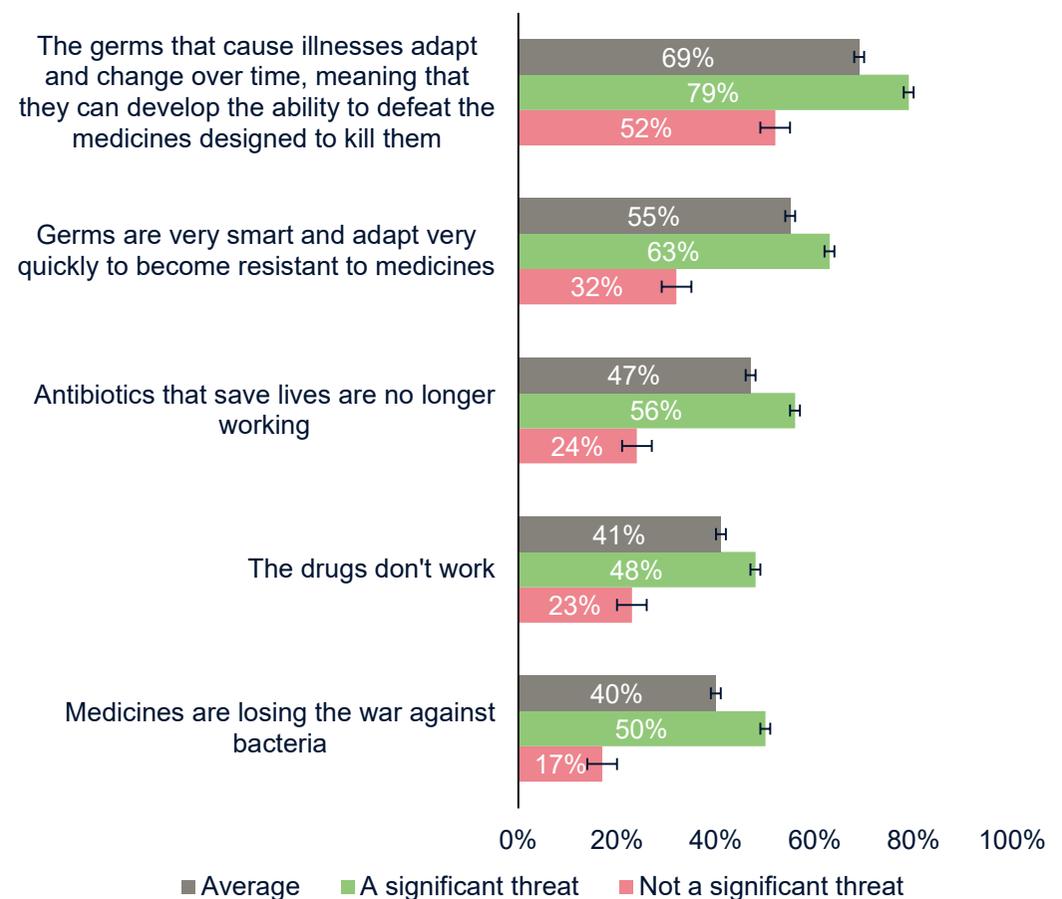
What is happening – wider resonance

- The preference for a full scientific explanation was consistent across all groups, including those with different levels of antibiotic understanding and those with different perceptions of how significant a threat antibiotic resistance is.
- People with low antibiotic understanding or who do not consider antibiotic resistance to be a significant issue were less likely to rate each of the messages as convincing but followed the same pattern of preference for the messages overall.

Results by antibiotic understanding



Results by perceived significance of threat from antibiotic resistance



Q: To what extent does this statement help you understand what is happening with antibiotic resistance? (Showing nets - % great / some extent minus % a little / not at all)

Why it is happening – messages tested

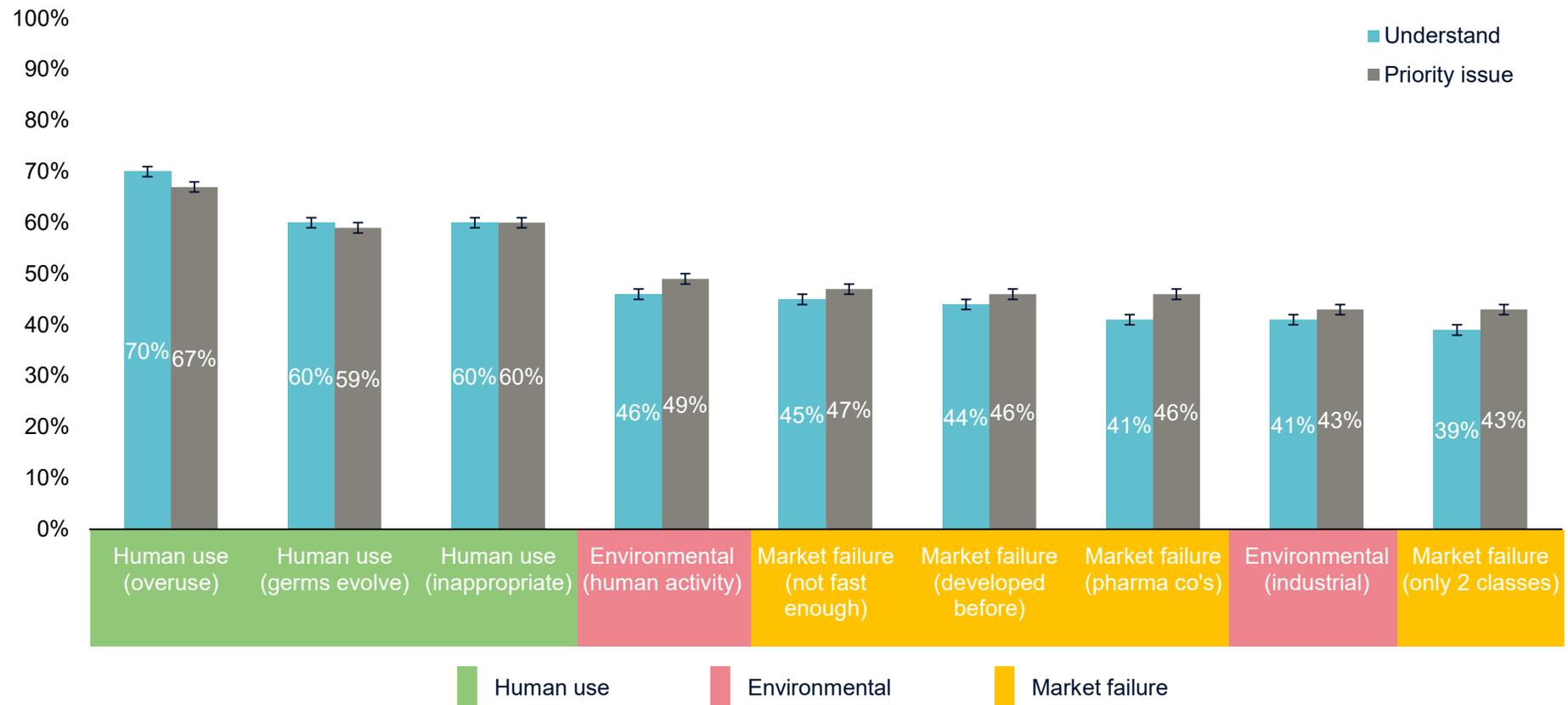
The below messages were tested for their:

- Efficacy in helping people understand what is happening with antibiotic resistance.
- Ability to help people feel that antibiotic resistance is a priority issue to be addressed – i.e. to increase support for action on antibiotic resistance.

Category		Message
Human use	Overuse	Antibiotics are overused in humans and animals, which has resulted in them becoming less effective in treating illnesses
	Inappropriate	Antibiotics are used inappropriately in humans and animals, which has resulted in them becoming less effective in treating illnesses
	Germs evolve	Germs will always look for ways to survive and resist new drugs, but the way we are using antibiotics is accelerating this process
Market failure	Pharma co.'s	We need new antibiotics because the current ones are becoming less effective, but pharmaceutical companies are not developing new antibiotics as it is not profitable for them
	Not fast enough	We are not developing new antibiotics fast enough which means that we don't have new drugs to fight antibiotic-resistant bacteria
	Developed before	We are not developing new antibiotics fast enough which means that we don't have new drugs to fight antibiotic-resistant bacteria. But we have developed them before, and we can do so again
	Only 2 classes	Only two new types of antibiotics have been introduced in the last 40 years, so we don't have the new drugs we need to fight antibiotic-resistant bacteria
Environmental	Human activity	Human activity can pollute the environment (soil, rivers, oceans) with antibiotics, which speeds up the spread of antibiotic resistance
	Industrial	When waste from industrial production of antibiotics gets into the environment, this speeds up the spread of antibiotic resistance

Why is it happening – global resonance

- Human use of antibiotics messages resonated most strongly, both in supporting understanding and driving perceptions of the issue as a priority to be addressed.
- ‘Overuse’ was more effective than ‘inappropriate use’, likely due to the relative simplicity of the concept.



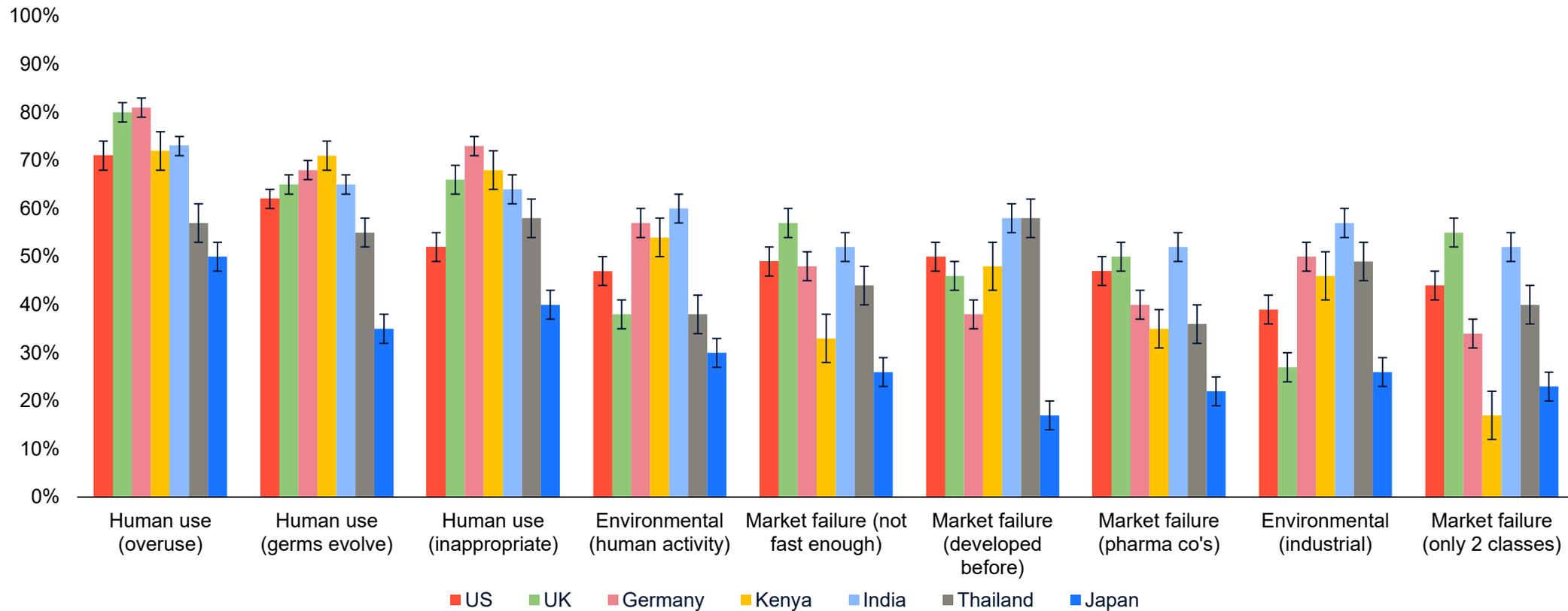
Q: To what extent does this statement help you to understand why antibiotic resistance is happening?

Q: To what extent does this statement make you feel that antibiotic resistance is a priority issue to be addressed?

(Showing nets - % great / some extent minus % a little / not at all)

Why it is happening – country resonance

- The preference for messaging around human use was consistent across countries.
- Market failure messages performed particularly poorly in Kenya.



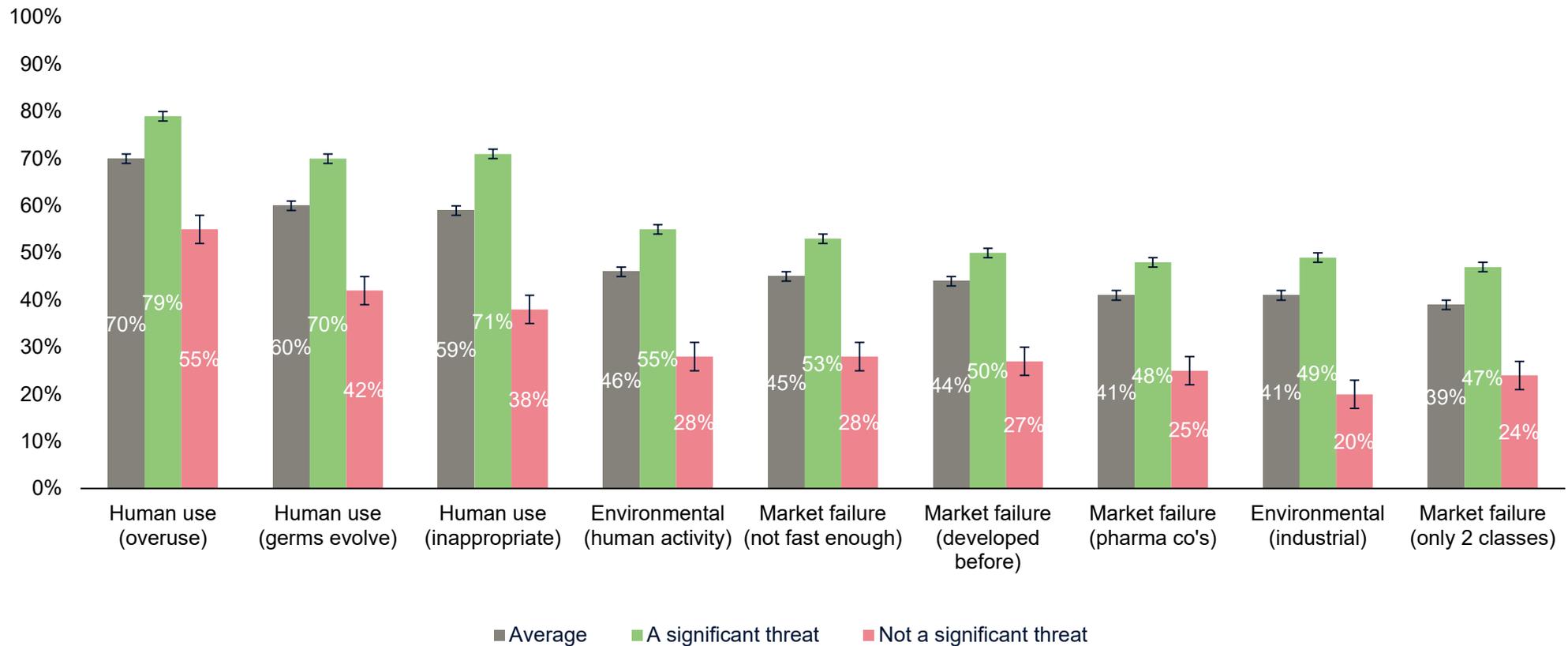
Q: To what extent does this statement help you understand why antibiotic resistance is happening?

(Showing nets - % great / some extent minus % a little / not at all)

Why it is happening – wider resonance

- Among those not perceiving antibiotic resistance to be a significant threat, messages focusing on market failure were particularly poorly received.

Results by perceived significance of threat from antibiotic resistance



Q: To what extent does this statement help you understand what is happening with antibiotic resistance?

(Showing nets - % great / some extent minus % a little / not at all)

Impact – messages tested (1/2)

The below messages were tested for their:

- Efficacy at helping people understand the current or potential impact of antibiotic resistance.
- Ability to make people feel that antibiotic resistance is a priority issue to be addressed.

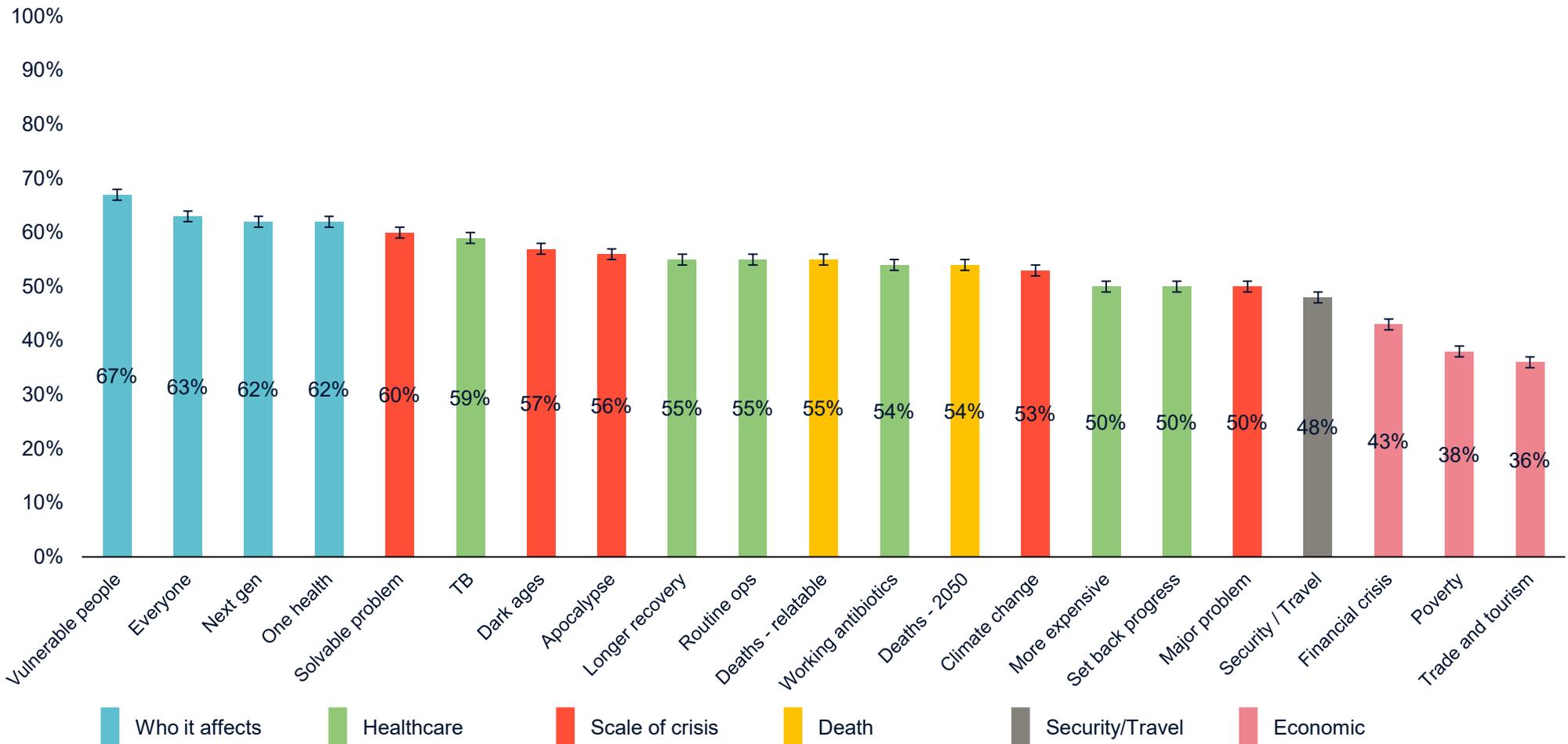
Category		Message
Healthcare	More expensive	People will have to pay for more treatments and longer stays in hospital
	Longer recovery	People will take longer to recover from operations and illnesses
	Working antibiotics	Modern medicine is impossible without antibiotics that work
	Routine ops	Having routine surgery such as caesarean sections or hip replacements will become life threatening, and complications from common diseases such as diabetes and injuries or cuts will become harder to manage
	Set back progress	The progress that has been made in treating diseases such as cancer will be set back decades if we don't have antibiotics that work
	TB	Tuberculosis (TB) was a disease that had been brought under control by antibiotics; however, the spread of antibiotic-resistant TB means many people are once again dying from this disease
Death	Deaths – 2050	It is estimated that, by 2050, 10 million people will die every year due to antibiotic resistance
	Deaths – Relatable	It is estimated that 700,000 people currently die each year as a result of antibiotic resistance which is equivalent to the population of [country-specific city]
Economic	Financial crisis	By 2050, antibiotic resistance could cause global economic damage on the same scale as the 2008 financial crisis
	Poverty	Antibiotic resistance could push up to 28 million people into poverty by 2050
	Trade & tourism	Antibiotic resistance could severely affect international trade and tourism, and damage the economies of countries around the world

Impact – messages tested (2/2)

Category		Message
Who it affects	Everyone	Antibiotic-resistant germs know no borders; antibiotic resistance threatens everyone wherever you live
	Vulnerable people	Antibiotic resistance threatens the most vulnerable people in society – the very young, the elderly and those with weakened immune systems that are less able to fight infections and other diseases
	Next gen	Antibiotic resistance will impact our children and grandchildren – currently treatable diseases will become life threatening for future generations
	One health	Antibiotic resistance is a threat to both human and animal health and could have a major impact on farming and food production
Scale of crisis	Apocalypse	Growing resistance to medicines means that we are facing an antibiotic apocalypse where currently treatable infections and injuries will kill once again
	Dark ages	If we do not take action against antibiotic resistance, we will return to the dark ages of medicine where currently treatable infections and injuries will kill once again
	Major problem	Antibiotic resistance is one of this generation's greatest problems
	Climate change	Like climate change, antibiotic resistance is one of this generation's greatest problems
	Solvable problem	Antibiotic resistance is one of this generation's greatest problems, but we can make a difference if we take action now
Security / Travel		Foreign travel and tourism will become much riskier as they will increase the risk of spreading antibiotic-resistant diseases

Impact – global resonance

- Messages focusing on ‘who it affects’ were most likely to make people feel that antibiotic resistance is a priority issue to be addressed – particularly those focusing on vulnerable people (the young, the elderly and those with weakened immune systems), as well as everyone wherever they live.
- Overall, healthcare, scale of crisis and death toll messages all rated relatively similarly. But economic impact messages tested most poorly.

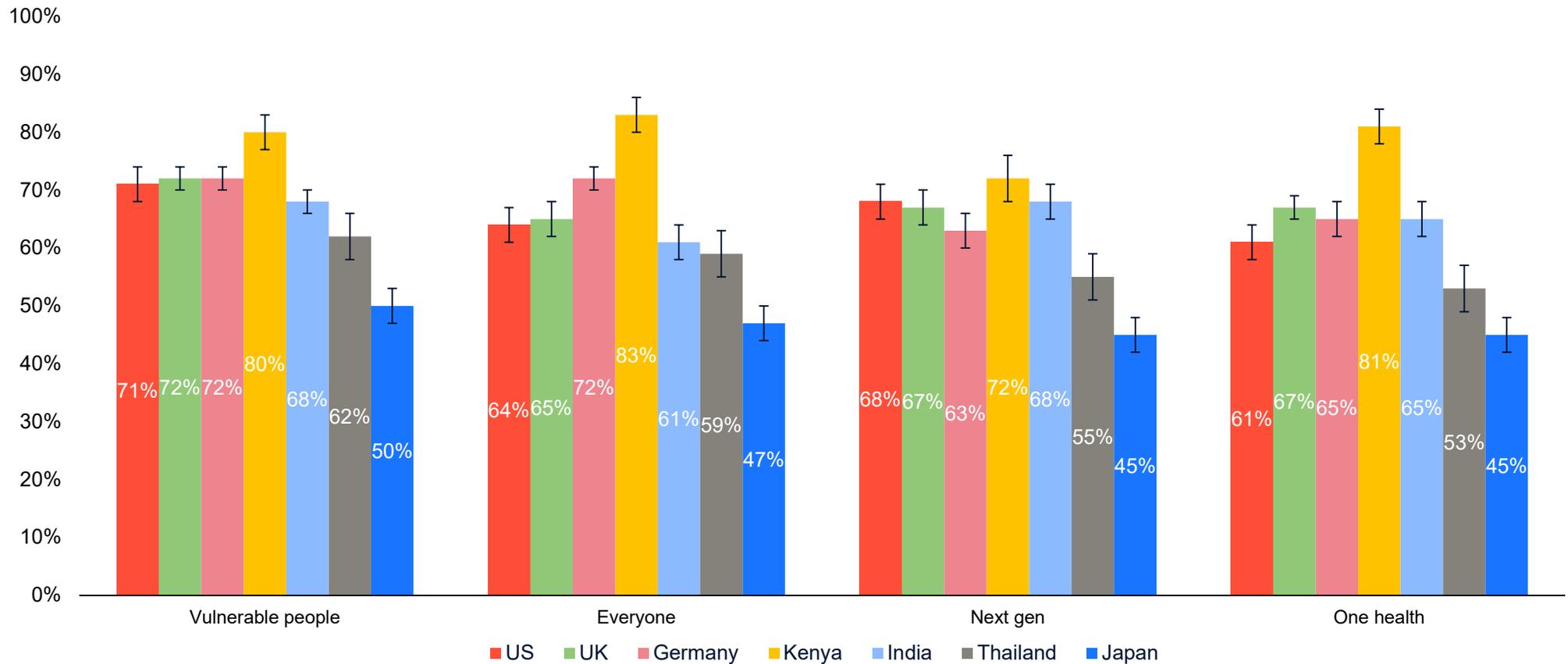


Q: To what extent does this statement make you feel that antibiotic resistance is a priority issue to be addressed? (% great/to some extent)

(Showing nets - % great / some extent minus % a little / not at all)

Impact (who it affects) – country resonance

- Messages focusing on who antibiotic resistance affects resonated well across countries.

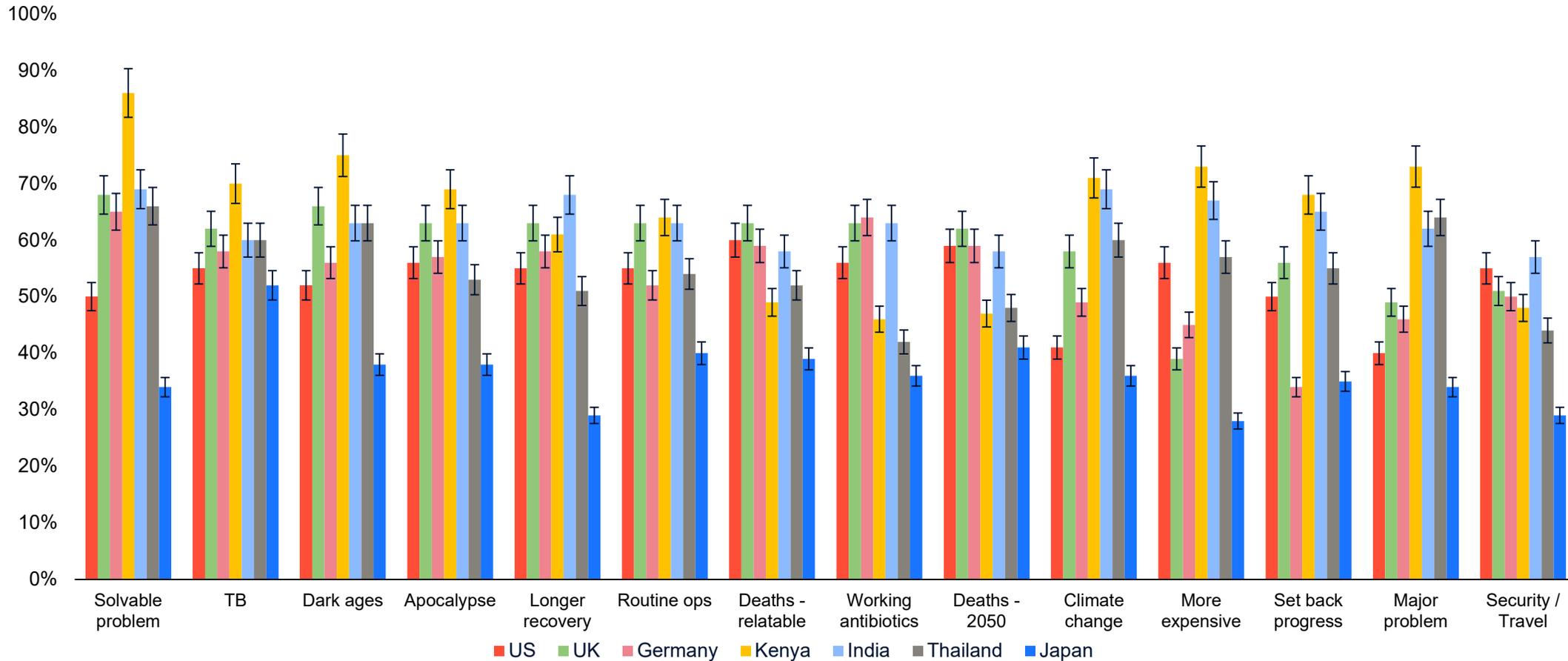


Q: To what extent does this statement make you feel that antibiotic resistance is a priority issue to be addressed?

(Showing nets - % great / some extent minus % a little / not at all)

Impact (healthcare, scale of crisis, death) – country resonance

- Healthcare messages focusing on setbacks to progress in treating disease and the rising cost of healthcare resonated more strongly in the Global South compared to the Global North.



Q: To what extent does this statement make you feel that antibiotic resistance is a priority issue to be addressed?

(Showing nets - % great / some extent minus % a little / not at all)



B. Qualitative testing & refinement

Qualitative testing & refinement

Focus groups were designed to refine the best-performing messages from the quantitative research to drive public awareness and support for action on antibiotic resistance:

Message language

- Identify the best language to communicate the frames

Bringing messages to life

- Identify the strongest proof points to communicate messages
- Highlight any country-specific nuance that may be required

Developing a narrative

- Understand the most effective way to combine frames and messages, that deliver increased awareness and support for action on the issue
- Evaluate the narrative's performance against four key criteria:
 - Engaging
 - Credible
 - Relevant
 - Urgent

Qualitative testing & refinement – methodology

Methodology:

- Two focus groups were conducted in each of the seven countries.

Audience:

- Focus group participants were media engaged members of the public, defined as those who watch, read, or listen to the news on a regular basis.
- The decision to focus on this audience was a reflection of the aims of the project – i.e. to increase understanding of antimicrobial resistance and support for action on this issue. Therefore, qualitative research targeted members of the public who are more likely to engage in conversations around this issue and come into contact with potential messaging and media coverage.
- In each country, groups were split by age based on the hypothesis that this was the most relevant demographic split in terms of use of, and attitude towards, antibiotics, as well as most appropriate in terms of group dynamics.

Country	Location	No. of groups	Age splits	Language	Date
US	New York	2	22-40 / 41-65	English	7 th August 2019
UK	London	2	22-40 / 41-65	English	6 th August 2019
Germany	Munich	2	22-40 / 41-65	German	6 th August 2019
Kenya	Nairobi	2	22-35 / 36-50	English	6 th August 2019
India	Delhi	2	25-40 / 41-60	English	1 st August 2019
Thailand	Bangkok	2	22-35 / 36-50	Thai	2 nd August 2019
Japan	Tokyo	2	22-40 / 41-65	Japanese	29 th July 2019

B. Qualitative testing & refinement

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i. Terms & understanding

Terminology – strongest terms

Term	Awareness and understanding	Verbatim quotes
Antibiotic resistance	<ul style="list-style-type: none"> • A consistent finding across countries was that antibiotic resistance is the best known term to describe the issue • High familiarity in the UK, US, Germany and Thailand (driven primarily by the media and doctors); and generally understood in India, Kenya, and Japan • It was also felt to be readily understandable – with the mention of antibiotics particularly useful in locating participants’ understanding in one type of medicine 	<ul style="list-style-type: none"> ▮ <i>I think, for me, antibiotic resistance more conveys what is actually happening. That you can’t use the antibiotics to treat disease and infection, whereas superbug is like it’s a different type of bug. It’s a mutated bug. It’s like the Hulk. So, for me, I wouldn’t particularly link that to being anything to do with antibiotics if I didn’t know. [UK]</i> ▮ <i>Antibiotic resistance is the word that I would use most often, I see it as the most common word. [Germany]</i> ▮ <i>[Antibiotic resistance] explains itself. [India]</i> ▮ <i>[Antibiotic resistance] is more understandable. [Kenya]</i> ▮ <i>For antibiotic resistance, I can come up with an idea what is it caused by. I understand that. [Thailand]</i>
Drug-resistant infection	<ul style="list-style-type: none"> • There was low prior awareness in the focus groups across countries when questioned, but it was felt to be easy to understand – and seen as clear and self-explanatory • A few immediately understood this term as referring to an issue that is broader than antibiotic resistance, so care should be taken in messaging to avoid the misconception that this applies to all drugs 	<ul style="list-style-type: none"> ▮ <i>I think drug-resistant infections, that’s something different because drug resistant, that is a wider range than antibiotic resistant. [Germany]</i> ▮ <i>Drug resistance, it’s a bit layman’s language. [Kenya]</i>

Terminology – other terms

Term	Awareness and understanding	Verbatim quotes
Superbugs	<ul style="list-style-type: none"> • High awareness in UK & US (driven by media), and some awareness in DE, IN (none elsewhere) • UK, US: considered a recognizable and relatable term • But some confusion as to whether this is the same issue as antibiotic resistance – some participants felt the term suggests stronger diseases, not necessarily linked to antibiotics 	<p>▮ <i>I still think superbug is used most commonly. Like, in non-medical lingo. [US]</i></p> <p>▮ <i>I have heard about superbugs on Google. [India]</i></p> <p>▮ <i>I think newspapers tend more to sensationalise things. They use words like a superbug because it comes across far more sensational and you hear that a lot more in news reports. [UK]</i></p>
Antimicrobial resistance / AMR	<ul style="list-style-type: none"> • Little to no awareness across (only a small minority in the UK groups were previously aware) • Did not resonate across countries – not understood; regarded as too technical / complicated 	

Japan: focus groups highlighted specific issues regarding terminology in Japan.

- Participants could generally understand the term ‘antibiotic resistance’. But there was pushback against the majority of the terms tested using what was seen as overly technical or ‘professional’ terminology.
- There was a preference for using a short but more descriptive term e.g. ‘resistance against drugs / antibiotics’.

Understanding of health terms – antibiotics & germs vs bacteria (1/2)

Antibiotics

- The term ‘antibiotics’ was widely understood across countries as a type of medicine that is used to treat illnesses (often viewed as stronger than other medicines)
- When pushed, participants were generally able to cite examples (e.g. penicillin, Amoxil, Augmentin)
- But deeper knowledge was less consistent; many participants struggled to explain specifically what antibiotics are or do (e.g. that antibiotics are used to treat *bacterial* infections)
- There was greater confusion in Global South countries (Kenya, India, Thailand) where ‘antibiotics’ are often used as a generic term for medicines or drugs. For example, in Kenya, one respondent referred to herbal medicines (aloe vera, ginger) as ‘*natural antibiotics*’

■ ■ *I think antibiotics is a term that most people know and that that would get through to people. [UK]*

■ ■ *[An antibiotic] is a drug that is supposed to treat an infection which can be caused by virus, bacteria, fungus. [Kenya]*

Germs vs. bacteria

- Across groups, participants were generally aware of both terms
- There was a general understanding that both germs and bacteria can cause illness
- But there was widespread uncertainty as to whether germs and bacteria refer to the same things or are different
- In the UK and US, the term ‘germs’ was viewed as less precise and less serious; whereas bacteria sounds stronger and scarier

■ ■ *I think that bacteria actually does sound scarier because germs you think of washing your hands ... so bacteria is a stronger word. [US]*

■ ■ *There are good and bad bacteria, lots of bacteria is in our body. Bad bacteria is also in the body, but our body's immune system suppresses it. If [your] immune system gets weak, they attack. [India]*

■ ■ *They use germs to refer to bacteria. [Kenya]*

Understanding of antibiotic resistance – Global North

Across countries, before entering into any discussion of the issue, there was general understanding of the central concept of antibiotic resistance – i.e. that antibiotics are becoming less effective or stopping working in treating disease.

But beyond that, knowledge and understanding (in terms of what is happening and why) varied considerably – both between countries and within individual focus groups.

Global North – the UK, US and Germany

Many Global North participants understood that antibiotic resistance occurs as a result of bacteria or diseases changing and becoming resistant to antibiotics.

- However, a significant proportion held the misconception that antibiotic resistance occurs when the *individual* becomes resistant
- Those believing that the individual becomes resistant were persistent and often confident in their misconceptions – they tended not to show any changes in understanding over the course of the focus groups, despite being presented with information and explanations by other participants and the moderators

There was a general appreciation that antibiotic resistance is linked to overuse of antibiotics:

- Many cited antibiotics having been prescribed too readily
- Some spontaneously mentioned use of antibiotics in livestock as a contributing factor (and human consumption of antibiotics via the food chain)

Participants broadly understood the potential breadth and severity of antibiotic resistance's impact:

- That it will result in us being unable to treat certain diseases or that diseases become a threat again – and people will die
- Children and the elderly were mentioned unprompted as the groups being most at risk

Understanding of antibiotic resistance – Global South + Japan

Global South (Kenya, Thailand and India) + Japan

There was a widespread misconception across Global South groups that antibiotic resistance occurs on an individual level – i.e. that the body becomes resistant to antibiotics, and that this occurs as a result of individual misuse of antibiotics

- This view was also frequently held in the Japan focus groups (Note: levels of understanding and prioritisation of antimicrobial resistance in Japan were generally more aligned with feedback in Global South countries, than other Global North countries)

But levels of knowledge and understanding varied:

- Kenya and Thailand: general view that antibiotic resistance is caused by individuals not taking antibiotics correctly – i.e. not following doctors' instructions (not finishing a course of antibiotics, taking the wrong dose)
- India: the focus was on overuse of antibiotics, with a general sense that antibiotic resistance is caused by resistance building up in the body over time as a person takes more and more antibiotics.
- Japan: across all markets, the most limited prior knowledge of the issue and most guarded in sharing hypotheses – a vague understanding that antibiotic resistance means that individuals develop resistance to antibiotics

Participants in these countries generally struggled to understand the real potential impact of antibiotic resistance:

- Instead they focused on the individual - people suffering from antibiotic resistance being more prone to disease, having to take stronger antibiotics (with possible side effects), requiring more expensive medication (Thailand), having a weaker immune system (India)

▮▮ *Being under the medication of antibiotics and they are not helping you, maybe you have used them so much and they are not working. Your body is resisting. [Kenya]*

▮▮ *If you use drugs, your body is supposed to create immunity against those diseases, but overuse makes the body resistant. [Kenya]*

▮▮ *If we take some medicine regularly, our body gets used to it. [India]*

▮▮ *The drugs we take, we are habitual for them, so they stop working. Again we have to take higher doses. [India]*

▮▮ *I think 'drug resistance' is caused by taking too much or too little of the drug, or you just stop taking it on your own decision. That's my understanding. It is caused by not completing the full course of the drug prescribed by the doctor. [Thailand]*

▮▮ *Your body will not respond to the drug. You may need more dose or maybe you have to give up that drug. [Thailand]*

B. Qualitative testing & refinement

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ii. Prioritisation

Prioritisation – compared to other global health issues

Antibiotic resistance was not ranked highly as a priority issue to address

- In a fairly consistent pattern across the focus groups, a majority ranked antibiotic resistance as a medium / low priority against other health issues, with just a minority in most groups ranking it highly

The process of prioritisation differs in the Global North compared to the Global South (+ Japan).

- Specific outlooks differed due to levels of understanding of antibiotic resistance
- However, they still tended to reach the same conclusion, ranking antibiotic resistance as a medium / low priority compared to other global health issues

Issues considered high priorities:

Despite different prioritisation processes, a common set of issues were most frequently cited across all the groups:

- Cancer, clean water and air pollution (the latter a particularly high priority in Thailand, India and Kenya)

These issues were better understood (than antibiotic resistance), and were considered high priorities for broadly consistent reasons:

- Issues that affect everyone – including me individually
- Global threats
- Imminently dangerous – a threat now, rather than in the future
- Do not have control over them
- Or – in the case of clean water – fundamental to survival, underpinning everything else

Prioritisation – Global North

Global North – the UK, US and Germany

Despite better understanding of antibiotic resistance compared to the Global South, antibiotic resistance still tended not to be ranked as a high priority to address.

- The exception was a small minority of participants with the greatest knowledge and understanding of antibiotic resistance, who consistently rated it as a higher priority. These participants tended to have higher levels of knowledge based on having read detailed articles or seen in depth TV coverage (documentaries) of antimicrobial resistance

Among those with the greatest knowledge, the thought process that drove high prioritisation of antibiotic resistance tended to be:

1. Antibiotic resistance is caused by bacteria becoming resistant
2. Everyone is at risk (irrespective of personal antibiotic usage) – both me and everyone else
3. It is a global threat, happening now but that will get worse

However, the majority of participants did not prioritise antibiotic resistance highly, despite understanding that it is caused by bacteria becoming resistant, as they:

- Did not make the link to see how they personally will be affected if otherwise fit and healthy
- Did not see the severity of the issue or consider it to be life-threatening
- Did not consider it to be an immediate or urgent issue
- Presumed that it will be solvable, and that governments, scientists and doctors will be able to find solutions when it does become a very severe threat

Those ranking antibiotic resistance as a high priority

- ▮ *I think antibiotic resistance, it is a big threat. It is a big problem. I think it's more contemporary, more current, than a lot of people realise and from what I've read, we don't seem to be getting anywhere with any kind of alternative to antibiotics and, if it actually does happen in a larger way then I think it will be completely devastating. [UK]*
- ▮ *This is something that would affect the entire world, hundreds of millions of people. Because we're actually overtaking antibiotics, we're taking them too often, too much and they're losing their effect. [US]*

Those ranking antibiotic resistance as less of a priority

- ▮ *I guess it's not something that personally impacts me. I guess that was part of my decision-making was things that personally impact me, or family, or people I know. [UK]*
- ▮ *I think it was able to be dropped down because I think that changes in medical practice can actually change the way that we use antibiotics and so, it can be avoided as an issue by doing other things. [US]*

Prioritisation – Global South + Japan

Global South (Kenya, Thailand and India) + Japan

The commonly held misconception that individuals become resistant (rather than bacteria) was a key factor driving the lack of prioritisation of antibiotic resistance. The thought process tended to be:

1. Antibiotic resistance is caused by individuals taking antibiotics incorrectly
2. I personally do not take many antibiotics / I do not take antibiotics incorrectly
3. This is not a problem for me (or people like me) – I am not personally affected by this issue and can manage my own risk
4. Antibiotic resistance is not a global threat
5. It is not an urgent issue – it takes time for resistance to build up in your body

Nevertheless, in these countries some participants ranked antibiotic resistance as a high priority – despite holding the misconception that individuals become resistant to antibiotics:

- Most commonly older age groups (notably in India & Japan)
- Often connected to more frequent use of antibiotics (and more frequent contact with doctors)
- With a better appreciation of the importance of antibiotics in curing illness – and a sense of the potential severity of the impact if they stop working (often on them personally)

▮ *It doesn't affect everybody. [Kenya]*

▮ *It's quite normal, no big thing, like malaria. It's on personal level, if you take antibiotic, your resistance will be on lower side. If you are fit, your body resistance is more. [India]*

▮ *We are not personally affected by it, not immediately affected... but slowly if we keep taking antibiotics our immunity will get finished. [India]*

▮ *We don't take it [antibiotics] frequently also. It's very less, 1-2 times in a year, so I am not prone to it. [India]*

▮ *Because it has less affect. It is not contagious disease. So, if you take good care of yourself, take medicine and follow doctor's advice you will not have this disease. It is something preventable. [Thailand]*

▮ *I think it is neither the worst nor the most important because it is individual. If you take the medicine in an appropriate way [you won't be affected]... I mean, the percentage of people having drug resistance is not as high as other problems. [Thailand]*

B. Qualitative testing & refinement

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iii. Explaining antibiotic resistance

What is happening and why – messages

	Message
What is happening and why	1. The germs that cause illnesses adapt and change over time, meaning that they can develop the ability to defeat the medicines designed to kill them
	2. Antibiotics are overused in humans and animals, which has resulted in them becoming less effective in treating illnesses
	3. Germs will always look for ways to survive and resist new drugs, but the way we are using antibiotics is accelerating this process

These messages were developed from those that performed best in the quantitative message testing in terms of helping communicate what antibiotic resistance is.

Overall, the public want an explanation that combines succinctly and accessibly *what* is happening and *why* it is happening.

- Combining messages 1 and 2 was thought to work best in this regard.

It should be noted that where misconceptions existed (e.g. that the individual becomes resistant, rather than the bacteria), these messages were not sufficient to correct that misconception.

- They did not prompt a realisation that it is the bacteria that change or that this is a collective problem.
- It is important to recognise limitations in correcting this misconception – not only did these messages fail to correct it, the general discussion which explicitly referred to bacteria becoming resistant did not change their beliefs. These misconceptions tend to be well-ingrained and will be one of the most challenging aspects to get across.

Explaining antibiotic resistance – message feedback (1/3)

1. The germs that cause illnesses adapt and change over time, meaning that they can develop the ability to defeat the medicines designed to kill them

A simple scientific explanation resonated – this message proved effective at increasing awareness and understanding of the issue across countries

- A clear and straightforward explanation of what is happening was welcomed.
- But where misconceptions existed (i.e. the individual becomes resistant) – this did not correct that misconception; instead the message was interpreted from the perspective of the individual.

Some specific issues were raised occasionally across the groups:

- That this message misses the human contribution (UK, Germany) – expressing a desire to combine multiple messages.
- Some suggestions that it makes the problem sound inevitable and there is nothing we can do (UK, Germany) – again, showing a need to combine messages and add additional framing emphasising the tractability of the problem.
- Several objections to the use of the term ‘defeat’ (US, India) – with some participants asserting that they felt this was too strong as they did not believe that it was credible that antibiotics would stop working. They instead suggested using the word ‘resist’.

A variation of this message was tested changing the ending to *‘meaning that medicines that save lives are no longer working’*.

- This alternate wording polarized opinion across the groups.
- Pros: Some felt it increases impact and the sense of urgency.
- Cons: Some felt it was too negative and felt like the problem was being ‘messed’ at them, rather than the information being presented simply. Others felt it was inaccurate and this was overstating what would happen – that antibiotics will not stop working, rather will become less effective.

Explaining antibiotic resistance – message feedback (2/3)

2. Antibiotics are overused in humans and animals, which has resulted in them becoming less effective in treating illnesses

Talking about ‘overuse’ resonates – but is open to (mis)interpretation without clarification

Of the three messages tested, this message was rated by participants in the UK, US, Germany Kenya and India as the most effective at driving understanding.

- Considered an accessible, straightforward message, that makes clear that antibiotic resistance is not just a natural process, but that our use of antibiotics is contributing.

However, the message was interpreted in different ways (depending on levels of understanding of the issue):

- UK, US, Germany: interpreted as referring to our **collective** overuse of antibiotics (primarily through systematic over-prescription).
- Kenya, Thailand, India, Japan: interpreted as the **individual** taking too many antibiotics, and developing resistance as a result.
 - Therefore, among those who felt that antibiotic resistance happens to the individual, this message was actually seen to further support that misconception.
 - When understood as talking about an ‘individual’s overuse’, this message caused confusion, particularly in Thailand and Kenya:
 - Uncertainty as to what ‘overuse’ means – how much is too much? What is the limit?
 - Suggestions that this is only part of the story – that antibiotic resistance can also be caused by ‘underuse’ too (i.e. not completing a course of antibiotics).

▮▮ *I think the word specifically ‘overused’, lets you know exactly what’s going on. [US]*

▮▮ *The terminology of ‘overuse’ is not okay because we still have underuse where people don’t finish the dosage. [Kenya]*

▮▮ *The word ‘overuse’. I think sometimes it is not about ‘overuse’, but it might be due to wrong use or use of several medicines at the same time. [Thailand]*

Explaining antibiotic resistance – message feedback (2/3)

2. Antibiotics are overused in humans and animals, which has resulted in them becoming less effective in treating illnesses

Citing use in humans and *animals* prompted differing reactions across the groups – in some cases this was new and welcome information, in others it caused confusion

- There was highest understanding of use of antibiotics in farming in Germany:
 - Including animals in the message was therefore considered important.
 - Both German groups raised concerns about antibiotics being prophylactically added to feed in mass livestock farming and cited our passive consumption of antibiotics through food.
- In other countries (UK, US, Kenya) this reference was broadly understood:
 - But there was a need for further explanation for it to land fully – what animals specifically, and how this is connected to humans.
- In Thailand it caused confusion and scepticism:
 - Questioning the connection between humans and animals, whether humans and animals suffer from the same illnesses or use the same medicines and asking if this could affect our food.

▮▮ *Humans and animals have different body system. When you say 'overuse', how much is considered overuse? Humans and animals take different dosage and have different responses to medicines. I wonder if what written here is true. [Thailand]*

▮▮ *The use in animals, I did find that slightly confusing ... I'd just make it talking about humans. Antibiotics are overused in humans, which has resulted in them becoming less effective in treating illnesses. [UK]*

Explaining antibiotic resistance – message feedback (3/3)

3. Germs will always look for ways to survive and resist new drugs, but the way we are using antibiotics is accelerating this process

This message resonated least well across countries, and prompted broadly consistent reactions:

- Pros: it combines explanation of the natural process and human contribution in antibiotic resistance.
- Cons:
 - Referencing ‘the way we are using’ antibiotics’ was felt to be vague and ambiguous, needing clarification.
 - Lacks urgency and trivializes the problem.
 - Sounds inevitable and risks being demotivating.

▮▮ *I thought it was ambiguous, the bit that say, ‘the way we are using antibiotics.’ That doesn’t mean anything to me. [UK]*

▮▮ *What I had a problem with was ‘but the way we are using’. It was just too broad, too general. But what’s the way? Overuse, underuse, what’s the way? [US]*

B. Qualitative testing & refinement

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iv. Explaining who it affects

Who antibiotic resistance affects

Which groups prompt most concern and therefore drive support for action on the issue?

- Responses varied between:

Broadest categories

- *Everyone, humans*
- Citing broad categories polarised opinion – some felt that it was effective (as it includes all people), while others thought it was too general and impersonal (and therefore did not interpret it as including themselves)
- To make the issue feel more personal, and to avoid misconceptions that antibiotic resistance can be personally avoided through one's own behaviour, some respondents suggested combining the breadth (everyone is at risk) with personal emphasis (we are all at risk – including you, your friends, family)

▮▮ *[It would feel more urgent] if the article said, 'This could affect you.' Everybody is vulnerable. [US]*

▮▮ *We did want to point out that fact that it would be everybody who would be affected, because if you try and pick on certain groups, people think that they might not have a problem, and everyone's going to have a problem with it. [UK]*

▮▮ *People affected, we said in a hierarchy, you, your friends and family, and then everyone just because, obviously, everyone is quite impactful, but I think you need to make it personal for people to get that kind of attention. [UK]*

Those most at risk

- *Those with weakened immune systems*

- Although these groups were most likely to be considered at risk from antibiotic resistance, focusing on specific groups risks making the issue feel less relevant to the individual (few identified as being part of such groups themselves)
- While 'vulnerable' groups (including those with weakened immune systems, children and the elderly) tested well in the quantitative research, in focus groups this group was criticized for:
 - Being too vague and open to a wide range of interpretations:
 - Children & elderly
 - People with weakened immune systems / suffering from chronic diseases (e.g. HIV, cancer)
 - Economically vulnerable – the poor, homeless, without medical insurance
 - Societally vulnerable – lower class
 - People in jobs that put them at risk (e.g. hospital workers)
 - Not being a group anyone would describe themselves as part of – therefore reducing the personal relevance of the problem

B. Qualitative testing & refinement

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v. Impact

Impact messages

Message	
Impact	1. 'Antibiotic resistance threatens farming and food production': Antibiotic resistance is a threat to both human and animal health and could have a major impact on farming and food production
	2. 'Antibiotic resistance slows recovery from operations and illness': People will take longer to recover from operations and illnesses
	3. 'Routine surgery, common diseases and injuries made more dangerous by antibiotic resistance': Having routine surgery such as caesarean sections or hip replacements will become life threatening, and complications from common diseases such as diabetes and injuries or cuts will become harder to manage
	4. 'TB once again killing due to antibiotic resistance': Tuberculosis (TB) was a disease that had been brought under control by antibiotics; however, the spread of antibiotic-resistant TB means many people are once again dying from this disease
	5. 'The world is facing an antibiotic apocalypse': Growing resistance to medicines means that we are facing an antibiotic apocalypse where currently treatable infections and injuries will kill once again
	6. 'Antibiotic resistance could take us back to the dark ages': If we do not take action against antibiotic resistance, we will return to the dark ages of medicine where currently treatable infections and injuries will kill once again

These messages were developed from those that performed best in the quantitative message testing in terms of helping communicate the impact of antibiotic resistance.

Overall, three of these messages tested most strongly across the focus groups – message 3 (impact on routine surgery, common diseases and injuries), 5 (antibiotic apocalypse) and 6 (taking us back to the dark ages).

Impact of antimicrobial resistance – apocalypse and dark ages (1/2)

5. **‘The world is facing an antibiotic apocalypse’**: Growing resistance to medicines means that we are facing an antibiotic apocalypse where currently treatable infections and injuries will kill once again

6. **‘Antibiotic resistance could take us back to the dark ages’**: If we do not take action against antibiotic resistance, we will return to the dark ages of medicine where currently treatable infections and injuries will kill once again

Apocalyptic framing captured attention, but lacked credibility

- Across countries, messages with an apocalyptic framing proved powerful at capturing attention and conveying a sense of urgency.
- However, they were often deemed sensationalist, overly exaggerated, and led to scepticism.

The concept of returning to *‘the dark ages of medicine’* tended to be the more effective angle

- It was typically interpreted as meaning that treatable diseases and conditions will become untreatable once again.
 - This concept of modern medicine being undermined and currently treatable infections killing once again resonated widely across the groups.
 - It was widely considered to be engaging (something that would catch their attention) and urgent (as a priority to address).
 - Some suggested it would be made powerful and relevant with more specific examples (from other messages, for example message 3 on routine surgery, common diseases and injuries).
- The phrase *‘dark ages of medicine’* was interpreted widely between countries, prompting a wide range of quite vivid associations from across time periods:
 - Middle Ages, hundreds of years ago, the plague, cholera, SARS, AIDS crisis.
- In Thailand however, this message was considered too pessimistic and extreme to be credible.

Citing an *‘antibiotic apocalypse’* was less effective.

- While the phrase captured attention and emphasized the global aspect of the problem, it was frequently seen as too lurid, exaggerated – which undermined credibility (‘clickbait’).
- The term *‘apocalypse’* caused confusion in several countries (Japan, Kenya, India), or was felt to be overused (UK).

Impact of antimicrobial resistance – apocalypse and dark ages (2/2)

Dark ages of medicine

- It's interesting, the fact that all of our developments and progress over the years, and medical advances, all of a sudden, you know, we're thrown back two, three, four, five hundred years. [UK]
- It's a good image. Something you can imagine easily. We always say, 'Well, that's like the Middle Ages. People died from banal things,' but this can happen if the medication doesn't work anymore. I think it's a very good image. Very graphic. [Germany]
- I feel like it takes us back to ancient times where we need to start developing something new once again. So this one makes me convinced that it is a priority issue. [Thailand]
- When antibiotics were not there, it was very difficult to manage diseases. [India]

Antibiotic apocalypse

- Not everyone understands [apocalypse], very heavy term. [India]
- I find the word 'apocalypse' just too sensationalist. I possibly would not read that just because the word's such a turn-off. [UK]
- I thought it was very dramatic, but also alarming as well. I mean it would definitely spark my interest because we're talking globally, not just the US. So, it would prompt me to read more into the story. [US]
- The words 'the world' and 'apocalypse' sound like something so big. It is not a small matter anymore. If it were a movie then it would be of hardcore action genre. It has so big impact. That's why I want to read more. [Thailand]
- I understand, but it's exaggerated. [Kenya]

Impact of antimicrobial resistance – relatable impact on healthcare

3. ‘Routine surgery, common diseases and injuries made more dangerous by antibiotic resistance’: Having routine surgery such as caesarean sections or hip replacements will become life threatening, and complications from common diseases such as diabetes and injuries or cuts will become harder to manage

Focusing on antibiotic resistance’s relatable impact on healthcare resonated widely across countries

- Participants felt they could relate to the examples given, rendering the message relevant and credible, at the same time conveying a sense of the severity of the impact.
- But the effectiveness of the message was dependent on the specific examples cited being relevant to the audience – it must feature procedures or diseases that the audience could be affected by in order to land effectively.
 - Some participants were turned off if they could not relate to the examples (e.g. in Thailand there were suggestions that the examples need to be more relevant to Thai people).
- A range of examples were cited: wisdom tooth extraction, tonsillitis, injuries from accidents, appendicitis.
- Many suggested that these should be tailored to the specific audience being addressed.

▮▮ *It’s something that you can relate to and connect with. It’s not that you need to be from a particular group or have particular conditions, if you go into hospital for anything, a fairly routine operation is something that can affect you. [UK]*

▮▮ *To me, this covers everybody. I don’t know anybody that doesn’t fall into one of these categories. They either have had or will have surgery or they have a common disease, it spoke to me in terms of concrete things that I could find a person I know pretty much to fit every single category here. [US]*

▮▮ *It looks like a headline, catches attention. It says, it’s becoming dangerous to get regular operations. [India]*

▮▮ *Nowadays Thai people has higher possibility to undergo an operation from diabetes or from road accidents while traveling. It can happen to anyone easily. [Thailand]*

Impact of antimicrobial resistance – worse performing themes

4. 'TB once again killing due to antibiotic resistance':

Tuberculosis (TB) was a disease that had been brought under control by antibiotics; however, the spread of antibiotic-resistant TB means many people are once again dying from this disease

Single disease: Tuberculosis

- While the concept of previously treatable diseases killing once again resonated, this message was generally among the less effective
- The general consensus was that focusing on one disease was too narrow (and lessened the impact of the issue)
- TB was also a disease that few participants could relate to

2. 'Antibiotic resistance slows recovery from operations and illness':

People will take longer to recover from operations and illnesses

Slows recovery

- This message did not resonate strongly across countries
- It was felt to downplay the severity of the issue – the impact does not convey the true severity of antibiotic resistance (that people could die)
- However, in India this message resonated more strongly, being regarded as clear and practical

1. 'Antibiotic resistance threatens farming and food production':

Antibiotic resistance is a threat to both human and animal health and could have a major impact on farming and food production

Farming and food

- Across the groups, this message was among the least impactful
- The impact on farming and food production was generally considered less significant compared to other messages. Some even suggested they could avoid being effected through their own personal food choices
- The message did not capture attention, and the impact was considered to be less personally relatable and more removed
- In Japan, some struggled to understand the connection between antibiotic resistance and agriculture – and then the connection with them personally

Solutions frame

“But if we take action now, this is a problem we can solve.”

Framing the issue as tractable gives cause for optimism – but it needs to be coupled with a clear call to action to be effective

- As was shown in the quantitative testing, stating that the problem can be solved can be effective at driving support for action:
 - Focus group participants welcomed the positivity of the sentiment.
 - It was seen to have the potential to increase engagement with the issue.
- However, simply stating that we can solve the problem if we take action is not enough – it needs to be coupled with specific calls to action:
 - This opinion was shared consistently across groups.
 - Respondents wanted to understand what needs to be done and by whom.
- Stating that the issue is solvable without articulating specific calls to action also risks reducing the urgency of the problem:
 - Some participants interpreted this as meaning that there are already solutions to the issue and that people are working on it already.

Calls to action need to be clear and proportionate in order to resonate

- Suggestions from UK and US groups included research into new antibiotics and legislation to guide antibiotic use.
- Governments were considered to have responsibility for driving action, therefore explicit calls for government action and political focus resonated.

▮▮ *‘If you take action now’, it’s a bit foggy. But if we take action now, so how? Is that today, tomorrow, in two weeks, in three years? I’m missing the action, what can I do? What can everybody do in concrete terms? [Germany]*

▮▮ *At the end it said, that last thing, if we take action now it’s a problem we can solve. How? What? What is the message, what can we do? [UK]*

▮▮ *When it says, ‘but if we take action now’, I mean, what action are we supposed to take? [US]*

▮▮ *If we take action now, what action are we taking? [Kenya]*

Statistics should be used as supportive evidence, not headlines

Quantitative research demonstrated that numbers do not resonate well as headline messages

- They often lack the personal relevance and meaning to render them engaging, credible and urgent priorities.

Nevertheless, respondents in focus groups repeatedly called for ‘evidence’ to support the headline messages and explanations

- Most notably in the UK, US, Germany and India.

People most commonly asked for data to convey:

- Scale – how widespread (and by extension, close to them) the issue would become.
- Timings – how urgent the problem is.

Numbers are often ineffective at communicating these concepts effectively – they may be part of the evidence given, but should not be the focus. In focus group research, participants often ask for statistics when they are unsure of what other evidence may be available.

Given the quantitative findings around the importance of who antibiotic resistance affects and focus groups participants’ emphasis on the specific procedures, diseases, illnesses and injuries involved, case studies of individuals affected by antibiotic resistance would be an effective means of delivering supporting evidence.

▮▮ *I could still do with some stats. [UK]*

▮▮ *I think timelines, like, when? Are we talking ten years, twenty years, are we talking next year? [UK]*

▮▮ *Like we have with climate change, do we have a tipping point, do we have, like, we’ve got five years to sort this before we’re at a point where it’s going to be catastrophic? I think that’s really important. [UK]*

▮▮ *I would prefer more statistics or examples and facts. [US]*

▮▮ *The other thing is the urgency. I’m not sure that you really put a time frame on it. You know, like, say, ‘Within five, ten years, if we do not act-,’ you know, so we know we may reach a point of no return. I think that’s missing. [US]*

▮▮ *I’d be interested in the figures. How many people are we talking about now and how fast does it spread? [Germany]*

Further information

For further information

For further detail on the research findings and recommendations, please see the full report, 'Reframing resistance'

For guidance on how to use the research findings, please see the communications toolkit

For further detail on the methodology and other elements of the project, please see Appendices [A](#) & [B](#)

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