



**VIRTUAL  
ROUND TABLE**

# **The current landscape surrounding use of probiotics to prevent or reduce antibiotic- associated diarrhoea**

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# Brief summary of background to the project

On 26 March 2026, a virtual roundtable was held to discuss the current evidence and expert outlook surrounding use of probiotics to prevent or reduce antibiotic-associated diarrhoea (AAD). Six international experts in the field attended – including clinicians, academic researchers, clinical epidemiologists, and pharmacists. Attendees were based across the UK and Ireland. Discussion focused on the current weight of evidence for recommending probiotics to support AAD management, current prioritisations and considerations relating to patient populations, and methods to improve confidence in probiotics.

The Advisors discussed which patient groups may benefit most from probiotic use alongside prescribed antibiotics and considered how to improve understanding of probiotics among healthcare professionals (HCPs) and patients. Discussions explored education strategies most likely to enhance probiotic uptake.

The opinions and recommendations of the Advisors are summarised herein.

## Participants

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## Abbreviations

Abbreviation	Definition
AAD	antibiotic-associated diarrhoea
AMR	antimicrobial resistance
CFU	colony forming unit
HCP	healthcare practitioner
RCT	randomised controlled trial

This project has been funded by Novonesis. This report has been prepared in collaboration with Novonesis.

## Front cover image

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# Executive summary

Antibiotics are commonly prescribed to treat infections. Despite successfully clearing bacterial infections, antibiotic side effects can include onset of AAD. This can cause great discomfort, reduced quality of life for patients, and increased hospitalisation rates – particularly in vulnerable patients. Probiotics can restore the diminished microbiome in some patients, with evidence emerging to suggest a corresponding reduction in AAD.

Addressing AAD early, through use of probiotics, can prevent further complications and hospitalisations – especially in vulnerable populations. The Advisors emphasised the **importance of acknowledging the potential role of probiotics in reducing the burden of AAD in children and elderly populations** – associated with greatest risk of AAD depleting health. Further data are required to support recommendation of probiotics in these at-risk patients.

The vast array of probiotics on the market creates **uncertainty surrounding which products to recommend** to which patients. The Advisors cited recommendation of some specific *Bifidobacterium* strains of probiotics alongside antibiotics for

their patients. Further evidence would be beneficial to uncover additional beneficial strains and to inform which strains may be effective in the context of different antibiotic prescriptions. Real-world data can be useful in the absence of expensive randomised controlled trials (RCTs) to provide patient perspectives and cost-effectiveness insights. Systematic reviews and meta-analyses may be useful to understand available data surrounding probiotics. However, grouping multiple strains of probiotics together within such analyses can mask beneficial strains behind strains with limited efficacy. Systematic reviews and meta-analyses therefore require careful planning to ensure any grouping of probiotic strains is appropriate, and careful interpretation is required to assess the benefits of probiotics strains.

Education was acknowledged as a key consideration for promoting recommendation of probiotics for patients who are prescribed antibiotics. Short-form content should summarise key data and unique benefits, alongside presence of patient testimonials to highlight their potential benefits in the real world.

and probiotic exposure, the microbiome may perform the same function as before treatment – resulting in an overall restored microbiome. This highlights the importance of understanding the mechanisms of probiotic action to understand clinical outcomes.

Certain probiotic strains have been associated with significantly reducing rates of AAD. Importantly, the Advisors suggested that use of probiotics in all patients who are prescribed antibiotics **may encourage compliance to antibiotic regimens** through reducing risk of AAD, which can often deter patients from completing their course. This is important, given the threat of antimicrobial resistance (AMR), which increases with patients not completing prescribed courses of antibiotics.

Advisors expressed positive opinions of the use of probiotics for reducing AAD risk. The pharmacists frequently recommend probiotics to patients, with one practice automatically printing ‘probiotic reminder’ labels alongside antibiotic prescriptions. Which probiotic strain to recommend is, however, a minefield for HCPs. With the exception of certain *Bifidobacterium* and *Lactobacillus* strains – which were specifically cited as being beneficial – the Advisors described having shelves full of different probiotic products in their pharmacies, with limited evidence-based knowledge restricting their confidence in recommending to patients. **More evidence-based education could therefore aid determination of which probiotics could benefit which patients.**

Collaboration between GPs and pharmacists may be useful to support probiotic recommendations for patients. With education for pharmacists to inform on the evidence-backed strains that can reduce AAD risk, GPs can be confident that when they prescribe an antibiotic, they can direct the patient towards the pharmacist who is confident in knowing which probiotic to offer in combination with the antibiotic.

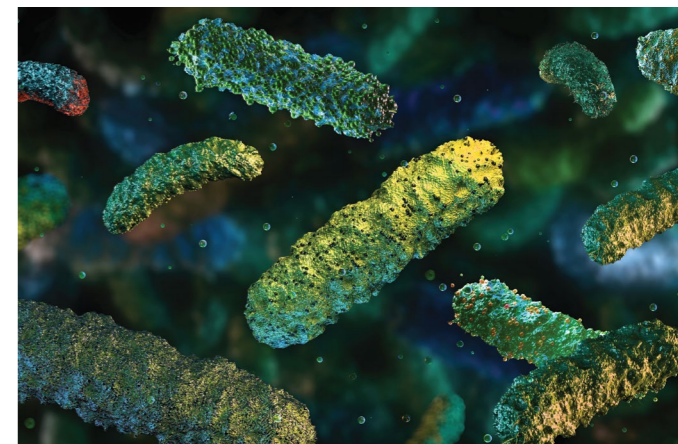
## Education is essential to enhance clinical and patient awareness of the use of evidence-backed probiotics

**Education is important to empower HCPs and educate patients on the potential value of evidence-backed probiotics.** Education should extend from the current HCP interest in probiotics with additional focus on the gut-brain axis, which is increasingly discussed within healthcare. Bite-sized learning activities (less than 10 minutes) would be beneficial to maximise engagement.

## HCP education

The Advisors discussed the importance of being **educated by colleagues and product representatives** to enhance their practice. **Webinars and evidence summaries** were highlighted as useful tools to improve confidence in HCP recommendations on probiotics.

Creating webinars for broad healthcare audiences would add value. GPs and pharmacists both play an important role in recommendation of probiotics for patients receiving antibiotics and those with AAD – both groups should be involved in educational activities. Small workshop-style sessions encourage



interactivity. **Robust, well-balanced evidence**, from recent studies, should be discussed and linked to allow follow-up exploration, with **patient testimonials** adding to clinical evidence to encourage HCP trust and to humanise the patients with AAD.

Ultimately, it can be helpful to share a few unique benefits of what makes the probiotic different from the many out there, as the market is crowded. Identification and bite-sized dissemination of these key points will greatly impact HCP understanding and confidence in probiotic products.

## Patient education

The Advisors described patients as frequently comparing probiotics to yoghurts, as well as requesting products based on the highest CFU values. It is important to help patients to understand that **probiotics with higher CFU counts do not necessarily confer greater benefits than those with lower CFU counts**, and to link benefits of specific probiotic strains to the CFU count studied in clinical data. **Educating patients on the requirement for and benefits of specific probiotic strains can therefore impact uptake.**

Patient outreach should build upon the trust that patients have in HCPs. This is particularly important in the age of social media, with non-HCPs promoting wellness products. Trusted HCPs would be beneficial to spread the messaging of probiotics and their role in AAD prevention and management – combining evidence-backed claims, for example ‘x% reduction in AAD’, with testimonials to develop an emotional connection, for example, ‘this probiotic worked for this person’. **HCPs should believe in the product and be able to give a clear outcome to patients.**

## Further evidence could improve confidence in recommendations

More evidence would further support use of probiotics during antibiotic treatment to prevent or reduce AAD. This is particularly important for vulnerable patient populations – including children and elderly populations – for which evidence is currently limited.

Larger-scale, strain-specific RCTs should focus on specific antibiotic classes and conditions. This would enable HCPs to understand which probiotic strains may be beneficial to prevent or reduce AAD depending on the antibiotic prescribed. One of the key trial outcomes should include improved patient

# Addressing AAD early, through use of probiotics, can prevent further complications and hospitalisations – especially in vulnerable populations.

## AAD can reduce patient quality of life and be detrimental to health

### Development of AAD

Antibiotics function by killing bacteria. While this is beneficial for treating a vast array of infections, this can cause dysbiosis of the gut microbiome – resulting in unwanted side effects. Reduction in ‘good’ bacteria within the gut can cause AAD, which **can last up to eight weeks following antibiotic cessation.**

**Broad-spectrum antibiotics** are associated with a higher rate of AAD than other families of antibiotics and are a commonly prescribed antibiotic type in the UK and Ireland. With high prescription rates and high resulting incidence of AAD, there is a great **need to offer support to patients to limit the impact of gut dysbiosis.**

Currently, AAD treatment predominantly involves simply informing patients of the potential onset of AAD, with a 1 in 3 chance of development, and managing patient expectations. Preparing patients for this possibility can help ensure that patients **“don’t [have a] knee-jerk response of stopping the antibiotic”**. Whether patients subsequently continue as normal or require intervention, for example use of loperamide, depends on patient-specific factors, such as age and their requirement to be frequently without a bathroom.

## Patient populations matter

**Children and elderly populations are at greatest risk of AAD substantially depleting their health.** Dehydration resulting from AAD can result in hospitalisation and seizures in these vulnerable groups. The Advisors therefore identified these populations as patients to keep an eye on. It is particularly important to address potential AAD at early stages, to prevent further complications and hospitalisations – especially in such at-risk populations. This may enhance the cost-effectiveness of probiotics, in addition to improving patient quality of life.

## Probiotics can restore the gut microbiome to improve symptoms of AAD

A diverse population of bacteria in the gut is required to support gastrointestinal functioning. AAD preventative strategies therefore involve maintaining the gut microbiome during treatment.

Probiotics compete with bacteria that may become disproportionately prevalent when antibiotics wipe out the usually more dominant species. Probiotics also regulate gene expression and immune responses. This encourages a healthy environment to support gastrointestinal function. Importantly, Advisors highlighted that even if the strain populations differ from their baseline within the gut microbiome following AAD



### Concise messaging and easy actions can support change

Evidence and education are key to improving uptake of probiotics. Beyond this, actions to make probiotic use easier will have an impact on uptake.

**Some pharmacists have labels that print when a patient is prescribed antibiotics, to remind them that probiotics should be recommended** – this can support timely recommendation and give HCPs confidence as to what to recommend to their patients. Checklists may also support recommendation of specific strains depending on a patient's condition and specific antibiotic treatment.

To support patient compliance, **formulation matters**. Different formulations are available, but taste and ability to swallow capsules could impact use and should therefore be considered. It is important that the final formulation matches that used within the clinical trials to ensure the probiotic has the same benefits as reported. **The size of a tablet** is also a consideration for patients. Logistically, the size of the product is important: **a box that is small, that can be easily transported** can support patient uptake. Finally, clear presence of key information (including whether the product is vegetarian/vegan, halal, etc.) can ensure suitability and ease for the patient – impacting their desire to initiate use.

### Proactive probiotic progression – next steps

In the absence of suitable guidelines in many countries, including the UK and Ireland, robust evidence needs to be disseminated to HCPs to support probiotic recommendations for prevention and management of AAD. Educational materials should be easily digestible, in the form of webinars and evidence summaries.

Discussions with colleagues, summaries of the available evidence, and checklists can also enhance HCP confidence in and understanding of which probiotics could be beneficial in which patients.

## ● Summary

**The roundtable offered expert discussion on the use of evidence-backed probiotics to prevent or reduce AAD. Some evidence exists to support the use of probiotics in this context, but analyses should separate strains to clarify those which display greatest benefit.**

**Given the vulnerability of children and elderly patients with AAD, these populations should be focused on when considering probiotics; however, patients of all ages should be encouraged to consider probiotics if their use prevents them from finishing their antibiotic course early due to AAD.**

**The following action points may support HCPs who have patients requiring antibiotics:**

- 1. Are you prescribing an antibiotic? Think probiotic**
- 2. Are you unsure of which probiotic to consider? Focus on specific strains of *Bifidobacterium* and *Lactobacillus* that have strong evidence in patients taking antibiotics and experiencing AAD**
- 3. Cross-functional support: GPs and pharmacists must work together to support patients in reducing the risk of AAD**

compliance to the antibiotic course – an essential consideration for the prevention of AMR. An additional outcome should include reduced rate of diarrhoea, to provide data that HCPs can relay to patients during recommendations. Assessment of the microbiome prior to study initiation and throughout the intervention could also enable understanding of how the microbiome recovers with probiotics – including through establishment of different populations of microorganisms with the same functions.

While RCTs are important to increase the evidence base, they are also expensive. Real-world data can also be useful, and can provide cost-effectiveness data, as well as patient perspectives to encourage focus on public health benefits.

Systematic reviews and meta-analyses of existing data can be valuable tools for understanding the broader clinical landscape. However, the grouping of multiple probiotic strains together, including evidence from a variety of studies that may not be comparable can be challenging. Advisors stressed that results from non-beneficial strains could mask those of beneficial strains in grouped analysis when combining results from trials of unrelated probiotics. Furthermore, **Advisors compared grouping different probiotic strains together in analyses to asking “do medicines treat diseases?”** – emphasising the individual nature of each strain. Further evidence generation and dissemination should therefore investigate strains individually or carefully plan probiotic groupings to **match the right probiotics with the right situations, in the right patient populations.**

In the US, guidance supports the use of probiotics based on the currently available evidence. There is variability in guidance internationally; however, more evidence could support more widespread recommendation of evidence-based probiotics in healthcare.

