

# Guest Editorial

## Antibiotic Resistance—What can the Dental Care Sector do?

The development of drug-resistant pathogens is extremely alarming. Today, infections that have been regarded as fairly mundane for many decades can in the worst case lead to a patient's death. In Europe alone, 25,000 people die every year from infections that cannot be cured because of antibiotic resistance. Even with modern high-tech healthcare, where the capacity to cure diseases and save human lives has increased dramatically, the risks to the health and lives of patients as a result of infections that do not respond to any antibiotic are now very real.



Two vital measures in tackling this global problem are to decrease the use of antibiotics and to ensure that the necessary courses of antibiotic treatment are actually completed.

We believe that supplements of *Lactobacillus reuteri*, a clinically proven probiotic, are an alternative that can contribute to reducing the risk of antibiotic resistance. There are powerful arguments showing that the dental care sector should use this alternative to a greater extent.

Despite the glaring need, few new antibiotics are being developed. Other types of drugs, such as cancer medicines, are far more profitable for the pharmaceutical companies and the incentives for research on new antibiotics are therefore few.<sup>1</sup> To combat this scenario, a number of national and international collaborative efforts between the private sector and government agencies have been initiated.<sup>2,3</sup> Public authorities are also taking action by issuing new guidelines to curb overuse of antibiotics. But, these measures are not sufficient. According to a recent report from the WHO, antibiotic resistance is a growing public health scourge of such magnitude that it threatens everything that our modern medicines have succeeded in achieving.<sup>3</sup> Parallel to these enormous investments, I am therefore convinced that we also need to take additional measures. Furthermore, I believe that these other alternatives can be at least as effective as the billions that are spent on developing new drugs.

According to the Swedish National Board of Health and Welfare's guidelines for 2011, preventive care accounted for only one percent of total healthcare and medical spending in Sweden.<sup>4</sup> The remaining 99% was devoted to alleviating symptoms or, in the best case, curing infections that had already occurred. My opinion is that this distribution should be completely different, since it is better from both a human and an economic perspective to prevent diseases than to treat them. Healthy people are less susceptible to infections, need fewer antibiotics and therefore cause less antibiotic resistance. In addition to a reallocation of economic resources, we must above all realign our focus from relieving symptoms to promoting preventive healthcare. To achieve this, we need incentives to change our habits, such as what we eat, how much we exercise, how often we use dental floss—basically, our entire lifestyle.

Swedish dental care is a happy exception within the Swedish healthcare sector. Preventative dental care is aimed at safeguarding against infections with the help of regular check-ups and education and advice about oral care at home. In spite of this, the dental care sector prescribes close to 7% of all antibiotics, according to the Swedish Institute for Communicable Disease Control. And, the regional differences are large, which indicate that the guidelines and recommendations for use of antibiotics are not being followed.<sup>5</sup> It also means that the dental care sector is facing a major challenge.

So what can *Lactobacillus reuteri* do to fight the problem of antibiotic resistance? A great deal, I believe. *Lactobacillus reuteri* affects the immune system and if it is possible to prevent infections, one logical consequence should be a decreased need for antibiotics. This is something we have shown in several studies—children who were given supplements of *Lactobacillus reuteri* were healthier and used less antibiotics.<sup>6-8</sup>

The absence of beneficial bacteria is a key etiological factor of periodontal diseases. Today, treatment of periodontal disease focuses on reduction of harmful bacteria mainly by scaling and root planning (SRP) and oral hygiene instructions. Although the number of pathogens can be greatly reduced by SRP, the resulting shift to a less pathogenic microbiota is only temporary even when combined with antiseptics or antibiotics.<sup>9</sup> In this context, the administration of beneficial bacteria has emerged as a promising concept in the prevention and treatment of perio-

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dental diseases. *Lactobacillus reuteri* possesses both antimicrobial as well as anti-inflammatory properties, which offers a whole new treatment approach to increase the proportion of beneficial bacteria in the oral cavity. A study on patients with chronic periodontitis showed that supplementation with *Lactobacillus reuteri* after scaling and root planing could reduce the number of patients with deep dental pockets. And, it is still more interesting that these results were on par with those reported for adjunct treatment with amoxicillin and metronidazole.<sup>10</sup>

Another area of use for *Lactobacillus reuteri* is in combination with antibiotics to ameliorate the side-effects of antibiotic treatment.<sup>11-15</sup> *Lactobacillus reuteri* can increase the rate of patients completing the treatment, which can contribute to lowering the risk for antibiotic resistance.

*Lactobacillus reuteri* can thus create benefits in several ways—by preventing infection and by reducing side-effects of antibiotics, thereby affecting antibiotic resistance. In addition to the initiatives already being taken by the Swedish dental profession to reduce the risk for antibiotic resistance, *Lactobacillus reuteri* should be used to further contribute to this vitally important work to a far greater degree than is currently the case.

**Peter Rothschild**

CEO and Founder, BioGaia AB  
Stockholm, Sweden

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