science of prophylaxis
The holistic connection between oral and general health

peri-implantitis
When to avoid implants

practical prophylaxis
“Prevention is not just for children and young people”
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Dear Readers,

I have been working as an editor at Dental Tribune International for over twelve years and as a clinical editor for its specialist publications. I have witnessed tremendous changes in many fields of dentistry. In only a few years, analogue become digital and the approach to diagnostics, treatment planning, implant placement and restorative treatment changed completely in dentistry. Currently, the dental professional can design a new smile for a patient before he or she even sits on the dental chair. There are so many new techniques and technologies to apply, but is this really the direction in which dentistry should be developing first of all?

A representative YouGov survey performed in 2017 found that one in three adults in the UK do not brush their teeth twice a day, including a third of men. According to a research conducted in 2015 by renowned toothpaste manufacturer, over 90 per cent of citizens of one of the European countries believe that eating an apple substitutes for brushing. Figures provided by National Smile Month, the UK’s largest and longest-running campaign to promote good oral health, show that a third of all children starting school each year have signs of dental caries and tooth extractions are the main reason children are admitted to hospital for general anaesthesia.

These are only some of the frightening figures that continue to shock with information about the low level of oral health worldwide.

There are still patients who think that they do not have to clean their prostheses and parents who do not brush their children’s primary teeth because, after all, they will fall out anyway.

Despite the efforts of the FDI World Dental Federation, the leading global body committed to oral health, which organises educational programmes and awareness campaigns, the level of oral health, even in developed countries like the UK and most of the EU countries, is still unsatisfactory and many people only visit the dentist once they already have a problem.

Therefore, in my opinion, there is a great need to make people aware of the risks and health implications that come with poor oral hygiene and that prevention is the key to a beautiful smile, not zirconia crowns or dental implants. Prosthetic solutions are necessity when prevention fails, but dental professionals should be primarily focused on prevention, should they not?

I feel very grateful that, after so many years of writing and editing articles on how to improve prosthetic solutions, I am finally involved in producing a publication about how to prevent oral disease and maintain good oral health, because I believe that this should be a direction in which dentistry should develop primarily.

With this in mind, I wish you all happy reading of this year’s first issue of the prevention magazine and hope that the articles will be informative to you and offer you ideas for efficient application in your practice.

Yours sincerely,
Magda Wojtkiewicz
Managing Editor
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The Eklund Foundation supports international research and education within the dental field. In 2018, the foundation is distributing approximately €160,000 to high-quality projects in odontology. The foundation welcomes applicants from all fields of dentistry and will particularly prioritize projects related to periodontology, implantology and cariology.

“The foundation is a way for us to show our appreciation and create something that will contribute to knowledge and development within the odontological field for many years to come.”

Joel Eklund, CEO, TePe Munhygienprodukter AB

Next application period will be open May, 2019.
Learn more on www.eklundfoundation.org
Raising awareness of the importance of keeping gingivae healthy throughout a whole lifetime, particularly among people aged over 60, is one of the new priorities of the European Federation of Periodontology (EFP), the leading global organisation on periodontal science and practice. Other aims include strengthening the leadership of the EFP around the world and promoting the status of periodontology among dentists and other health professionals.

More than 75 experts and officers from 30 national scientific societies specialising in periodontal health and implant dentistry gathered in Vienna in Austria on 17 March to celebrate the EFP’s annual general assembly and to discuss future projects. Highlights of the meeting included the appointment of Prof. Anton Sculean as new EFP President, the launch of the EFP mobile app, the international dissemination of the Perio and Caries project, and reports on the final preparations for European Gum Health Day 2018 in May and the EuroPerio9 congress in June.

Sculean, chair of the department of periodontology and executive director of the School of Dental Medicine at the University of Bern in Switzerland, has taken over the helm as EFP President from Prof. Gernot Wimmer, Senior Scientist and Privatdozent at the Medical University of Graz in Austria. Other major appointments by the assembly included Prof. Lior Shapira (Israel) as new executive committee officer and coordinator of European Gum Health Day 2019, and Prof. Filippo Graziani (Italy) as President-elect. In addition, Prof. Nicola West (UK) and Dr Monique Danser (the Netherlands) will join the EFP’s executive committee in 2019 as secretary general and treasurer, respectively.

The EFP’s general assembly included the official announcement of European Gum Health Day 2018, to be celebrated on 12 May to raise public awareness across Europe of the importance of keeping gingivae healthy throughout life. “Health begins with healthy gums” is the slogan chosen by the EFP to remind authorities and the public that gingival health is an achievable and cost-effective way to improve general health, public health and quality of life.

By joining European Gum Health Day 2018, more than 25 national societies of periodontology are organising at the national level a wide range of public events, conferences, communication projects, periodontal check-ups and other activities, under the coordination of Dr Xavier Struillou, who is making sure that their messages are aligned.

EuroPerio9—The world-leading congress
Participants of the Vienna general assembly were informed of the latest preparations for EuroPerio9, which will take place in Amsterdam in the Netherlands between 20 and 23 June and is widely regarded as the world’s leading congress in periodontology and implant dentistry. Registration for EuroPerio9 is open and attracting numerous attendees, journalists and companies. The recently finalised scientific programme features innovative session formats, and more than 100 presentations will be deliv-
The Perio and Caries awareness project builds on the knowledge extracted from Perio Workshop 2016, the top-level scientific conference organised by the EFP jointly with the European Organisation for Caries Research in November 2016 in La Granja in Spain. EFP-affiliated societies are offered all Perio and Caries publications free and encouraged to disseminate, edit or translate them if they wish. This process has proved successful with a similar initiative previously developed by the EFP, the Oral Health and Pregnancy project, supported by Oral-B, which is now being disseminated by 20 national member societies in their respective languages and countries.

EFP Graduate Research Prizes in Periodontology

The first prize of the EFP Graduate Research Prizes in Periodontology, which is given to the best research from EFP-accredited graduate perio programmes, was awarded to the study “At least three phenotypes exist among periodontitis patients”, authored by Dr Chryssa Delatola, Prof. Bruno Loos, Dr Evgeni Levin and Dr Marja Laine from the Netherlands. The second prize was given to research titled “Reduced platelet hyper-reactivity and platelet-leukocyte aggregation after periodontal therapy”, a paper written by Dr Efthymios Arvanitidis, Dr Sergio Bizzarro, Dr Elena Álvarez Rodríguez, Prof. Bruno Loos and Dr Elena Niciu, also from the Netherlands. The third prize went to the study “Oral health in relation to all-cause mortality: The IPC cohort study”, authored by Prof. Nicolas Danchin from France, Prof. David Batty from the UK and Prof. Philippe Bouchard from France. Concerning personal recognition, Prof. Jan Wennström received the EFP Distinguished Scientist Award, and Prof. Stefan Renvert the EFP Distinguished Service Award.

Strengthening the message

“As the EFP reinforces its leadership and its role as the world benchmark in gingival health and periodontal disease, it is time for us to strengthen the message that gingival health brings not only oral health but also overall health, well-being and quality of life throughout a whole lifetime, and particularly among the population aged over 60,” highlighted Sculean. “I am deeply happy and honoured to lead this exciting time for the EFP and for periodontology in Europe, as we’ll keep working on promoting its acknowledgement as a recognised dental specialty in all EFP countries, and on turning it into an area of interest for dentists, dental students and patients across Europe.”

Wimmer said, “I am proud that this 2018 general assembly has brought together here in Vienna many of the most brilliant periodontal scientists, clinicians and teachers in the world, to review progress made over the last year and to prepare future action with the aim of tackling the hidden epidemic of periodontal disease. Now I’m ready to continue to contribute to the success of exciting forthcoming EFP projects, starting with EuroPerio9 next June.”

Other major outcomes of the Vienna general assembly were the launch of the EFP app for accessing key EFP content via smartphones and tablets, recognition of the Lithuanian periodontology society as a full-member society and the decision to hold Perio Master Clinic 2019 in Hong Kong next year.

EFP—The global benchmark in periodontology

The EFP is the driving force behind EuroPerio—the world’s leading congress in periodontology and implant dentistry—and Perio Workshop, a globally leading meeting on periodontal science. It is an umbrella non-profit organisation that brings together 30 national scientific societies of periodontology in Europe, northern Africa and the Middle East, which together comprise about 14,000 specialist dentists, researchers and other members of the dental team focused on improving periodontal science and practice. The EFP also edits the Journal of Clinical Periodontology, one of the most authoritative scientific publications in this field.

More information can be obtained at www.efp.org.
This year’s EuroPerio, the world’s leading congress in periodontology and implant dentistry, is expected to attract up to 10,000 periodontists and members of the dental team to learn about the latest in periodontal research and clinical practice, in June in Amsterdam in the Netherlands. In this interview, Prof. Søren Jepsen, past President of the European Federation of Periodontology (EFP) and Scientific Chair of EuroPerio9, outlines the event’s scientific programme, which features more than 100 top-level speakers and many innovations. The detailed programme is available at www.efp.org/europerio9/programme/scientific/index.html.

Why should a dentist or a hygienist consider attending EuroPerio9?

Because EuroPerio9 is their opportunity to obtain the best insight on periodontology and implant dentistry available in the world until 2021—when EuroPerio10 takes place. EuroPerio9 has gathered the best pool of talented speakers from Europe and around the world for an audience that is increasingly global too. We’ll enjoy a great venue in a city as attractive and well-connected as Amsterdam. And then there are the events of the networking programme, the fact that all happens in only four days and the choice between four parallel tracks of presentations according to the attendee’s interests. All in all, attending EuroPerio9 is the most enjoyable and cost-effective way to be fully updated on the best in periodontology and implant dentistry available today.

Will EuroPerio9 be similar to EuroPerio8 (London, UK, 2015) and EuroPerio7 (Vienna, Austria, 2012)?

It will be definitely unique! We have created the Team Session track, which is more inclusive than the previous separate track for dental hygienists. We have added more sessions on the afternoon of Wednesday, 20 June, to take better advantage of the time before the official opening ceremony. We have arranged sessions in such a way that many more dental professionals will be able to present their short oral presentations and posters for discussion. We have included the well-established stars in the specialty and have more women speakers and young speakers than ever before. We have built on the best of our successful experiences and we have added a number of new formats.

What are those new formats?

We have designed eight new formats. First, on the opening day, we will have a special double session with the Japanese Society of Periodontology, on one biofilm and anti-infective therapy, the other on regenerative periodontal and implant therapy. Second, the Perio Talks will offer fresh, TED Talk-style presentations given at the first EFP Alumni Symposium. Third is a lively debate about the use of antibiotics, led by Profs. Andrea Mombelli and David Herrera, in which attendees will be able to use their smartphones as voting devices. Fourth, for the first time, a live surgery session will take place at a EuroPerio congress. A new, rarely performed procedure with implants will be carried out by Prof. Giovanni Zucchelli and Dr Martina Stefanini at the Academisch Centrum Tandheelkunde Amsterdam dental school and broadcast in real time.

The fifth major innovation is the interdisciplinary treatment planning session, in which cases will be shown and the audience will choose between different options for treatment. Sixth is a 3-D session with Dr Pierpaolo Cortellini and Prof. Stefan Renvert on reconstructive surgery on teeth and implants, in a large auditorium. Seventh is the EFP Perio Contest, for which presentations will be judged not only by an expert panel but also by social media voting before the congress. The three final contestants will be invited to present their work on stage on the last day of the congress. Eighth is the Nightmare Session, in which Drs Mario Roccuzzo, Giulio Rasperini, Jean-Louis Giovannoli and Caroline Fouque will explore treatments that went badly.

Being Scientific Chair of EuroPerio9 sounds like quite a challenge. How has the experience been?

It is, indeed, an incredible challenge, but also an opportunity to work with a wonderful team of periodontists and professional organisers. Together, we have worked hard to put together a high-quality programme with the latest research in the field, the best professionals and the new formats I mentioned. I hope that EuroPerio9 will provide attendees with a fruitful and unforgettable experience!
Periodontal disease and dental caries are the two most widespread oral conditions in the world and in fact the two most prevalent non-communicable human diseases. Both are preventable and share common genetic, aetiological and environmental factors. Given that they follow different trajectories, they have traditionally been studied separately. Not anymore.

For the first time, the European Federation of Periodontology (EFP) has put forward a new, common approach by launching Perio and Caries, an ambitious Europe-wide project aimed at raising awareness among scientists, health practitioners and the public about the associated causes, risk factors, interactions and prevention measures than may affect both periodontal disease and dental caries. The core element of the Perio and Caries project is the newly created dedicated site perioandcaries.efp.org, which contains a wealth of educational materials, which are freely available and downloadable. These publications include a specially written scientific report compiled by Prof. Nicola West, as well as five targeted recommendation brochures, each providing concise advice for oral health professionals, other healthcare professionals, researchers, policymakers and the population at large.

The Perio and Caries initiative, sponsored by Colgate, has been designed to disseminate the outcomes of Perio Workshop 2016, a major scientific meeting held in La Granja in Spain and jointly organised by the EFP and European Organisation for Caries Research (ORCA).

It was co-chaired by Prof. Mariano Sanz (EFP) and Prof. Andreas Schulte (ORCA). All Perio and Caries publications are based on the knowledge generated at Perio Workshop 2016.

Based on the contributions from 75 leading global cariologists and periodontologists organised in four working groups, Perio Workshop 2016 pioneered the exploration of the boundaries between dental caries and periodontal disease. It reviewed all available scientific evidence on common links between these oral conditions, including identified similarities—and the distinct characteristics of each—and recommended clear preventative strategies to help tackle them.

The scientific conclusions of Perio Workshop 2016 are publicly available in a special open-access supplement of the EFP-edited Journal of Clinical Periodontology. Furthermore, the Perio and Caries site offers a series of related videos, news, additional documentation and all the scientific papers produced by the four working groups at Perio Workshop 2016, which examined the role of microbial biofilms; the interaction of lifestyle, behaviour and systemic disease; prevention and control; and age-related effects, all in relation to dental caries and periodontal disease.

Available free to everybody
Perio and Caries materials are to be shared with all 30 EFP-affiliated national societies of periodontology in Europe, northern Africa, the Middle East and the Caucasus, and their members—around 14,000 periodontists, other dentists, researchers and other oral healthcare professionals interested in gingival health. Stakeholders can freely take advantage of this Perio and Caries content in their dental practices, schools, laboratories and companies. The same applies to any other people who may be interested. “The project Perio and Caries disseminates for the first time a new approach to dental caries and periodontal disease as connected conditions,” explained Prof. Mariano Sanz. “Building on the outcomes of Perio Workshop 2016, Perio and Caries pays attention to the common risk factors that make people lose their teeth because of caries, periodontitis or both. Emphasis has been put on patients’ quality of life, not only how these widespread oral diseases impact upon their well-being, but also the reverse situation, how socioeconomic factors heavily influence the prevention, development and treatment of these diseases.”

“Sugar intake, smoking and excess weight are the three key factors to be reduced in order to help tackle both periodontal disease and caries,” pointed out Prof. Iain Chapple, Secretary General of the EFP and co-chair of one of Perio Workshop 2016’s working groups. “By bringing down carbohydrate intake to less than 25 grammes per day, by fighting and ideally eliminating the smoking habit, and by avoiding obesity, we are not only improving our general health, but having a meaningful, positive impact against periodontal disease and dental caries.”

“The main message of Perio and Caries is that tooth loss, periodontal disease and caries are nearly always preventable,” concluded West. “Following simple recommendations such as brushing teeth with fluoride toothpaste twice a day, reducing the amount of sugar and starch in the diet, staying away from tobacco, and seeing your dentist twice a year would improve dental and overall health, as well as alleviate the economic burden of periodontal disease and dental caries. We hope that medical professionals will heed our campaign’s motto: ‘Teeth are for a lifetime. Take action!’ and will guide their patients accordingly.”

Editorial note: A list of references can be obtained from the publisher.
The holistic connection between oral and general health

By DTI

To discuss about the future in holistic healthcare education, prevention met up with Dr Marzia Massignani, Global Scientific Affairs Manager for Sunstar, at the company’s new Étoy headquarters in Switzerland—just a stone’s throw from the beautiful Lake Geneva.

“The holistic connection between oral and general health really is our main focus,” she explained. “By taking care of your oral health, you are taking care of your general health. Interestingly, there is still so much that can and needs to be studied in this field. The biggest challenge, however, is gaining people’s attention. People are being bombarded with information in the form of blogs, journals, social media, and so on. Obviously, oral and general health information easily get lost along the way.”

Where did Sunstar’s holistic approach to well-being originate?

Dr Marzia Massignani: Prior to his death of complications from diabetes, Kunio Kaneda, Sunstar founder, made it very clear in his last few hours of conversations with his son, Hiroo, that he wanted him to search for the best professionals working around diabetes. As a representative of Sunstar at the Sunstar Portside Symposium in Kobe in Japan in 1987, Hiroo addressed the link between diabetes and oral health. There had been a number of studies done before, but by bringing this link to the attention of the scientific community and promoting research on the subject, he really opened up the way for a new field of study that is now widely accepted and researched. Of course, this vision has now been taken up and driven by the third generation, led by CEO Yoshihiro Kaneda.

Is there a difference in how oral health and other medical specialists regard this interconnection?

We have been doing research on how diabetes associations communicate with patients and found that this link sometimes is not stressed enough. We gained the impression that this idea is still not widely accepted in the medical community and that there is more input provided by periodontists than diabetes researchers at present. However, in World Health Organization reports and the International Diabetes Federation guidelines, diabetes is already described as being linked to periodontal disease and vice versa. Moreover, as part of a project Sunstar funded, the European Federation of Periodontology and the International Diabetes Federation released a number of new guidelines for dental professionals, medical professionals and patients. So, although more organisations are starting to address this link, Sunstar still has an important role in educating the wider public and supporting health professionals.

In the process, we have developed a virtual reality tool showcasing the connection between oral and general health. It is a purely scientific and non-commercial project that is to be launched at the upcoming EuroPerio9 congress in June. In fact, we already showed it at the last International Diabetes Federation congress because we wanted to gain the attention of diabetes specialists too. If we connect a new medium that people have not experienced yet to our holistic health message, there is...
a greater likelihood that they will remember it. So far, I can say it has worked.

Another way of gaining people’s attention is the Perio Link Award. Can you tell me more about that?

Oral and general health concern everybody. However, although there are a great number of excellent papers that explore the link between them—well-executed and with solid results—they are usually not available to the general public and this is wrong! Science is for everyone. The only way to encourage people to like science and become involved is to break it down in a way that everybody understands. For this reason, and also to promote research in the field, we established the Perio Link Award.

For the Perio Link Award, the Sunstar Foundation’s scientific committee selected what they felt were the most influential scientific papers of the last three years on the oral and general health link. The nominees for the award were asked to explain their research in a one-minute video. Some nominees had difficulty in doing this because they had never been asked to do this before. In order to spread their scientific research, the nominees were then asked to share their videos and collect votes. The project with the most votes would receive a monetary prize, as well as an expenses-paid visit to this year’s EuroPerio congress in Amsterdam in the Netherlands. It was pleasing to see how some scientists employed their networks to spread their message. Some healthy competition between different teams of course also contributes to spreading the message.

How do Sunstar’s various product groups relate to each other based on the holistic view that mouth and body are interconnected?

Industrialisation has largely led to specialisations in products and professions and too often there is no link with other fields. Cross-disciplinary thinkers are valuable to break silos. Sunstar, for instance, connects a number of different business units. So how are toothbrushes connected with motorbikes, brakes or sealants? Simple: health and safety. Inflammation, for example, is common to a number of diseases, such as diabetes, periodontitis, dementia and obesity. It is a connector and a starting
point. When one considers inflammation and ways of preventing it from a holistic perspective, the solution lies in avoiding stress, sleeping well, and ensuring good oral health and quality of life.

Do you think that has something to do with Sunstar being a Japanese company?

Japanese culture definitely has an impact on what we do. Many companies in Japan are very specialised and pursue nothing less than perfection. That of course is something that we strive for as well. Apart from that, Sunstar is a product of our chairman and CEO’s vision. Their business decisions are informed by their collaboration with people from all over the world and being open to seeing things from different perspectives. One could say that they are holistic thinkers themselves.

Have you incorporated Sunstar’s 360° approach to health into your personal life?

Oh yes, very much so. And to be honest, I feel extremely thankful. It was only after starting my job at Sunstar that I heard about the connection between oral and general health, and I have noticed, in talking to friends, that I have become very evangelical about the subject myself! Personally, I have started to think about things I had never considered before, such as the possible role of mindfulness in enhancing mental health and reducing stress through various relaxation methods. There is a proven link between stress and inflammation, and I am interested in holistic ways to reduce it. My work here has greatly changed my way of experiencing life, as well as my way of communicating.

Finally, what are your wishes and recommendations for dental professionals?

My greatest wish is for dental professionals to spend a little bit more time in talking to their patients. A good oral health routine, including using interdental brushes and going to the dentist at regular intervals, is the gateway to good general health. Dentists have a tremendous opportunity in passing on this knowledge to their patients. If they would take an extra five minutes to do that, we would see an overall improvement in quality of life.

Of course, it would also help if governments will include oral health and care in their agenda and prioritise it. As political changes are driven by people, we need to support oral care and health professionals in educating their patients. The Perio Link Award demonstrates that the supporting research is there and that the data is excellent. These are no fairy tales. We need to make people aware and empower them.

Thank you very much for the interview.
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Eklund Foundation— Supporting research in odontology

By DTI

The Eklund Foundation for Odontological Research and Education was established to support high-quality research in the field of dentistry. It was launched with a donation of €5.5 million by the Eklund family, founders of the Swedish oral hygiene company TePe Munhygienprodukter. Key in reviewing the research projects and presenting the applications under consideration to the board is Dr Anna Nilvéus Olofsson, Manager of Odontology and Scientific Affairs at TePe.

First of all, what constitutes a perfect research project for the Eklund Foundation?

Dr Anna Nilvéus Olofsson: Applicants from all fields of dentistry are welcome, though we prioritise periodontology, implantology and cariology. The applications are assessed on well-defined criteria: novelty and originality, feasibility and scientific quality of the proposed research, and lastly, the merits of the applicants, as well as the quality of their applications. Every year, we receive a significant number of high-quality applications and are pleased to be able to select projects that really stand out.

What is your greatest challenge in selecting successful applicants?

We see it as an opportunity to contribute to high-quality research, rather than a challenge. The real challenges are tackled by the researchers, whereas it is our privilege to support them.
How can the results of the research projects be integrated into dental practice?

It depends on the aim and characteristics of the projects, but as the research process often runs for an extended period of time, the outcome cannot be realised in practice before the results are thoroughly analysed and compiled. The majority of the applications for funding are in their initial stages, and we expect a number of our selected projects to have strong clinical relevance in the long run.

For instance, we know for a fact that globally there is a growing elderly population with more implants and prosthetic constructions. Research results will contribute to knowledge about how to address these challenges. Another highly topical research focus is the connection between oral and general health, which may influence medicine from a wider perspective. We look forward to seeing how the funded projects will contribute to odontological knowledge and what clinical impact they will have in the future.

How does the Eklund Foundation differ from other organisations that support research in the field of dentistry?

Some foundations work locally, while others—such as the Eklund Foundation—work globally. Many different types of foundations are needed to support as much high-quality research as possible, and there is no competition between them. It is important to stress that research has to be carried out independently from company interests in order for it to be unbiased. Thus, the Eklund Foundation operates entirely independently from TePe. The foundation is a way for the owners of TePe to show their appreciation for the dental profession and create something that will contribute to knowledge and development in the field of odontology for many years to come.

Do you see dentistry becoming more medical, embracing prevention and primary prophylaxis?

Prevention already plays a big role and will become even more prominent in the future. Good oral hygiene and good oral health have turned out to be of wider importance than initially thought. Oral health is not merely about brushing one’s teeth, cleaning interdentally and having a good oral health routine; rather, it is about maintaining a healthy lifestyle, of which oral hygiene is an essential part. In recognition of this, TePe was recently awarded a life science prize. This is a clear indication that oral hygiene belongs to the domain of life sciences, and it pleases me to see oral health being placed in a wider health context.

Is TePe’s philosophy reflected in the Eklund Foundation in any way?

Although they exist independently of each other, both TePe and the Eklund Foundation place high value on close relationships with the dental community. TePe was founded in close collaboration with the profession and listens to their specific needs and issues, which in turn translates into the development of new products. The goal is not merely to develop visually attractive oral health products; every product has a clinical relevance. As a dentist, I can thus fully endorse TePe’s product portfolio.

Lastly, how can researchers apply for funding?

All information regarding the application process is available at www.eklundfoundation.org, including the application form and clear instructions on how to apply. The application period opens in May each year, and the projects that will receive funding are announced in the autumn.

Facts about the Eklund Foundation

– Founded in 2015 by the Eklund family
– Supported by a donation of €5.5 million
– Next application period starts in May 2019
– More information is available at www.eklundfoundation.org
One of the applicants to be awarded a grant by the Eklund Foundation for Odontological Research and Education in 2017 was Dr Riccardo Guazzo, who combines his research at the dental clinic of the University of Padua with running a private practice in Vicenza in Italy. Through their research project titled “Peri-implant disease in elderly population: Epidemiology and treatment strategy of an emerging problem”, Riccardo and his team seek to address the increasingly prevalent problem of peri-implantitis in ageing populations, with the ultimate aim of developing effective prevention and treatment strategies.

Your research topic is peri-implant disease in the elderly population. Why is this such an important subject?

“Dental implants require more attention”

By DTI
Dr Riccardo Guazzo: Dental implants are the biggest revolution in dentistry of the last 30 years. They allow restoration of masticatory function and improvement of patients’ quality of life from an aesthetic, psychological and functional point of view. More and more patients are being treated with dental implants: over 15 million implants were placed in 2013, of which 1.3 million were in Italy alone. The purpose of our study is to assess the prevalence of peri-implant disease in elderly dependent patient populations by studying nursing home residents in the province of Padua in Italy. The constant increase in the use of dental implants and their associated inflammatory pathologies, as well as the increase in the number of elderly patients in nursing homes, underlines the originality and relevance of our study. Furthermore, this study will be the precursor to a wider programme that will aim to prevent peri-implant disease and ensure optimal peri-implant tissue health and maintenance.

**Why did you decide to explore this specific topic?**
According to the 2015 official data from the Italian National Institute of Statistics, the average life expectancy in Italy for women and men was 83 and 79.6 years, respectively. More and more elderly people go to nursing homes because they gradually lose the ability to maintain an independent life and carry out normal everyday activities, including proper oral hygiene. The last is a fundamental prerequisite for long-term maintenance of dental implants. Inadequate oral hygiene can lead to inflammation of hard and soft peri-implant tissue. Symptoms of peri-implant disease are pain, abscesses, bleeding, halitosis and difficulty chewing. All of these symptoms result in a reduced quality of life.

**Does your research focus on a specific region? Are there significant differences between countries?**
A great number of people in various countries have implant-supported prostheses. We decided to start our research in the Padua area because there are more than 62 nursing homes in the city, giving us an estimated sample size of 3,000 subjects. Initially though, we will screen patients from a smaller sample.

**Why did your topic resonate so well with the Eklund Foundation?**
The aim of the study is to investigate the prevalence of dental implants and peri-implant pathologies in nursing home residents. The Eklund Foundation promotes scientific research aimed at improving people’s quality of life, so our research fits perfectly with that aim.

**How has the Eklund Foundation’s funding helped you in your research?**
Funding is essential for the project. We are employing staff and need specific instruments to conduct our research. We are also providing scholarships and have to cover travel and publication costs. Almost all scientific research has expenses related to staff and equipment. Funding is very important because internal resources are often insufficient.

**How do you think the increasing importance of primary prophylaxis will influence implantology?**
We hope that the use of dental implants will become more and more accurate through improved knowledge and techniques. Our wish is that primary prophylaxis will be pursued as a way to maintain and improve the health of the tissue surrounding dental implants as efficiently as possible. The longer this tissue remains intact, the longer people with dental implants will enjoy good oral and general health.

**What do you want dental professionals to take from your research?**
Dental professionals must remember that primary prevention is crucial to proper maintenance of dental implants. We must do everything in our power to prevent and, if necessary, treat peri-implant disease. In doing so, information is key. Patients must be informed about the undisputed advantages of dental implants, but also about possible complications and maintenance techniques. We must remember that dental implants require more attention and preventative care than natural teeth do.
Gain a child, lose a tooth?

By Prof. Nicole Arweiler, Germany

The most important physiological, hormonal and perhaps also most beautiful changes in a woman’s life occur during pregnancy. And the mouth is one of the main areas involved in these changes. Although gingival inflammation during pregnancy tends to increase—even with correct oral hygiene—pregnancy gingivitis does not normally cause lasting damage to the periodontium. In the post-partum phase, even women with periodontitis who did not receive periodontal treatment during their pregnancy show an improvement in all clinical periodontal parameters. So all is well, right? Unfortunately not.

The research agrees: pregnant women require special oral hygiene instructions, owing to hormonal changes, in order to avoid periodontitis. This is because periodontal treatment can be nerve-racking, time-consuming and bad for their health.

How important is periodontal health for pregnancy really? Its significance is actually increasing with current research findings. Pregnancy gingivitis is one of the most important periodontal diseases. Like other forms of gingivitis, untreated it can lead to periodontitis. No specific type of periodontitis is linked to pregnancy, but periodontitis seems to be a potential risk factor for negative pregnancy outcomes. But how strong are the connections between periodontitis and negative pregnancy outcomes like premature birth, low birthweight and pre-eclampsia really? More on that later.

The legislature has already known for decades about the importance of periodontal health for expectant mothers (e.g. the maternal health passport guides women in Germany and Austria through pregnancy). Federal committees and health insurance companies also require that gynaecologists and dentists speak about the importance of oral hygiene for mother and child in the last trimester as needed. Unfortunately, the reality is that only 5 to 10 per cent of pregnant women worldwide see a dentist during pregnancy. Certainly, socioeconomic status, fear and perhaps also apathy mean that many patients avoid the dentist. Many expectant mothers say they do not have time to go to the dentist several times. “Gain a child, lose a tooth,” as your grandmother used to say.

What is pregnancy gingivitis?

Various periodontal diseases, including pregnancy gingivitis, granuloma gravidarum (pregnancy tumour, also epulis gravidarum) and periodontitis, affect the (oral) health of pregnant women. Pregnancy gingivitis is therefore among the classic gingival diseases. Besides plaque-induced gingival disease, pregnancy gingivitis ranks among the diseases altered by systemic factors. This includes hormonal influences, like puberty, menstruation, pregnancy and diabetes mellitus or even blood disorders.

In appearance and form, pregnancy gingivitis does not differ from classic gingivitis, but it does differ in prevalence. Already in 1933, Ziskin et al. spoke of a 30 to 100 per cent occurrence. In more recent studies, this varied between 38 per cent and 93.7 per cent. Gingivitis has
been found to correlate with hormone level and plaque. In the second and third trimesters, pregnant women generally notice an increase in gingivitis and bleeding, since the body produces the steroid hormones progesterone and oestrogen more strongly. The more plaque, the higher the risk of gingivitis.

The causes of pregnancy gingivitis, however, seem to be more complicated than previously believed. Even small quantities of plaque in pregnant women lead to an excessive inflammatory reaction in the susceptible tissue. Not only does the immune system change, but so do blood circulation and the cell system. The entire oral mucosa prepares for the birth. The practice team must therefore pay particular attention to the dental biofilm. Progesterone and oestrogen directly promote the pathogens *Prevotella intermedia* and *Porphyromonas gingivalis*. Indirectly, the soft tissue is more sensitive to bacteria that reach the oral cavity.

**Does pregnancy gingivitis lead to premature birth?**

Generally, science assumes that periodontal inflammation plays an important role in pregnancy complications. Periodontitis as a chronic inflammation is ultimately caused by a bacterial infection and thus represents a potential source of circulating inflammatory biomarkers. These inflammatory mediators spread throughout the entire body and are related to possible negative pregnancy outcomes. In studies on periodontitis in pregnant women, the occurrence of the disease varied between 0 per cent and 61 per cent.

Clinical studies further suggest that bacteria, like *P. gingivalis*, *Treponema denticola*, *Tannerella forsythia* and *Fusobacterium nucleatum*, from the oral cavity colonise the foetus and the placenta, with blood being the most likely transfer medium. These periodontal pathogens may therefore represent a risk factor for negative pregnancy outcomes, including low birthweight, premature birth and pre-eclampsia (high blood pressure). Actually, there is still no clear proof to support the connection between periodontitis and negative pregnancy outcomes. Some studies indicate that there could be a link. Further studies are needed, however, to understand the complex biological processes. Three facts remain. First, a pre-existing periodontal condition in the woman can exacerbate periodontitis during pregnancy. Second, after the birth, the periodontal status of women with periodontitis improves without active periodontal therapy. However, the disease does not disappear and can even worsen after the birth. Third, pregnancy gingivitis alone does not lead to negative pregnancy outcomes.

**Treatment and prevention**

Whether the mouth is healthy, has gingivitis or even periodontitis, nowadays, organisations and researchers recommend that pregnant women make three visits to the dentist, ideally once per trimester. This way, dentists can advise them comprehensively in the first trimester. The second trimester is suitable for a professional tooth cleaning and, if necessary, periodontitis treatment. The practice team should use the third trimester for consultation on the dental health of the baby. Ideally, prophylaxis should begin for the child during pregnancy. Different studies show how important it is to educate women during pregnancy and right after the birth in order to reduce the risk of caries in children.

In the dentist’s office, pregnant patients should learn everything important about the development of dental caries, routes of infection and nutrition; however, the emphasis here is not just on the information, but also on targeted, preventative therapy. Expectant mothers who become enthusiastic about prophylaxis pass this experience on to their children. This way, prophylaxis for the child, the first primary prophylaxis even before the birth, becomes the focus of dentistry.

**Mechanical and professional plaque control**

Mechanical plaque control has always been the focus of pregnancy prophylaxis. Brushing with a toothbrush with
soft bristles and fluoride toothpaste, and using instruments for interdental care and, if necessary, chemical plaque control are key instruments for the prevention of gingivitis and periodontitis even before pregnancy. That is why, for example, Oral-B recommends electric toothbrushes with oscillating rotations. At the same time, every system of mechanical plaque control is suitable in principle, whether manual or electric, as long as the correct technique is used regularly and with persistence (120 seconds).

In the case of gingivitis, toothpastes with antibacterial agents such as stannous fluoride are beneficial, and mouth rinsing solutions are suitable as additional therapy. For acute gingivitis, patients should use chlorhexidine therapeutically for a short time, best in a concentration of 0.1 to 0.2 per cent or 1 per cent. Different meta-analyses have found that chlorhexidine can be used with confidence during pregnancy. Long-term chemical plaque control is suitable for pregnant women with nausea and poor oral hygiene, particularly in the molar area. Other alternatives, such as tea tree oil and propolis, have not shown any effectiveness in studies.

What to keep in mind with periodontal therapy

If the practice team has to treat pregnant patients for periodontitis, neither has any special procedures to be considered first. Research shows that non-surgical periodontal therapy is safe and sensible during the second trimester. Scaling and root planing are quite possible during pregnancy. Radiographs can be taken and local anaesthesia can be administered without additional risk to the foetus or the mother. Articaine is the agent of choice in this case. Periodontal therapy does not reduce the occurrence of negative pregnancy issues. However, it can lower the frequency of negative pregnancy outcomes in women at high risk of pregnancy complications or who respond better to periodontal treatment.

Modern pregnancy prophylaxis

Professional tooth cleaning as part of modern biofilm management is an indispensable component of gingivitis and periodontal therapy in the context of a prophylaxis session. Professional tooth cleaning, in combination with oral hygiene products and instructions, clearly reduces moderate or severe gingivitis. The second trimester is therefore best suited for professional tooth cleaning. At this point, nausea has usually disappeared and the patient can stay lying down for a whole hour.

An optimal pregnancy prophylaxis also includes nutrition from a dentistry point of view. Here patients should not limit themselves, but enjoy their pregnancy. Nevertheless, patients should forgo acidic foods and beverages. A craving for sour and sweet foods, often in high frequency, also increases the risk of caries or an erosive change in the tooth enamel. In addition, the buffering capacity and rinsing function of the saliva is reduced during pregnancy; the mouth tends to be dry, which promotes the development of dental caries. Even allegedly healthy foods and drinks, like fruits or fruit juices, which are acidic, can quickly damage the tooth enamel.

Speaking of erosion, morning sickness also leads to the production of gastric acid, which can again lead to dental erosion of varying intensity. Toothbrushing should be avoided after an episode. The pellicle needs two hours to reform after vomiting. Helpful means of neutralising are the consumption of milk, cheese and, above all, chewing gum. Instead of brushing right after, antibacterial mouth rinsing solutions and fluoride rinsing solutions are suitable first.

Pregnancy is a major challenge with regard to teeth and gingivae. The main task of periodontal treatment during pregnancy is to improve the periodontal and overall health of pregnant women. Oral hygiene training and nutrition advice reduce plaque and gingivitis and thus periodontitis. With respect to affecting negative pregnancy outcomes, intervention even before pregnancy may be more effective. If the practice team controls the gingivitis and so avoids periodontitis, it has made its contribution to a problem-free pregnancy. In all cases, prevention is better than cure and every tooth counts.

Editorial note: A list of references can be obtained from the publisher.
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Pregnant women are hardly informed about the importance of oral health

By DTI

A new mother herself, pregnancy gingivitis has become a subject close to Dr Anja Carina Borer’s heart. She set up a joint campaign between Oral-B and the European Federation of Periodontology (EFP), which promotes oral health during pregnancy and educates health professionals and the wider public on the issue. Originally trained as a dentist in Mainz in Germany, Anja now serves as Professional and Scientific Relations Manager Europe at Procter & Gamble in Geneva in Switzerland, where we met with her for some questions and answers on the subject. Fittingly, she brought along her 4-month-old daughter, who cooed quietly in her pram throughout the interview.

Oral-B and the EFP have touched upon a very important and personal topic, in that periodontal disease could affect the developing baby.

Dr Anja Carina Borer: Yes. Gingivitis is a well-known side-effect during pregnancy and the latest data shows that practically every pregnant woman suffers from it. The number of bleeding sites is about three times higher in pregnant women than in the average adult. Even I, a dentist equipped with more than enough scientifically sound Oral-B products, experienced some gingival bleeding for the first time in my life! As we know, untreated gingivitis can lead to periodontitis, the inflammatory burden of which can negatively impact pregnancy. Although more consistent in-depth studies are necessary, periodontitis during pregnancy has already been linked with premature birth, low birthweight and pre-eclampsia. This topic is important as most pregnant women are not aware of this problem and therefore often do not recognize the warning signs of gum problems such as bleeding or sensitive gums. With our campaign, we want to inform women and make sure they take good care of their oral health and see a dental professional in order to prevent possible oral health problems and pregnancy complications.

How can periodontitis lead to these complications?

Clinical studies suggest that bacteria from the oral cavity—specific microorganisms associated with periodontitis—colonise the foetus and the placenta, with blood as the most likely vehicle of transmission. As a consequence, the presence of periodontal bacteria in the fetal-placental unit may activate a local immune or inflammatory response that might negatively affect the pregnancy.
Biologically, that makes perfect sense, but how widely accepted is this point of view?

Although clinical research on the matter has existed for years, it is still a fairly neglected topic. Not only does it not receive enough attention from dental professionals, it is also largely overseen by healthcare professionals such as gynaecologists and midwives. When I was pregnant, I was warned about many potential risks, ranging from flying to eating sushi or dying my hair! I did enough research on the aforementioned “risks” to conclude that there is no scientific data to support these. However, no one—my gynaecologist included—told me to go and see a dental professional or take care of my oral health.

To me, this really is a very personal matter, as I fell pregnant while establishing the cooperation concerning pregnancy gingivitis with the EFP. I find it worrying that pregnant women are hardly ever informed about the importance of good oral health during pregnancy. Therefore, I was passionate about establishing the Oral-B/EFP cooperation and lead the joint campaign. Our aim is to better educate dental professionals and medical professionals in general, as well as the wider public, on the importance of good oral health during pregnancy.

Could you explain the changes in the bodies of pregnant women that cause pregnancy gingivitis?

The biggest hormonal changes in a woman’s life take place during pregnancy. It is a period of great change and obviously the mouth is one of the main areas affected by such changes, which in itself can lead to gingivitis.
It is not for nothing that people used to say that women gain a child and lose a tooth. During pregnancy, there is a 150 times increase in oestrogen compared with the amount during a normal menstrual cycle. This and the increase of progesterone and other hormones lead to an increased vascular permeability of gingival tissues, which promotes gingival inflammation in the presence of dental plaque. For women who have already developed periodontitis, the situation usually gets worse because of the changed hormonal situation.

Apart from cardiovascular disease, periodontal disease is known complication of diabetes. What is the risk of pregnant women with diabetes developing periodontitis?

How do you integrate all of your findings in your Oral-B seminars?

Oral-B’s mission is to promote oral health and work closely with dental professionals to ensure optimal home care. Our collaboration with the EFP serves as a way to raise awareness about all matters concerning oral health during pregnancy. Our educational activities such as the Up-to-Date events are a way to communicate this and support dental professionals in their objective to improve oral health. We believe a healthy mouth is part of a healthy body and promoting good oral health during pregnancy is one way to help to achieve this.

How can general dental practitioners, periodontists and dental hygienists integrate this last thought into their daily practice?

It is important that they understand the connection between oral and general health, be it the link between periodontitis and diabetes, as well as cardiovascular disease, or complications during pregnancy. Gynaecologists, cardiologists and endocrinologists too should be aware of this connection. That being said, many women avoid professional dental care during pregnancy and, conversely, many dental professionals are insecure about treating pregnant patients. However, female patients of childbearing age should be informed about the importance of oral health during pregnancy. This is especially important for patients who suffer from periodontitis. These patients should be encouraged by dental professionals to undergo treatment before pregnancy. During pregnancy, non-surgical periodontal therapy has been considered safe in the second trimester.

Finally, what would your tips be for pregnant women?

Women who have periodontitis must seek treatment before pregnancy, whereas women who enjoy good oral health should go and see a dentist or a dental hygienist in the second trimester for a dental cleaning. Of course, they should brush their teeth twice a day with a fluoride-containing toothpaste—even better is an antibacterial toothpaste containing stannous fluoride—and clean their teeth interdentally. It is scientifically proven that electric brushes such as our Genius toothbrush are particularly good for reducing plaque and gingival bleeding. Moreover, they are a practical solution for women who have less time to brush their teeth. There is no question that all mothers with a baby will know exactly what I am talking about.
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Healthy implants, mucositis, peri-implantitis
Start by rinsing with BacterX mouthwash

02 DISCLOSE
Make biofilm visible
Show patient disclosed biofilm
The color will guide the biofilm removal
Once biofilm is removed, calculus is easier to detect

03 MOTIVATE
Raise awareness and teach
Emphasize on prevention
Instruct your patients on oral hygiene
EMS recommends Sonicare toothbrushes and interdental brushes or Airfloss Ultra

04 AIRFLOW*
Remove biofilm, stains and young calculus
Natural teeth, restorations and implants
Remove biofilm supra- and subgingivally up to 4 mm using PLUS 14 µm powder
Remove remaining stains on enamel using CLASSIC COMFORT powder
Also remove biofilm from gingiva, tongue and palate

05 PERIOFLOW®
Remove biofilm in 5-10 mm pockets
Use PLUS Powder on teeth and implants
Also remove biofilm interdentally
Use depth marked PERIOFLOW® nozzle

06 PIEZON®
Remove remaining calculus
Use the minimally invasive ESS PI instrument supra- and subgingivally up to 10 mm
Clean > 10 mm pockets with mini curette
Use ESS PI instrument around implants and restorations

07 CHECK
Make your patient smile
Do a final check for remaining biofilm
Ensure calculus is fully removed
Accurately diagnose caries
Protect with fluoride

08 RECALL
Healthy patient = happy patient
Schedule recall frequency according to risk assessment
Ask your patient if he or she liked the treatment

Download here the GBT catalog of 20 pages:
Oral microbiota, intestinal microbiota and inflammatory bowel disease

By Prof. Denis Bourgeois, France

Intestinal microbiota

There exists a close relationship between the human host and the intestinal microbiota—a mixed community of microorganisms that protect the intestine from being colonised by exogenous pathogens. In a healthy individual, the host and microbiota coexist in mutual harmony, allowing both to function properly. The balance of the intestinal microbial ecosystem can be disrupted by a number of factors, such as antibiotics, vaccinations, certain foods and stress. An intestinal bacterial disorder primarily manifests in terms of quantitative changes in bacterial location, causing excessive bacterial growth in the intestine. This can damage the intestinal mucosal barrier, thereby releasing enterotoxins as a means to increase intestinal epithelial permeability so that bacteria and products can enter the intestinal lamellae, causing an immune dysregulation of the mucous membranes and inducing inflammatory bowel disease (IBD). Changes in intestinal microbes are associated with the development of IBD.

IBD comprises a group of idiopathic diseases characterised by chronic inflammation of the bowel. This inflammation may affect any part of the gastrointestinal tract. IBD represents a group of two principal intestinal disorders: Crohn’s disease (CD) and ulcerative colitis. These two disorders have distinct clinical and pathological features, yet they do overlap.

The pathogenesis of CD is most notably associated with a deterioration of the immune system, which becomes incapable of destroying bacteria, viruses and other potentially harmful foreign organisms, as well as the intestinal microbiota. There is currently good evidence that the intestinal flora or microbiota plays a key role in the development of IBD. Recent studies have shown that certain strains of intestinal bacteria are responsible for ulceration and chronic inflammation in IBD. Ulcerative colitis, as opposed to what was initially believed, is not an autoimmune disease, but rather an infectious disease related to an imbalance in the intestinal microbiota.

According to He et al., the CD microbiota is grouped into two distinct meta-communities, which would indicate subject variation in the structure of the microbiome. Specific functional changes in the CD meta-community show increased levels of pro-inflammatory hexa-acylated lipopolysaccharides and a reduced potential to synthesise short-chain fatty acids. Moreover, disruption of ecological networks in CD is associated with reduced growth rates of many bacterial species. The authors concluded that the microbiota of CD patients can be layered into two distinct meta-communities, in which the most seriously disrupted meta-community exhibits functional potentials that substantially deviate from those of a healthy individual, with a possible implication for the pathogenesis of CD.

Various explanations have been advanced, such as the hygiene hypothesis, which blames the frequent use of antibiotics and microbicidal compounds; the partial elimination of enteric microflora after suffering from infectious acute gastroenteritis; certain food components, for example refined sugars used in developed countries, which could promote the growth of certain types of bacterial species; and even certain types of toothpaste.

Oral microbiome

Individuals’ oral microbiomes are highly specific at the species level, although overall, the human oral microbiome is largely homogenous. If the symbiotic balance between the host and the microbiota of the oral cavity is disrupted, the microbiota may become harmful. Distinctions in microbial composition have been found between carious and caries-free microbiomes, as well as periodontally diseased and periodontally healthy microbiomes. Although caries and periodontitis are clearly bacterial diseases, they are not infectious diseases in the classical sense, since they result from a number of factors: commensal microbiota, host susceptibility and environmental factors, such as diet and smoking.

The literature on interdental applied to carious lesions is extremely limited. However, it has been established that the effective presence of the red complex, particularly Porphyromonas gingivalis, a pathogen of heart disease and other systemic diseases, is a strong indicator of the need to develop new methods to disrupt interdental biofilm through daily oral hygiene. Indeed, it has been shown that low levels of P. gingivalis (< 0.01% of the total load) were able to induce changes in the composition of the biofilm. Likewise, the presence of Candida albicans in significant quantities in the interdental spaces is cause...
Understanding the interaction between the intestinal microbiota, pathogens and the human host could lead to new strategies, notably by modifying the composition of the intestinal microbiota.

_**Helicobacter pylori**, a bacterium known to irritate the stomach lining and induce chronic gastritis, as well as poor periodontal health.\(^5\) This observation is supported by existing literature on the subject, which suggests that dental plaque may harbour _H. pylori_ and cause recurrences of gastric infection.

A 2017 study by Hujoel and Lingström traced an overview of the historical role of nutrition in the development and prevention of dental caries, gingival bleeding and periodontal disease.\(^6\) Given how much recommendations on nutrition have changed over time—the World Health Organization has only since 2015 recommended the restriction of sugar intake, for example—it is interesting to see that the current evidence suggested a low-carbohydrate diet high in non-vegetable fats, micronutrients (e.g. vitamin C and B\(_{12}\)) and protein was correlated with periodontal health. However, the ability to absorb these nutrients can be influenced by gastrointestinal health.

As the Canadian Society of Intestinal Research has reported, the improper functioning of the gastrointestinal tract can reduce nutrient absorption, leading to vitamin and mineral deficiencies that may cause oral lesions and tongue inflammation.

**Editorial note:** A list of references can be obtained from the publisher.
We have an enormous influence on children’s overall health

By DTI

Parents of children with systemic disease often wonder in the dentist’s office what oral health problems they can expect for their child. Depending on the type of systemic disease, there can be complications in terms of the child’s oral health. In this context, Dr Karolin Höfer, senior physician at the University Hospital of Cologne, studies oral disease in children with chronic renal insufficiency or congenital heart defects. In her presentation at the Oral-B Up-to-Date event, she spoke about the typical oral health problems of paediatric kidney and heart patients based on her own research and compared these with current systematic reviews. She then, in a very personal interview gave helpful suggestions for the support and treatment of these children in everyday life.

Dr Höfer, why do you like working with children?

Dr Karolin Höfer: My passion lies in working with children and young people; that’s why I specialised in paediatric dentistry, with a special focus on children with systemic disease. In dentistry, we say: one either loves it or leaves it.

With every one of my young patients, whether they have a medical history or are healthy, I have to gain their confidence on an emotional level first, aside from the dentistry challenge. Working with children who are traumatised and have medical histories in particular requires sensitive handling in order to build trust, which is the foundation of successful treatment. Intuition, taking sufficient time, patience and empathy are essential here.

Successful treatment of children with cancer or severe heart problems or others at high risk is achievable by using special techniques, such as ritualised behaviour management. After a difficult treatment, having a child smile and ask when he or she can come back is the best endorsement in daily practice.

What questions do dentists have to ask when treating these patients?

First of all, it is important to identify the child’s dental problem. Secondly, it should be determined whether the child has certain diseases and whether there are interactions with oral disease. And thirdly, which specialists in other disciplines should be consulted before dental work commences must be established.

How do you see your position as a dentist within the holistic therapy of these children?

I am not responsible for the patient’s entire medical recovery. However, I see myself as a physician, mediator and member of a team of paediatric specialists. When we treat patients with systemic disease, we need to be in contact with specialists from all disciplines. As experts in oral health, we have an enormous influence on children’s overall health. Every dentist should consult with the treating paediatricians of children with pre-existing conditions. It’s about the overall well-being of the child. Even a tooth cleaning can take on another meaning for these children. Healthy people associate it with health, well-being and aesthetics. For children with systemic disease, however, an intensive prophylaxis can have major implications for their general health, for example, should pathogenic bacteria enter the bloodstream of a child, say, with immunosuppression.

You work with children who have congenital disease. You have conducted interesting studies on the prevalence of caries and gingivitis. What have your results been?

If one considers the tooth decay process of healthy children in Germany 20 years ago, about five teeth were affected by tooth decay, while today, only one tooth on average is affected. Up to 85 per cent of 3-year-olds have no caries; however, the remainder may have up to four carious teeth. As I said, these figures involve healthy children.
For children with systemic disease, the situation is different. Children with heart disease have a demonstrably higher prevalence of caries. On average, four to seven teeth are affected. Children with kidney disease have a risk of caries comparable to that of healthy children; however, this group presents a much higher risk of developing gingivitis. Gingivitis could thus be understood as enabling bacteria to enter the bloodstream. Children with cystic fibrosis also have a very low caries prevalence, but owing to the frequent intake of antibiotics, the composition of their saliva is altered, so in this patient group, frequent enamel hypoplasia has been determined.

Why should paediatric dentistry be interested in such interactions?

If there are potentially about 700 different species of bacteria in the mouth, and children with heart disease have an increased risk of caries, the danger actually exists that these bacteria will reach the bloodstream via the mouth. We are speaking here of bacteraemia. Bacteraemia is not a disease in itself and is not a risk for a healthy patient; the immune system automatically fights the invading bacteria. For patients with systemic disease, the starting point is different. It is therefore not surprising that, with bacteraemia, oral streptococci, in particular the viridans streptococci, can be detected. Blood cultures reveal, for example, that viridans streptococci, as part of the oral cavity, are also responsible for 50 per cent of infectious endocarditis cases. Of course, bacteraemia does not automatically lead to endocarditis. As I said, a healthy body can normally deal with such bacteria. Patients with pre-existing conditions like heart disease, however, have a higher risk of endocarditis. Ideally, children with a serious heart disease should have their teeth cleaned prior to upcoming heart surgery.

How frequently does bacteraemia develop after dental procedures?

Occult bacteraemia can result from routine activities such as toothbrushing, but of course also through different dental procedures. Bacteraemia develops most frequently after surgeries like tooth extractions. Here, the frequency is usually 100 per cent. These bacteria can be released during periodontal procedures, such as scaling and root planing, and even during professional tooth cleaning, bacteria enter the bloodstream in around 40 per cent of patients. It is very interesting that, even after brushing and interdental care, the frequency of bacteraemia is about 68 per cent. As I said, a healthy body normally deals with such bacteria, but the picture is different for patients with systemic disease, particularly children with congenital heart disease. If we find a carious lesion in these children, we would treat this immediately in consultation with the paediatric cardiologist in order to avoid further infections. For our paediatric colleagues, it is more difficult to diagnose carious lesions. We do, however, have an excellent working relationship with our colleagues from the paediatric clinic. They are well trained and refer patients to us promptly and regularly for check-ups before surgical procedures.

You also mentioned cystic fibrosis, a congenital metabolic disease that leads to the formation of thick mucus, for example in the lungs, intestine and liver. What interactions have you observed between this genetic defect and a patient’s dental status?
Patients with cystic fibrosis often have an accumulation of viruses, fungi and bacteria in their airways, which can in turn lead to pneumonia. These patients are under constant drug therapy. As dentists, we should comply with special hygiene regulations. We should be aware that the particulate matter that normally develops during dental treatment is to be avoided. One danger, for example, is lung infections, which can be triggered by bacteria like *Pseudomonas aeruginosa*. This risk can be prevented by using an external water supply.

**What measures do you recommend to reduce the risk of bacteraemia for these risk groups?**

We are currently conducting an intervention study in collaboration with the paediatric nephrology division at the University of Cologne. In addition to treating gingivitis through intensive prophylaxis, the goal of the clinical trial is to determine the bacterial risk after toothbrushing. For bacteria identification, blood cultures and oral microbiomes are examined. We want to examine the influence of a patient-centred intensive prophylaxis programme and improved oral hygiene on the change in the oral microbiome. We hope in the long term to improve oral hygiene through regular check-ups and instructions, and to implement an interdisciplinary prevention programme for children with chronic kidney disease.

Furthermore, we hope to achieve a substantial improvement in oral health with targeted tooth cleaning and intensive prophylaxis, and to eliminate the daily bacteraemia risk in children at risk, as well as carious lesions and gingivitis. This includes a regular recall system for these high-risk patients adapted to their individual needs.

**What are your recommendations for parents?**

I would like children to look forward to their dental appointment with me. Through a very intensive relationship with the children and their relatives, I replace the cliché of an uncomfortable and angst-ridden dental visit with trust in dental treatment. We should give today’s generation of children a new perception about dentists. Of course, for many parents who have a child with a systemic disease, oral hygiene is not their top priority. However, all the results of my clinical trials to date have shown that oral health has only a positive effect on the overall health of children with systemic disease, but besides that, the quality of life and self-confidence of my young patients are enormously strengthened.

**What is your appeal to your peers in practice?**

It is enormously important to take children in dental treatment in hand, accompany, explain and find a way to bring dentistry goals in line with the systemic disease. We must achieve oral health in children as quickly as possible and maintain it for the long term through individual prevention programmes. The treatment of children with systemic disease should always take place in consultation with the treating paediatrician. Every practice staff member should contribute to paediatric dentistry being perceived by parents as a specialist field in interdisciplinary cooperation with paediatricians and serving the well-being of their children.
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The oral biofilm: What you should know

By DTI

As research into the complexities of the oral microbiome—the community of microorganisms that exist in the mouth—continues to progress, so too should our own knowledge of it. Though the existence of dental plaque has been known about for decades, dental caries nevertheless remains the most common chronic disease globally. The World Health Organization estimates that 60 to 90 per cent of school-aged children worldwide suffer from caries and that 15 to 20 per cent of adults between the ages of 35 and 44 have severe periodontal disease. Clearly, our approach to this issue needs to change.

What is a biofilm?

A biofilm is a dense accumulation of bacteria, fungi or protozoa that adhere to each other and to solid surfaces. In our bodies, biofilms develop on teeth, tissue cells and the exterior of implants. Though they can have a positive role in many environments, the presence of certain biofilms may also lead to negative outcomes, such as infection.

Once a microbial cell has attached itself to a surface, it produces an extracellular polymeric matrix. This matrix essentially helps not only to bond these cells together, but also to protect the cells from external attacks. This community of microbes, together with their extracellular product, constitutes a biofilm.

Dr Phil Marsh, Professor of Oral Microbiology at the University of Leeds in the UK.

The microbial cells in biofilms in the human body are generally resistant to antibiotic treatments and natural immune system responses, allowing them to subsequently thrive. Because of this, biofilms are considered to be an ideal state of existence for microbes.

Biofilm and infections

Biofilms are estimated to be the cause of somewhere between 60 and 80 per cent of all bacterial infections in the human body. Though there are certain strategies to treat these infections that can prove successful, the diversity of the oral microbiome and its habitats means that special consideration must go into maintaining its balance.

The composition of oral biofilms

Our mouths play host to a variety of biofilms, both good and bad. Socransky et al. attempted to define this bacterial distribution in a 1998 study of the oral biofilms of individuals both with and without periodontitis. In collecting over 13,000 dental plaque samples, they found that there were six major complexes that could be consistently observed together. These complexes were then colour-coded into red, orange, yellow, green, purple and blue groups.

The blue, green, yellow and purple Socransky complexes were found to correlate to periodontal health, whereas orange and red complexes generally indicated the presence of periodontal disease. When present by itself, Porphyromonas gingivalis—one component of the red complex—can cause the loss of alveolar bone. When found alongside Tannerella forsythia and Treponema denticola, it often leads to periodontal disease, which has itself been linked to a variety of systemic diseases.

Dental plaque biofilm

Dental plaque biofilm is most commonly found on the surfaces of our teeth. It is most widespread when there is a lack of correct oral hygiene. This biofilm is the primary causative factor for dental caries, periodontitis and peri-implantitis.

If dental plaque biofilm is not removed via mechanical or chemical control within 24 hours of forming, it will release virulent, acid-producing and acid-tolerating bacteria, triggering an inflammatory response—gingivi-
tis, the initial stage of periodontitis—from the gingiva and the periodontium. Left alone, the bacteria can eventually initiate alveolar bone loss, soft-tissue destruction, implant failure, and other potential systemic issues.

Since dental plaque biofilm’s antagonistic behaviour takes place in an environment with an incredibly diverse microbiota, and because its cariogenic traits are not emblematic of a particular species, its bacterial composition is somewhat unclear at this point. Despite this, our understanding of other elements of dental plaque biofilm continues to improve—indeed, its recognition as a biofilm only occurred in the twenty-first century.

Removing dental plaque biofilm is still not that simple, however. For example, the fact that its cells have the ability to express multiple types of adhesin (surface structures that facilitate attachment) means that several avenues of attachment might still be available to it, even if a main method of adhesion were to be blocked.

Microbiomes

A microbiome is simply the community of microorganisms existing in a specific environment, particularly in the human body.

The oral microbiome

The oral microbiome is, along with the gut microbiome, one of the two most diverse microbiotas in the human body. The Human Oral Microbiome Database states that there are approximately 700 prokaryotic taxa that have been identified as existing in the oral cavity.

The oral cavity is different to other human microbial environments, as it contains several types of surfaces for microbial colonisation, such as the teeth, mucosa, tongue, attached gingiva and implants in cases of tooth loss. In addition, teeth are the only non-shedding natural surface in the human body. This allows for biofilm to accumulate on them relatively easily, a feature that is shared by dental restorations, implants and other oral prostheses.

“There is a natural symbiotic relationship between the host and the oral microbiome,” says Dr Phil Marsh, Professor of Oral Microbiology at the University of Leeds in the UK. “The host provides a warm and favourable environment for microbial growth, and the oral microbiome acts as a barrier to colonisation by exogenous microbes, modulates the host’s immune response to prevent unwanted inflammation, and contributes to the regulation of the cardiovascular system and other physiological activities.”

In a 2017 study published in the Journal of Clinical Periodontology, Marsh and Zaura sought to describe the range of microbial interactions that take place in biofilms in the oral microbiome. They found that these biofilms display “emergent properties”, meaning that their characteristics cannot be understood by simply studying individual organisms. Instead, analysing how they function and interact with one another proves to be more fruitful.

Maintaining a healthy, balanced oral microbiome involves processes that are, admittedly, still not entirely understood. However, there are certain factors that clearly benefit oral health. Saliva, for example, is well known for its rinsing function in the oral cavity and for its role in initiating the digestive process by enabling chewing and swallowing of food. So what exactly causes dysbiosis—a microbial imbalance between harmful and protective bacteria—to occur?

Dysbiosis and its causes

“There are various factors that can disturb the symbiotic relationship between the host and oral microbiota, leading to dysbiosis and disease,” says Dr Thuy Do, a lecturer in microbiology at the University of Leeds. “Changes in the conditions at oral sites, such as the accumulation of dental biofilms from a lack of oral hygiene, may lead to an inflammatory response from the host immune cells.”
“The frequent intake of fermentable sugars in the diet, along with a reduction in the flow of saliva, can lead to dysbiosis,” adds Marsh. These sugars, by initiating the development of dental caries, are metabolised into acid, which generates a low pH level in the biofilm. As Peterson et al. demonstrated in a 2013 study, this low pH can constrain the growth of many bacteria responsible for the health of tooth enamel, decreasing the diversity of the oral microbiome.

Some other common causes of dysbiosis include the use of broad-spectrum antibiotics, smoking, physiological changes like pregnancy or puberty, and certain diseases that are associated with periodontitis, such as diabetes.

**Dental implants and biofilm**

As the popularity of dental implants continues to rise, their use has become more successful in terms of both aesthetics and function. However, even successful procedures can lead to peri-implant mucositis, an inflammatory lesion at the mucosal and bone level, which then can progress to peri-implantitis, an inflammatory lesion of the tissue surrounding the implant.

Peri-implantitis can develop for a number of reasons. One of the most common is the presence of periodontal disease when the implant is placed. If the patient has deep periodontal pockets filled with harmful bacteria, it can lead to colonisation of biofilm around the implant and possibly implant failure.

Dr Lisa Heitz-Mayfield is, among other roles, a university lecturer and a periodontist in private practice. As implant specialist, she says that infection control prior to and after implant placement is essential for control of biofilm and peri-implantitis.

“Having good infection control before placing implants is crucial, as it is the best way to prevent these infections occurring later on,” she says. “A preventive approach requires several elements to work effectively: regular monitoring and supportive periodontal therapy with professional biofilm control, a healthy and regular at-home oral hygiene routine, and controlling for other risk factors, such as smoking and uncontrolled diabetes.”

**Orthodontic patients and biofilm**

Despite the advances in technology that have made orthodontic appliances smaller and more comfortable than ever, intraoral problems often arise from their use. A 2014 study by Ren et al. published in *Clinical Oral Investigations* estimated that at least 60 per cent of all orthodontic patients develop at least one biofilm-related complication. These complications develop primarily because the presence of orthodontic appliances can impede toothbrushing and other oral hygiene activities, rendering these techniques less effective in disrupting the formation of dental plaque biofilm.

**Chemical control**

An alternative method of controlling dental plaque biofilm in orthodontic patients is chemical control through the use of antimicrobials. Chlorhexidine is considered to be the most effective antiseptic agent available, with numerous studies demonstrating its efficacy against dental plaque when present in mouthwash.

However, Valen et al. found that prolonged daily use of an antimicrobial might lead to resistance to not just the applied substance but other antimicrobials as well. With this in mind, they recommended that daily antimicrobial use for the control and eradication of biofilm should be limited to situations in which mechanical cleaning and patient behavioural change are inadequate or unachievable.
Controlling dental plaque biofilm

There are currently two primary ways of controlling dental plaque biofilm and establishing a healthy oral microbiome for the non-orthodontic patient: professional biofilm management and individual manual biofilm management.

Professional biofilm management commonly involves the removal of subgingival dental plaque and calculus with the use of hand scalers, followed by tooth surface polishing with rotary rubber cups and brushes. By removing this biofilm from periodontal pockets that have formed, hand scaling is able to reduce gingival inflammation that may be present and prevent further damage caused by its potential progression to periodontitis.

Dentists may choose to use an ultrasonic scaler instead if they wish to remove supragingival dental plaque biofilm. These scalers feature a metal tip that vibrates at 20–45 kHz and follows a curved linear, elliptical or figure eight path. The tip is cooled with a water spray, in which bubbles form and collapse as a consequence of the ultrasonic waves of energy passing through. This effect, called cavitation, facilitates removal of dental plaque and calculus.

When used by an experienced professional, an ultrasonic scaler can be faster and can cause less hand and wrist fatigue than with a manual hand scaler. If used incorrectly, however, it can cause heat damage to the tooth.

Recent developments

In the inaugural issue of prevention magazine, Dr. Klaus-Dieter Bastendorf, a scientific adviser for the Swiss Dental Academy, outlined recent developments in the materials and technology for professional biofilm management. With the introduction of piezoceramic instruments and low-abrasion powders made of erythritol or glycine, Bastendorf argues, modern professional biofilm management is now safer, minimally invasive and more comfortable for both the patient and dental practitioner. In addition, the ability to disrupt both sub- and supragingival biofilm in one procedure improves the efficiency of these procedures, making it more likely that patients will return for regular professional cleaning.

Recommendations for oral self-care

The easiest way for individuals to remove dental plaque biofilm build-up themselves is through a consistent oral hygiene routine. Regular use of a soft-bristled toothbrush, dental floss and interdental brushes is essential. By disrupting the established layers of bacteria through effective cleaning, the protective layer of biofilm on the teeth—the pellicle—will be able to reorganise and perform more capably.

“Control of dental plaque biofilm begins with daily oral hygiene,” asserts Marsh. “Meticulous cleaning of the teeth and associated gingival tissue removes the bulk of the biofilm that has developed in the time since the last oral hygiene session.”

Working together

Regardless of the type of preventative measures taken in controlling biofilm, it is essential that dental professionals cooperate with and motivate their patients to take charge of their own oral health.

“The dentist and dental hygienist should work together as a team in evaluating, treating and maintaining the oral health status of the patients,” says Dr. Rajiv Saini. “There should be a greater emphasis on the modification of behaviour of patients by providing them with education, scientific facts and research data.”

Do’s sentiments on this relationship strongly reflect Saini’s. “Dental professionals should advise patients about effective oral hygiene and the impact of their diet and lifestyle choices on their oral health, such as the risks of a high carbohydrate diet or smoking for tooth decay,” she recommends. “There is increasing evidence of the link between oral health and general health, and maintaining a good oral microbiome may be in our best interest.”
Gingival health benefits of enzymes and proteins in toothpaste

By DTI

How healthy the gingivae are largely depends on the balance of the oral microbiome. According to a review by Kilian et al. in the British Dental Journal, our oral microbiome encompasses no less than 700 distinct bacterial species that cover the teeth and oral mucosa and are attached to these surfaces as part of the oral biofilm. Ideally, this microbiome is naturally in a state of balance—symbiosis—protecting our mouths from the over-proliferation of disease-promoting bacteria. However, the ingestion of fermentable sugars, smoking, stress, physiological changes like pregnancy, or the frequent use of antibiotics and antimicrobials can create an imbalance in the oral microbiome—dysbiosis—that in turn can lead to diseases such as caries, gingivitis and periodontitis.

Toothpaste—The helpful assistant

Maintaining a healthy oral microbiome is clearly essential to good gingival health, but what measures can we take to achieve this? According to Mogens Kilian, Professor of Medical Microbiology at Aarhus University, as well as Affiliate Professor of Bacterial population genetics at the University of Copenhagen, “The balance that has been lost as a result of modern lifestyles can, in most cases, be restored by improved oral hygiene, including the use of toothpastes containing not only fluoride but also other beneficial compounds, such as enzymes and proteins occurring naturally in saliva.”

Fluoride in toothpaste

Fluoride, firstly, has been proven to provide effective protection against the development of caries by hardening and remineralising tooth enamel. It also exerts an antibacterial effect. “The most dramatic success of dental research is the discovery of the protective effects of fluoride,” said Kilian. “Virtually every commercial toothpaste includes fluoride, which increases the resistance of tooth enamel against caries. In this way an imbalanced oral microbiome can be restored in spite of the negative effects of modern life.”

Enzymes and proteins—Natural salivary components

Enzymes and proteins are naturally present in saliva and are key to a healthy mouth. Each person produces over one litre of saliva per day on average. Made up of 99.4 per cent water, saliva keeps the mouth lubricated and comfortable, allowing one to speak, chew, taste and swallow. The remaining 0.6 per cent of saliva is made up of minerals, proteins and enzymes, which all perform an integral role in protecting and repairing the oral cavity. These salivary components are essential for maintaining good oral health, since they protect the enamel of the teeth, thereby helping to prevent dental caries and ensure gingival health.

Saliva is also important in the formation of the pellicle, the thin acellular organic film that forms on oral surfaces after exposure to saliva. The pellicle is a mostly bacteria-free protective film consisting of protein, glycoprotein, lipids and salivary enzymes that forms on...
the teeth, gingivae and oral mucosa. Inevitably, a build-up of microorganisms, biofilm, can form on the pellicle and threaten the enamel. The enzymes and proteins in saliva, however, are able to act extremely effectively against unwanted bacteria, fungi and viruses, by restricting their formation and breaking down potentially harmful sugars.

Zendium studies

A 2017 study by Adams, published in *Scientific Reports*, showed how a toothpaste containing certain enzymes and proteins can significantly shift the ecology of the plaque microbiome at species level, resulting in a community with a stronger association with gingival health. The study was published in *Scientific Reports*. The year, two other studies, presented at the oral health research congress of the Continental European and Scandinavian divisions of the International Association for Dental Research in Vienna in Austria, shed light on how a toothpaste containing enzymes and proteins naturally present in saliva positively affects gingival health. The two different teams of scientists compared Zendium (Unilever), a commercial toothpaste that, in addition to fluoride, contains these natural salivary components, with control fluoride toothpastes. One team did so in an epidemiological setting, and the other in a clinical trial.

Epidemiological setting

An epidemiology study at the University of Copenhagen led by Prof. Anne Marie Lynge Pedersen, head of the university’s Department of Odontology, examined 305 people regarding the long-term effects of their personal choice of toothpaste on their gingival health. Long-term Zendium users were found to have significantly better gingival health than those who used regular, fluoride-only toothpastes. These results were irrespective of diet and brushing or smoking habits. This landmark study showed for the first time that long-term everyday use of a toothpaste that contains enzymes and proteins positively affects gingival health.

Clinical trial

A study in the UK at the Bristol Dental School’s Clinical Trials Unit found similar results. Prof. Nicola West and her colleagues examined the gingival health of 229 participants regarding plaque, inflammation and bleeding. After 13 weeks, the participants who had been brushing twice a day with Zendium had significantly better gingival health on all three parameters than the group that had been brushing with a fluoride control toothpaste. Moreover, 83 per cent of the Zendium users had improved gingival health. Speaking at the congress in Vienna, West said, “It is very exciting to see two studies demonstrating the benefits brushing with Zendium can bring to gingival health.”

Prevention and the microbiome

Consistent with the findings of the Adams investigation, the two studies present evidence that a toothpaste containing enzymes and proteins enhances the effects of the innate immune factors in the oral cavity. The result is a shift of the oral microbiome towards healthy symbiosis and improved gingival health. The number of bacteria associated with gingival health increases, and the number of bacteria associated with periodontal disease decreases. “With the new information that has become available, it is clear that oral disease is the result of dysbiosis,” said Kilian. “Prevention is a crucial part of dentistry, prevention aimed at restoring the balance within our oral microbiome and between the microbiome and us.”

Editorial note: A list of references can be obtained from the publisher.
Located in the Salamanca district of Madrid, Spain’s capital, Clínica Vilaboa was founded more than 30 years ago by Drs Beatriz and Débora Vilaboa. With polished hardwood floors and a stylishly minimalist interior, the practice’s aesthetic emphasis is immediately evident. A pioneer in aesthetic dentistry when first established, the multilingual clinic has since expanded its focus to two disciplines, implantology and prophylaxis—which may at first seem contradictory. prevention spoke with practice dentists Drs Amparo Llorente and José Manuel Reuss about the clinic’s approach to prevention in implantology.

Why did you choose implantology?

**Dr José Manuel Reuss:** I was always very interested in prosthetics and replacing what was missing. I am very motivated by the fact of giving back what patients have lost. The combination of prosthetics and surgery makes implantology perfect for me.

**Dr Amparo Llorente:** I am a trained periodontist and I am wholly dedicated to it. I look more at periodontal disease and prevention of implants [laughs]. However, I think I also have a good understanding of implants, so we make a good team.

Reuss: You definitely have a very good understanding!

What is your approach to implantology and prevention?

**Reuss:** It is very difficult to be able to tell a patient that something should last for a lifetime, but this is our goal, our wish and our belief. Placing an implant should naturally be our last solution once we have done everything to save the natural tooth. When we do the treatment, we do not want to have the implant last for only ten years. That is not really a success. We want to provide a treatment that lasts for a lifetime.

**Llorente:** The great thing about Dr Reuss is that, as an implantologist, he is devoted to restoration and replacing. However, whenever he sees a tooth that still has the potential to be maintained, he does everything to maintain it. That is very important. Nowadays, implantology is so fashionable. Everybody wants to place implants. Some dentists see the implants only, but we should look at oral health first. The patient needs to have an implant for a lifetime. This involves good initial oral health and a well-planned treatment.
So, you argue that implants should be avoided as much as possible?

Reuss: Well, implants are a great treatment modality and we are very thankful for this invention. However, implants should be delayed as far as possible. If we can preserve the tooth for ten more years and then place the implant, that is the way forward. Patients should not have their teeth removed and replaced with implants instead. After implant treatment, patients need to be twice as careful with their mouths. There is no way to go back to another solution. The dentist needs to communicate this as far as possible.

Llorente: An implant is the best solution for a missing tooth, but it is not an alternative for a tooth that can still be saved. An implant is more expensive than maintaining the natural tooth, so we try to preserve the tooth if we still can.

Do you think that implantology and prevention of implants can work side by side?

Reuss: Prevention is the best thing one can do for one’s patient in the long run. If we can get our patients to believe in prevention and therefore come to the dentist more regularly, it will be beneficial for all of us. However, this is a long and bumpy road, as the patient’s oral care mindset cannot be changed easily.

Llorente: Prophylaxis is the main way that conditions like peri-implantitis can be prevented. We know that implant treatment requires follow-up; implants need to be taken care of continuously, so it is very important to instruct and motivate patients to have regular check-ups that are complemented by a good home oral hygiene routine.

As a periodontist and implantologist, how do you work together?

Reuss: In cases of severe periodontal disease, such as aggressive periodontitis, we try to delay the implant placement as far as possible. I am not talking about weeks or months, but even years. If we need ten years for a patient with periodontitis to have the necessary oral health for implant placement, then we wait. Sometimes, it depends on the patient; sometimes, it is the wrong approach to oral hygiene; sometimes, it is genetics. At the same time, we have seen implant failure without any clear reason.

Llorente: The major risk factors include bacterial contamination, a history of periodontitis and habits such as smoking. This means that we need to look at the patient’s habits and anatomy and the surgical protocol. These factors are more related to early loss. Another factor is the prosthetic design.

What role does poor oral hygiene play in terms of implant success?

Reuss: When we see a patient with very poor oral hygiene, we do not place the implants. We are that radical. We tell our patients that the periodontal tissue needs to be strong. In the case of poor oral hygiene, the implant will fall out eventually. We need to make sure that the patient has good oral health habits. Edentulous patients with a lack of good oral hygiene are not good candidates for implants. We have to do several hygiene appointments first before continuing with implant placement.

How can we motivate the patient to use oral care products more effectively and regularly?

Reuss: First of all, we have a growing awareness of oral health among our patients. That helps a lot in the general predisposition of patients. When they come to our practice, they have changed their dietary attitude and work out more. They are starting to believe more in prevention. They also come in every six months, while we only saw them every two years in the past.

Llorente: In Spain, we still have this mindset that patients only come when they are in pain. Now, we are moving in this direction of coming at least every year. From a periodontal perspective, I would like to see my patients every three to six months, especially during maintenance therapy. During the dental appointment, they already look forward to the next appointment.

Reuss: We understand now that we have to work with patients as a team. We can no longer simply provide treatment. We have to spend extra time educating them, motivating them on how they can maintain and preserve their oral health, which is ultimately their responsibility.

Do you also instruct your patients on how to use toothbrushes, interdental cleaning tools and toothpaste?

Reuss: Our dental hygienists focus more on oral care instructions. Their role in prevention is crucial. They establish a close relationship with the patient and make sure that every patient gets the individual tools he or she needs, be it toothbrushes, interdental brushes or floss. Everything in our office is teamwork.

Llorente: Every patient is different, no doubt, but everyone needs interdental brushes, for example. I brush interdentally every day. As dentists, we need to make sure that we reinforce oral hygiene measures every time the patient visits. With improving oral health habits comes greater satisfaction for the patient. The best thing in dentistry is that we can see the change. We can see how the bleeding stops. And the patient feels it.

What do you think about CURAPROX products?

Reuss: Products that are easy to use help us progress in our treatments quicker and provide patients with the
tools to easily establish a positive home care dental regimen. CURAPROX’s products are often gentler than other products, and this meant that it went against the general trend of the market for the past few years. However, this softness is extremely beneficial, as it helps to prevent damage to tissue and teeth.

What role does the implant design play for oral hygiene?

Reuss: Implant prostheses are not easy to clean. The implant has a very thin cylinder compared with the anatomy of the tooth. The design of the implant needs to accommodate the structure of the overall anatomy, as well as the neighbouring teeth.

In the case of missing periodontal tissue or of full-arch restorations, we need to have a different implant design. In any case, we use the design most suitable for oral hygiene measures, especially in non-aesthetic areas. For example, for lower arch rehabilitations, we try to have no contact with the soft tissue. That is not possible in the upper arch. But we want to have implant surfaces that can be polished easily. Interdental brushes and dental floss also need to be used regularly. We work very closely with the laboratory and have clear instructions. Tissue contact continues to be crucial.

Finally, optimal prevention and oral health require an interdisciplinary partnership. How do you work with other medical doctors towards achieving overall health for your patients?

Reuss: As healthcare professionals, we see patients every day who are sent to us by heart specialists, endocrinologists, and so on. This is because there is an intrinsic relationship, proved by many studies, between oral health and overall health. For example, we have patients who have been referred by cardiologists who have detected some form of cardiovascular disease and want their patients to be orally healthy as soon as possible. We also have diabetics referred to us by endocrinologists, often straight out of the hospital. This is because, if they have anything wrong with their mouths, an infection or anything that needs to be addressed, it is essential that this issue is resolved so that the diabetes-related issues may also be resolved. Patients need to know about these relationships.

Llorente: We always have to contact doctors if the patient has a special need. Interestingly, medical doctors send us their patients with immunosuppression and other conditions to get rid of the dental problems. In comparison with other medical disciplines, we can quickly manage to control the inflammation and regain the microbial balance in the mouth, thereby helping the overall immune system. The dental knowledge of general medical doctors is growing, as they understand the need for a healthy mouth for general health.
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*Refers to the oral plaque microbiome and the relative abundance of bacterial species with a known association with gum health or disease after 14 weeks of brushing twice a day with Zendium when compared to baseline. **Refers to the results of a gum health study (UK 2017) on the 113 people who used Zendium (total subjects = 226) and a measurement of gingival health by the Modified Gingival Index (Lobene) after 13 weeks. 1. West N et al. A toothpaste containing enzymes and proteins improves gingival health. Abstract presented at CED-IADR 2017.
Oral hygiene instructions and patient motivation with and without dental hygienists

An interview with Dr Eric Thevissen, periodontist and pioneer of Belgian prophylaxis

Dr Thevissen, I wanted to talk to a dental hygienist in Belgium. Why is that not yet possible?

Dr Eric Thevissen: Well, the good news is that, from June 2019 on, it will be possible to visit and talk to a dental hygienist in Flanders. Why Flanders has waited such a long time to start the education and training of dental hygienists is politically motivated and due, in large part, to the representative dental associations. Belgium has a long tradition of one-dentist clinics, often working without dental assistants. Since the introduction of a quite difficult admission exam for dentistry in 1997, the discipline has attracted fewer students. As a consequence, the number of graduating students has dramatically decreased, while the demand for dental care is continually increasing. Slowly, but surely, more and more group practices have emerged, hiring dental assistants. Back in 2006, the first meetings were organised between universities and dental societies about the qualifications needed to become a dental hygienist and the tasks that could be delegated to them. As always, there were proponents and opponents, and it took a very long time before all stakeholders agreed on the conditions and criteria needed to start dental hygienist training in Leuven and Ghent.

Let’s talk about your study “The provision of oral hygiene instructions and patient motivation in a dental care system without dental hygienists”. Please tell us more about it.

Thirty years ago, I started working as a periodontist in Hasselt with another colleague. Since we were the first periodontists in this province, we had a flying start. After a few years, I noticed that dentists were always referring patients to our clinic with the same complaints, such as bleeding gingivae or bad oral hygiene. In my opinion, treating bleeding gingivae or giving oral hygiene instructions is the duty of every dentist and belongs in the sphere of primary dental care rather than in secondary or specialist care. Although we organised courses where a general dental practitioner (GDP) could learn about patient instruction and guidance, I realised that we were considered by a large number of GDPs to be dental hygienists rather than periodontists. The truth was that we were both, periodontists and dental hygienists. This annoyed me because I knew that in neighbouring countries periodontists could spend their precious time on the work they were trained for.
In 2004, I took the initiative to set up a pilot study in Limburg with 65 referring dentists. We used the Dutch Periodontal Screening Index, a screening test for periodontal status that had been introduced in the Netherlands a few years earlier. We collected data from 814 patients. The results clearly showed that the screened age groups had, on the whole, periodontal problems and that there was a high need for treatment.

Around the same time, Prof. Hugo De Bruyn joined the teaching staff of Ghent University’s Department of Dental Sciences. Probably thanks to my publication, he asked me to become one of his staff members. Working with Prof. De Bruyn, one is quickly involved in clinical research and so I had the opportunity to investigate, in depth, the questions that had bothered me ever since I started my career. One of these questions was the kind of oral hygiene instructions GDPs provide to their patients.

Using questionnaire responses of 776 dental professionals gathered for various postgraduate courses in Flanders, we were able to determine that, given the absence of dental hygienists in Belgium, oral health instructions and patient motivation appeared to be non-compliant with international guidelines. Though dental professionals were concerned with prevention, there were several mitigating factors working against them delivering this adequately.

The study mentioned lack of time, remuneration and patient interest as complicating factors for the provision of preventative care. However, qualification, work experience and time are crucial for providing oral hygiene instructions and patient motivation. Can dental hygienists be seen as a solution to these problems?

It is my conviction that dental hygienists are the solution to these complicating factors. Prophylactic care will be the main target of their work, since dentists are primarily trained for restorative care. Owing to factors such as the decreasing number of graduating dental students, the increasing number of retiring dentists in the next ten years, an ageing population and a higher demand for preventative care, the stress of work increases and forces dentists to manage their work time more strictly. Of course, GDPs prefer restorative and other more rewarding treatments. We all know how time-consuming patient motivation techniques for behaviour change can be. There is no dentist prepared to spend that time on preventative care. Generally speaking, dentists are used to giving a basic package of information on oral hygiene to every patient and, depending on compliance, they may want to spend more time on patient guidance. Here, dental hygienists can make the difference. They will be trained to insist on the importance of behavioural change and will take the time to explain and show how to perform proper home oral care.

You have also published studies on implants, such as on implant design. What made you publish your study titled “Attitude of dental hygienists, general practitioners and periodontists towards preventive oral care: An exploratory study”? You could have just continued with your research on implant systems.

Indeed, the team around Prof. De Bruyn is very driven by and focused on the outcome of implant therapy. To my knowledge, the Department of Dental Sciences at Ghent University published around 40 scientific articles in 2016, the majority of which are related to implant therapy. The subject of my PhD is not implant-related, but deals with different relationships in dentistry: between the patient and the dental professional, and between primary and secondary dental care, that is between GDPs and specialists.

What were the objectives and results of this study?

This second study was a step further than the first one. In the first study, we looked for an explanation for the differences in patient motivation techniques between Flemish GDPs and periodontists. In this second one, we compared our rather unique Belgian system with the Dutch system, a completely differently structured healthcare system including dental hygienists. We wanted to know if the Dutch system represented the gold standard and how we were situated in Flanders.

The results showed that periodontists and dental hygienists shared more common viewpoints than GDPs and hygienists did. What was remarkable was the fact that more than 80 per cent of periodontists and dental hygienists were satisfied with their efforts in informing and motivating patients, compared with 38 per cent of GDPs. Secondly, whereas GDPs indicated nurture as the factor most contributing to the oral hygiene level of the patient, periodontists and dental hygienists focused on the influence of the dental practitioner and a patient-centred approach. In our multivariate analysis, the presence of chairside assistants seemed to be of major importance.

But, as always in questionnaire-based studies, the results can be biased by socially desirable answers and by the inevitable structural differences between Belgium and the Netherlands. One of these differences, for example, is the fact that providing oral hygiene instructions is not reimbursed in the Belgian dental care system, as it is not considered an autonomous activity.

What should the role of the dental practitioner in the successful treatment of periodontal disease be? What does the patient need to do?

The role of the dental practitioner, in particular the GDP, undoubtedly remains to keep a panoramic oversight over everything that has to do with the dental and oral health of the patient. Especially considering the introduction of dental hygienists in the near future in Belgium, the dentist’s role as a supervising manager is important. It is my experience that progressive problems often remain untreated until complications or even complaints surface. A trigger seems
to be needed to make the idea of treatment approachable or acceptable. Unfortunately, waiting for this trigger often leads to the loss of the tooth instead of its repair.

From the patients’ point of view, I am convinced that some of them insist on not being treated for things they do not complain about, as they see these treatments as unnecessary.

If I personally have to undergo an annual medical check-up, I would hope that all the exams needed are performed, as this will set me at ease. Why then does this appreciation not apply to oral health?

What are some of the oral hygiene instructions and patient motivational actions that you would recommend?

Thanks to research and clinical findings, lifestyle habits, genetics, stress, hygiene, medication, age, nutrition and different systemic factors have been shown to accelerate the development of periodontal disease in the presence of biofilm, activated by a hyperreactive or even a hypo-reactive immune system response. It is a fact that this sort of risk analysis has become part of the graduate curriculum, including counselling on healthy food habits or how to quit smoking, detecting periodontal risk through assessment, using caries detectors, and so on.

Firstly, the patient should demonstrate his or her home care habits using his or her own toothbrush. We distinguish four levels of patient information needs: the lowest level is the patient who is almost totally ignorant about proper home care; the second level is the patient who brushes his or her teeth on autopilot without paying attention to any technique, time duration or interdental cleaning; the third level is the patient who regularly cleans even the interdental spaces, but unfortunately not frequently enough or not with adequate instruments; and finally, the fourth level is the patient who performs extremely well and needs none or only minor adjustments, for example tongue brushing.

In accordance with the technique of motivational interviewing, we build up a conversation with the patient while giving instructions, waiting for approval, repeating and counselling. One needs two or three control sessions to check his or her dexterity and oral cleaning performance. Plaque disclosure remains a confronting but very effective tool to show the results of the patient’s cleaning habits.

Finally, the dental professional should show enthusiasm and keep on repeating until there are visible improvements.

From your point of view, does the dentist spend enough time on the diagnosis of a disease?

Of course, dentists are dutiful people who are concerned with their jobs. Spending time to ensure correct diagnosis is their core business. Examining patients means exploring and looking for mostly hidden troubles or discomforts. The next question is the most important one: is this problem acute enough that it should be treated immediately, in the very near future, or can we wait and see how it develops? This is risk management and it is dependent on multiple factors.

Often, prevention is neglected in dental practices in favour of diagnosis and restorative treatment. How can dental professionals implement prophylaxis in their daily practice, especially primary prophylaxis?

I would say, rather, that prevention is not neglected. Sixty-five per cent of GDPs provide information about oral hygiene as a standard procedure. Depending on compliance, the GDP may decide to spend more time on patient guidance. This requires delicacy, as one cannot tell from a patient’s face how motivated he or she is, nor what he or she is interested in. This is not often asked of the patient, so one could rather say there is not enough time spent on communication.

To be honest, I think that primary prophylaxis is impossible to achieve because we do not control all the influencing factors, of which some can be health- or patient-related. It means that we need to try to prevent people from developing caries or periodontal disease. This is somewhat futile, since caries and periodontal disease are the most widespread infectious diseases present in almost every patient. Twenty-five per cent of 5-year-old children have bleeding gingivae, and this figure rises to 55 per cent for 15-year-olds. Primary prevention is like placing speed cameras on highways: it works all the time and for everyone, it is highly effective and inexorably justified. Today, I heard in the news that, thanks to these speed cameras and other regulations, the number of persons killed by traffic every year is diminishing. This is primary prevention. However, I strongly believe in secondary prevention; it is the dentist’s duty to examine and to intervene, preferably before detrimental clinical signs occur.

How important are home care and high-quality oral hygiene products such as those of CURAPROX?

It is a fact that oral hygiene devices are not considered as pharmaceuticals and they therefore don’t have to be thoroughly tested. If a company designs a nice, good-looking toothbrush, it is allowed to produce it and sell it, even if the
brush does not meet the criteria desired in an effective toothbrush.

Comparing the oral hygiene products from different companies, we see a variety of designs and features. This is interesting because there is no such thing as the perfect interdental brush. There are always compromises to make and what some patients like, may be rejected or disapproved of by others. We as dentists have only an advisory, consultative role.

Nevertheless, CURAPROX makes Swiss-quality products designed by dental professionals, and the company is willing to listen to advice on how to improve its products.

What is the status of dental hygiene in Belgium? In other words, how does the Belgian mouth look?

When I go abroad to congresses and meet with peers, I feel their displeasure when they hear that I come from Belgium. The first thing I am asked is, how can you treat periodontal disease without a dental hygienist? For them, it is like having bars and pubs, but no beer.

I have read some articles in which the decayed, missing and filled teeth and decayed, missing and filled surfaces scores of children were compared between different European countries. Though Belgium was not top of the class, it wasn’t at the bottom either. In articles from the US, it is reported that, at 30 years of age, 25 per cent of the American population have mild periodontitis, 60 per cent have chronic periodontitis and 15 per cent have aggressive periodontitis. This is exactly the same breakdown as in Europe. The question is not about whether dental hygienists are necessary; the question is, what percentage of the population do dentists reach and can afford to go to a dental hygienist on a regular basis? Despite all this, we seem to be able to manage the periodontal situation in Belgium and this was one of the reasons for the second study.

Does the addition of dental hygienists make financial sense or does prophylaxis make financial sense for the dental practice if the practice already makes good money with implants?

I understand your point of view that, in the perfect world of prophylaxis, dental implants have no place because everything should be done to prevent implant treatment.

I remember Prof. Jan Lindhe saying that, nowadays, too many treatable teeth are extracted to be replaced by dental implants. As a periodontist I agree with Prof. Lindhe; a dental implant is an effective instrument to rehabilitate edentulous areas, but only after all other options have been considered. But often life decides differently, and at Ghent University, I see a lot of young people seeking dental care because of, for example, fracture of one or more of the front teeth owing to biking and other kinds of accidents, sometimes under the influence of alcohol or drugs. These students don’t want to wear removable dentures for life.

With respect to the first part of the question, of course the addition of dental hygienists makes financial sense. The purpose is to relieve dentists of those tasks that can be delegated to auxiliary staff. Secondly, dental hygienists will be trained to communicate with patients about their problems and questions. Delegating prophylactic care to the dental hygienist implies that more patients can be treated and followed up on. We also must not forget patients who live in nursing homes. Since nurses are not allowed to provide dental treatment, we are glad that, in the near future, dental hygienists will be available to give these people the necessary preventative care.

What kind of prophylaxis does the Belgian dentist perform in the office? How much time do you devote to prophylaxis?
Supposing that patients go to their GDP on a yearly basis, supragingival scaling and scaling of shallow pockets is standard procedure. The Dutch Periodontal Screening Index is a perfect tool to screen patients for periodontal disease and treatment needs, but this index is unfortunately not yet applied widely enough, even though it is reimbursed. If a GDP remarks that the gingivae bleed easily or if the patient complains about periodontal infection, then the periodontal probe is used and the patient will eventually be referred to a periodontist.

UC Leuven-Limburg and Artevelde University College (in Ghent) are offering a new professional bachelor’s degree programme in dental hygiene. Is that a breakthrough?

It certainly is. It is a pity that this programme is not yet offered in the French-speaking part of Belgium. Let’s hope they will follow with us as soon as possible to ensure the levelling of our nation’s dental care. Since Leuven and Ghent are the only Flemish universities where the dental graduate curriculum can be followed, it is logical that dental hygienists will be trained at those same universities, and that both professional groups will start to work together at chairside from trainee level onwards.

When looking at your Dutch neighbours, what do you think should be replicated in Belgium?

In the Netherlands, they have more than 50 years of experience with dental hygienists. This profession is well represented and has a strong, hardworking and lobbying society. We in Belgium have always respected and admired the pioneering way of organising dental care in the Netherlands. Although tough discussions have had to be conducted, they have always reached a consensus. Today in the Netherlands, up to ten different levels of dental professionals are distinguished, from specialists to dental assistants. I don’t think we will ever see this development in Belgium.

The advantage of us being behind is that we can copy the best things that have proven to be solid and to work, and delay the more complex or risky things until we see how it works out there.

I hope that dental hygienists will integrate easily into the dental workplace and that their future will be as bright as it is in the Netherlands.

Finally, where do you see the future of Belgian dentistry?

When I graduated in 1986 as a periodontist I had two dreams, the first of which was the official recognition of our diploma as a specialist in periodontology and oral implantology.

This dream was only fulfilled in 2003. My second dream was that dental hygienists would be legalised to work in Belgium, and as you know, this will also become true from 2019 onwards. So, the future is bright. I fortunately did not mention how long it would take before my dreams would be fulfilled.

Looking back to ten years ago, taking digital impressions with oral scanners was still a utopia; there were no navigation systems available for implant therapy, and we did not yet have these composites with hydroxyapatite nanoparticles. Dentistry has evolved in such a rapid way that the future is today.

However, in my opinion, the evolving trend towards cosmetic dentistry is almost alarming. There is nothing wrong with the high demand for aesthetic dental treatments because it has been proven that these patients show more compliance in cleaning their teeth, but there is a tendency towards the belief that appearance is more important than function. Many patients prefer whitening their front teeth to periodontal treatment to save natural teeth. While they argue about periodontal therapy not being reimbursed by the healthcare system, this point is not raised when they seek aesthetic dental care.

Another rather regrettable observation is the fact that stock-market-listed companies invest in dental clinics and hire dentists as employees. Of course, this is a sign of the times. Being the manager of a group clinic today has turned into a full-time job that has almost nothing to do with dentistry. Let’s hope that the financial management of these clinics is not more important than the patients and that the dentists working in the system still feel the same responsibility towards their patients.

Thank you very much for the interview.
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“We’re all about prevention”

By DTI

Getting one’s patients to engage in preventative oral health behaviours can be difficult at times. Helping them to understand the importance of such care for long-term health is key to achieving this. With this in mind, prevention magazine spoke with Clare Ison, a nurse and oral health educator at Beaufort Dental Health Centre in Burton-on-Trent in the UK, about what her roles entail and how she motivates and educates her patients to take ownership of their oral health.

Mrs Ison, could you tell us a little bit about yourself and your background?

Clare Ison: I initially started my career in dentistry in 1988 before becoming a qualified dental nurse in 1994—back then, one didn’t have to become a qualified nurse immediately, unlike now. At a point, I had a bit of a career break, but I’ve come back to work in practice management. Though I also used my break to gain qualifications in business management, I gained my post qualification as an oral health educator as well.

What does being an oral health educator involve? How do you become one?

It just means educating one’s patients about prevention—preventing any dental disease, whether it is periodontal disease or dental caries. Oral cancer is also on the increase, so discussing that topic is important as well. Dentists or hygienists refer patients to our clinic, and once the patients are with us, we look at what the aims of the appointment are. Though this differs for patients, we always want them to go away from our clinic with the motivation to take charge of their own oral health.

With respect to becoming an oral health educator, we put our nurses through a nine-month-long online course that is run by the British Dental Association. Though the online aspect of it makes it somewhat easier to complete, the content is quite in depth: there are case studies one has go through, the way one conducts lessons is analysed, and there’s an exam at the end of it. It’s a great programme that gives nurses a chance to get additional skills and new responsibilities, and more nurses should be encouraged by their practices to do this sort of stuff.

What do you specifically aim to educate your patients about?

We really want to emphasise the importance of keeping one’s mouth healthy. One doesn’t want them to see the hygienist and think that that’s enough and not take any action until they come back for another check-up six...
months later. They need to know how to practise good oral hygiene at home, what the risk factors for certain oral diseases are, and indeed, what even causes them. We go right back to basics, what toothbrush and toothpaste they use. It’s not judgemental, however; this is aimed at providing them with a solid base of knowledge upon which they can build.

We’re all about prevention. To be honest, why would one keep treating a patient who has dental disease without informing him or her about what exactly was causing that disease? If he or she has tooth decay, for example, one can treat it by providing fillings, but one also needs to explain what exactly is causing the decay so that the patient can be aware of it and prevent it.

What type of patients do you have at your practice?

We welcome all ages and all patients, but we do like to focus on children, as we can get them started at an early age with a good education on oral health. At the end of the day, they’re most likely to be shown how to clean their teeth by their parents, and if there’s something wrong with how they’ve been taught, we need to break the cycle and improve the oral health of not just the children but also hopefully the whole family.

How can you motivate patients to adopt good oral hygiene practices?

We sometimes like to focus on the risk factors and the issues that can potentially arise, such as tooth and bone loss. However, it’s most important to show patients support and guidance and provide them with a good oral health education. If these are all right, the patients will usually listen. Though this is sometimes a step-by-step process for certain patients and can require multiple sessions, it is ultimately worthwhile.

How many patients practise or understand the benefits of something like interdental cleaning?

Well, interdental cleaning is something that a lot of patients don’t know about, because they often think that a toothbrush cleans all of the tooth surfaces, and so it’s quite difficult to implement in a daily oral routine. However, if one demonstrates it to them not just on a model but in their own mouths as well, one will often be able to physically show them the removed plaque on the interdental brush, the evidence of what is in the interdental space, and this can motivate them to adopt it in their day-to-day routine.

What is the current situation regarding oral healthcare in the UK?

Overall, I would say it is quite good, yet there are still some areas that can be addressed. Interdental cleaning, as I mentioned, is not really something that is that popular in the UK yet, and there are also a lot of patients who think that brushing their teeth only once a day, and not twice, is acceptable. Though they might be hesitant at first, once we’re able to educate patients and show them how removing plaque twice a day can improve their oral health dramatically, we can really get them to change their oral hygiene habits for the better.

Thank you very much for the interview.
When it comes to motivating patients to maintain good oral hygiene practices, a clear plan is essential given the time constraints of most dental appointments. What this plan entails, however, depends on what the most pressing issues to the patient are. Prevention magazine spoke with Sandy Basheda, a dental hygienist at the M & N Dental Practice in Bedford in the UK, about how she structures her oral hygiene appointments and the importance of building relationships with patients.

Ms Basheda, how did you first get started as a dental hygienist at M & N Dental Practice?

Sandy Basheda: I've been working at M & N Dental Practice for three years now. I started basically straight after I graduated from the University of Liverpool with a degree in dental hygiene and therapy. Prior to that, I had a background in dental nursing, but I wanted more of an instrumental role with dental patients, which led me to hygiene and therapy.

What does your average day at work involve, and what is the structure of your oral hygiene appointments?

I see many patients with periodontal problems and so conduct a lot more hygiene right now than therapy. I also deal with a lot of children that, unfortunately, have dental caries due to a poor diet, lack of oral hygiene and likely a lack of education on how to prevent it. It’s not a good start for children if they have to have fillings put in or even have their teeth pulled if it’s particularly bad—it doesn’t give them a good first impression of the dentist.

How can you get patients to continue with good oral hygiene practices after an appointment?

I think one has to build a relationship with them. They have to trust one and understand what the benefits of oral hygiene are, as they might not be aware that they have any problems in the first place. For example, if smokers aren’t experiencing any bleeding in their mouths, they might not think that there’s anything to worry about. One needs to be able to explain to them in a clear and understandable way why taking care of their teeth is important not just for their oral health but their overall health too.

But is it possible to achieve this all within half an hour?

Well, it’s not a lot of time, but we can always schedule an hour-long appointment if it is necessary. I see many anxious patients, patients who might not have been to the dentist in ten to 15 years. With these patients, a shorter appointment is often good in the beginning, because it means that they’re not overwhelmed and that one can build up from there over the ensuing sessions. By the second or third appointment, they’re a bit more relaxed and eager for treatment.

How do you motivate your patients to take charge of their own oral hygiene?

I think it’s mostly about re-educating patients on what the correct and most effective cleaning methods are, what products are best for them. It’s about finding something that works for the patient, something that will get him or her excited about taking care of his or her teeth and seeing the benefits. In dentistry, it can be difficult to engage in a cooperative relationship with one’s patients—often, it’s a one-way conversation with the professional giving the patient instructions or advice on how to take care of him- or herself. I like to leave that sort of instructional conversation to the beginning or the end of the appointment, as this allows the patient to think, while in the chair, whether he or she has any questions about anything I’ve said or what our future appointments will entail. Being able to answer these questions in a clear and understandable way is essential to motivating patients.

Thank you very much for the interview.
NEW COLLECTION

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My Guided Biofilm Therapy journey

By Faye Donald, UK

Right now, I am sitting outside a small cafe overlooking the vast and beautiful Lake Geneva. It is a crisp February afternoon, yet I have chosen a table outside. I am sipping a small glass of red wine and on the left side of my thick winter coat I am wearing a badge given to me on my recent visit to the EMS head office. It reads, “I feel good”. I smile to myself as I reflect on my journey so far, a journey that I had thought was almost complete only to unexpectedly stumble upon another exciting pathway. Picture this: I had graduated from dental school about 14 years before, I thought I had gone as far as I could go clinically, I was honest, hard-working, kind and good at my job. Did that make me successful? Or did that make me just good enough? It was tough. General practice was a slog, a battle. Regulations were getting stricter, time was getting more restricted and budgets were getting tighter. I struggled to remain motivated, and I fear my patients did too. It felt almost like the tools to treat active periodontal disease were in abundance, with advice from all corners, but maintaining patients was something that just was not focused on. I would reinforce, retreat as necessary and hope for the best.

However, there was something happening in the dental world that was long overdue, a change in our treatment methods. Painfully slowly, we saw the decline of instrumentation, replaced by more minimally invasive treatment modalities. Rethinking what we had been taught, we cautiously stepped out of the shadows of old-fashioned treatment and into a modern, forward-thinking, results-based, patient-centred approach. All of a sudden, we were discussing biofilm instead of calculus. We were giving oral hygiene instruction before scaling. There was a revolution occurring in front of our very eyes.

I was first introduced to AIRFLOW when I switched practices and quickly grew to appreciate it. Soon, I was using AIRFLOW on every patient and seeing cleaner mouths and happier patients. Though I initially used it for its stain removal benefits, I read up some more and especially looked at studies on periodontal powders. I experimented more and more and it seemed to do no wrong. Patients drove much of the change; they had started to request it, having seen and felt the difference first hand.

I was suddenly reawakened, eager and enthusiastic about my work. The more I used AIRFLOW, the more it impressed me. Treatment times were getting shorter, yet results were getting better. I was dazzled by AIRFLOW’s potential and the prospect of how far we could take it. That said, there seemed to be no clear direction on when best to use AIRFLOW. I was experimenting but without much guidance.

I made contact with a practice that had been recently purchased by a young and enthusiastic dentist who was looking for someone to revitalise his quadrant-scaling-focused hygiene department. At that time, his hygiene bookings consisted of just Tuesday afternoons and even that time could not be filled. The practice was losing money and the struggle was very real.

I pitched the GBT concept to the new principal, who had a vision of creating a slick preventative- and prophylaxis-centred practice. It took a great leap of faith for him to trust me and invest in the AIRFLOW equipment, particularly given the scepticism that surrounded the whole department. However, within 12 weeks, we had gone from...
one half-filled afternoon per week to two full days of oral hygiene appointments. After six months, we were at full hygiene surgery capacity of three days per week. The demand was so high, we could barely keep up. We advertised wherever we could and ran free AIRFLOW promotional days based around GBT to raise awareness and money for charity. Our first “Drop in for a Free AIRFLOW” day was a huge success, with local businesses donating raffle prizes and local media broadcasting from our waiting room. It was an unqualified success.

I performed AIRFLOW treatment on 34 new patients that day—free of charge. Those were 34 people who otherwise might not have experienced the pain-free comfort and results that AIRFLOW offers. One year on and of those 34 patients, 23 are now regular paying patients. Who knows how much other business was generated from the ripple effect of people talking about our ethos and our pain-free treatments.

I was motivated to share my knowledge and unleash GBT’s potential for other hygienists in the UK. I took to social media and rapidly made a name for myself on the hygiene forum as the go-to AIRFLOW guru. Requests to run courses came thick and fast, and I travelled the length and breadth of the country practising, teaching and dreaming about GBT.

To my utter shock and amazement, in November 2017, I won the award for Best Hygienist at the Oral Health Awards. I was humbled and honoured, and accepted the award with pride and dedicated it to the incredible individuals who have developed AIRFLOW into the game changer that it is today.

Life in general practice in the UK for many hygienists is gruelling. Twenty-minute appointments are not uncommon and packing in assessment, motivation, full-mouth scaling, polishing and home care in this time is very difficult, leaving both hygienists and patients unmotivated. It does not need to be this way. GBT has transformed my clinical practice and it can change others too. I would go as far as to say I am unrecognisable from the hygienist I was five years ago. My appointments are measured, controlled and, most importantly, complete. Treatment is carried out without compromise and to the highest standard. Most importantly, my patients feel empowered and motivated to take charge of their own oral health. I feel in control, I feel inspired and, true to EMS, “I feel good”!

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The future

In my opinion, there is a new revolution taking place: the rise of AIRFLOW and GBT. My passion lies in sharing this knowledge, skill and experience and in providing hygienists with the tools to be the best they can be. I invite hygienists into my surgery free of charge to observe and learn before returning the favour at their practices. I will not stop until every single hygienist in the UK has heard of GBT and I have founded the very first GBT practice in the UK. And then I will take on America! Just you watch me…
Knowing-doing gap in dentistry

By Dr Ana Stevanović, Switzerland

According to a 2002 study by Douglas CW in The Journal of Prosthetic Dentistry, 38 million adults in the US will be in need of one or two complete dentures by 2020. What is being done to address this shocking prognosis? There are more than 14 million implant placements per year worldwide. Consequently, the efforts invested in preventing implant complications have risen significantly. But are we doing enough to reduce the need for implants in the first place? Why, when we know that 99 per cent of dental disease is due to nothing other than biofilm, are our predictions on the future of oral health still so pessimistic?

Despite dentistry’s knowledge of these facts and predictions, results indicate that not enough is being done. There is a vast difference between knowing and doing, a gap between intention to make a change and the action of bringing about such a change. It is a gap that dental professionals experience daily. So the question is simple: how do we bridge the gap between knowledge and action?

As a dentist, communication with my patients was never an easy part of my job. For example, telling a patient to brush better. What does brushing better even mean? If I simply advised the patient to apply the Bass technique, I would see 100 different forms of the technique.

A changing world without change

A colleague once commented that patients are responsible for their own oral health. I could not agree more. However, as medical experts, do we not first have to empower patients by providing the knowledge and teaching them the skills necessary to assume full responsibility? The truth is that most patients received their oral care instruction from their parents. This contrasts with the modern approach of individual prophylaxis and this is the gap that must be bridged.

Present-day dentistry does not seem to allow enough time for proper training and instruction. Either patients are not willing to pay for this service or the dental professional does not have the necessary time during an appointment to provide this service. Most countries do not have the luxury of a one-hour appointment with a dental hygiene specialist, which would allow enough time for cleaning and instruction. Switzerland is one exception. Other countries need to follow its example in order to implement an effective knowledge transfer during dental appointments.
Unacceptable status quo

One thing we will always have to deal with is the mindset of our patients: “I get decay no matter what I do or how much I brush”, “My parents too had bad teeth”, or “A tooth can be easily replaced today.” Patients are, firstly, quick to put the blame on their parents or point the finger at dental professionals. Secondly, dentistry is still associated with a great deal of discomfort. Lastly, patients know about many of the treatments and solutions available.

Charles-Edward Winslow, founder of the Yale School of Public Health in the US, once said that it a duty of each generation to redefine “unacceptable”. Is 38 million Americans with at least one complete denture not absolutely unacceptable? We live in such a fast-changing world that we have lost our connection with our mission and at times also with our patients. The time has come to change the status quo.

Change must be accepted

How do we bring about this change? The answer seems too simple to be true. Through the service of coaching. Nowadays, there is hardly a product sold without a value-added service. No treatment without maintenance. No dental practice without dental hygiene.

In-depth instructions have become crucial for the success of a product. Is a dental office not an accumulation of service efforts? Why, then, since we as dental professionals have the competence, do we not include coaching as a value-added service in a dental practice?

Successful coaching in dentistry depends on three crucial factors: establishing personal connections, developing trust, and growing relationships. Patients should become part of a long-term relationship with the office. It is not about regularly bringing in new patients, but cultivating the ones the practice already has. The most modern practice and the friendliest team will avail nothing if the patients do not stay with the practice.

Personalised connection through individual coaching is key to building a long-term relationship. No technology can replace a durable connection between a dental professional and a patient. Digitalisation cannot replace trust.

A programme designed for change

This is why Curaden brought individually trained oral prophylaxis (iTOP) to life. This is a programme introduced 20 years ago by Dr Jiri Sedelmayer, an established dentist and past professor at the University of Hamburg in Germany. During his time at the university, he realised that dental students studied every detail about restoration, but knew nothing about keeping their own mouths healthy. Dental students were never practically taught any techniques to maintain their own oral health. This realisation led to the establishment of iTOP—to train future dental professionals.

What began in 2006 as a single two-day course has since grown and been attended by more than 14,000 dental professionals worldwide. iTOP operates with the support of over 200 instructors in 44 countries. In our seminars, we do not differentiate between a dental hygienist, dental nurse, dentist or oral surgeon. All of their daily work contributes likewise to shifting the paradigm from restoration to lifelong oral health. Each of their endeavours aspires to the best for their own health and the health of their family members, friends and patients. All of them share one common understanding: a clean tooth cannot become diseased.

The iTOP programme is based on three simple criteria: acceptable, effective, non-traumatic. These pillars are the foundation for all oral healthcare products that Curaden offers to its clients.

Knowing is good, action is better

In order to achieve clean teeth, we employ a unique practical training concept called “touch to teach”. It is based on the idea of the dental professional experiencing and practising the iTOP techniques on him- or herself first, before teaching it to others. No phantom model will ever replace the feeling of a toothbrush, interdental brush and solo brush on one’s own teeth and gingivae.

Oral health needs to be taught individually and practically. Sometimes it is necessary to go back to the basics to achieve change in the future.

There continues to be a huge gap between knowing and doing. But let me be clear: what we know, we should apply repeatedly, every single day. It is our job to repair teeth, but it is our mission to keep our patients healthy. We should not confuse our job with our mission. Only then will we, 20 years from now, have those 38 million people smiling with their own healthy teeth denture-free.

about

Dr Ana Stevanović is Head of Professional Education at Curaden. She has spoken at numerous events on the importance of a paradigm shift in dentistry and bridging the knowing-doing gap in preventative oral care. Her background as a dentist, manager and development coach aids her in utilising her work with both dental professionals and patients to help shape a change in the mindset of individuals in order to change the future of oral care.
Already cleaning or still polishing?

By Adina Mauder, Germany

Caries and periodontitis are avoidable. Dental plaque resulting from microbial colonisation of tooth surfaces is seen as an aetiological factor for caries and periodontitis, the most common infectious diseases in the Western world. Biofilms are complex 3-D structures in which, for example, bacteria are encased in a mucoid extracellular matrix. They do not just occur in the oral cavity, but on all boundary surfaces that are moist and warm. Their significance regarding the occurrence of problems such as periodontitis and caries has been scientifically acknowledged. Science has been trying for years to find efficient means and methods to remove and prevent biofilm.

Although we have new findings on biofilm, we are still using instruments and materials from a time when the aetiology revolved around sub- and supragingival calculus. Why do we first remove calculus with hand instruments and electric scalers despite the focus falling here on living biofilm? Why do we still polish with rubber cups and brushes, which are proven to harm hard- and soft-tissue? Why do we use four methods to remove biofilm: ultrasound, rubber cups, hand instruments and polishing compound? Is there not just one method that is completely painless, more effective and saves time?

We are fortunately now seeing a further paradigm shift in terms of procedure and the performance of prophylaxis. A procedure known as Guided Biofilm Therapy (GBT) has become the new protocol for the examination appointment with the clinician. Based on numerous scientific studies and jointly developed by specialists at universities and dental practices and Swiss company EMS, GBT is now increasingly popular. I myself am delighted to be able to offer my patients this simple and pleasant treatment, which above all ensures gentler treatment of the tooth substance.

What is GBT? It is very simple: GBT is my concept for success, a procedural protocol, divided into several steps that are easy to explain. They are establishment of findings, disclosing; patient education, including performance of oral hygiene at home; remotivation of the patient; sub- and supragingival biofilm management with the appropriate instruments, gentle treatment that is really necessary; quality control; recommendations; and individual assessment of the recall interval.

In GBT, it is especially important to disclose the tooth deposits that cause harm. It is what the clinician discovers here that guide the clinician when performing oral prophylaxis. This is how we achieve optimum results for the benefit of patients, treating them with the least invasive method while ensuring maximum comfort. GBT is suitable for healthy patients, including children; patients with orthodontic appliances; and those with caries, gingivitis, periodontitis, peri-implant mucositis or peri-implantitis.
What GBT means for me

GBT has changed not just my work procedures, but also me personally. I have been a dental hygienist for 18 years and also work as a dental coach at the Swiss Dental Academy. In my seminars, I place importance on individual prophylactic treatment concepts. I do not concentrate solely on removing calculus, but also on biofilm. After all, it should be the task of the team at the dental surgery to offer optimum, personalised prophylactic treatment for lifelong oral health. At the surgery, we should apply an individual concept that combines the latest findings with a better quality of life for the patient and greater earnings for the dentist.

For me, this concept is GBT. Since I learnt about GBT, my work tray has undergone a radical change. I need fewer instruments, but use the ones I have far more effectively. I too have changed. From being a cheerful sort of person anyway, I have now become even happier. I enjoy my work more and see how patients are willing to come back. After all, they have just received gentle treatment, as well as had an informative discussion about personal oral hygiene with me. I see how happy patients feel, and how happy I feel as well.

The eight steps of GBT

What is the secret of GBT? In a nutshell: hand instruments and traditional polishing make way for ultrasonic instrumentation PIEZON NO PAIN and AIRFLOW with low-abrasion erythritol-based PLUS powder. GBT combines these technologies in eight successive treatment steps.

Step 1: Findings

We perform no treatment without thorough screening for caries and periodontal disease, which we accomplish using conventional tests, for example periodontal screening index, approximal plaque index and sulcus bleeding index. To ensure exact reproducibility of the indices, it is advisable for the entire prophylaxis team at the dental surgery to agree on documenting and evaluating their findings according to one specific index and system.
We need to know whether the patient takes medication, suffers from systemic disease (e.g. diabetes), has a pacemaker or possibly has any allergies. The anamnesis must be clarified in detail. The data filtered here allows us to decide which technical instruments and materials can be used during the prophylaxis session without putting the health of the patient or the clinician at risk. Visual inspection of the patient’s teeth is followed by examination of the mucosa in the oral cavity. It is important to note that, before treatment, we always start by administering a mouthwash to protect both the patient and the clinician.

Step 2: Disclosing

Coloured biofilm is the best way to show patients the correct cleaning action (techniques) in their individual case. We use disclosing agent to motivate them. By making biofilm visible to patients, they understand their problems better, and this is proven to result in greater compliance.

Disclosing helps the clinician even more. We are able to target biofilm more accurately and increase the success of its removal. Studies have shown that, without disclosing, some 20 per cent of biofilm is left in place, particularly when it is supragingival. Only clinicians who use disclosing agent are able to remove up to 100 per cent of supragingival deposits. This also means that, if there is nothing there, it does not have to be removed. In the past, we cleaned every tooth, but left half the deposits behind.

Step 3: Motivation and oral hygiene instruction

Motivation is the driving force behind patient satisfaction. Disclosing is thus the basis for successful instruction and motivation of patients to perform oral hygiene at home. Only when patients understand their situation will they remain motivated. Motivation and personalised instruction are therefore a central and exacting element of GBT. For oral hygiene at home, I recommend using suitable aids that are individually tailored to the patient’s needs.

I strongly recommend Philips Sonicare toothbrushes (31,000 brush head movements), and Philips AirFloss owing to its dynamic sonic technology and minimally invasive efficacy. The success of patients in cleaning their teeth using these technologies or a combination of them after instruction leads to excellent results in terms of oral hygiene. I have seen even greater success as regards stabilisation, particularly in the case of patients with periodontal disease or unsatisfactory lifestyles.

Step 4: AIRFLOW

We first remove the biofilm. Why the biofilm first? It is very simple: as already mentioned above, calculus has never caused disease on its own. The main reason for many problems in the oral cavity is the quality of the biofilm, and its adverse processes and effects—far-reaching, even affecting the entire body. If we remove the biofilm first, we are eliminating bacteria and so stopping disease.

We can also remove stains successfully with an efficient procedure that has been learnt. Deposits of all kinds, including calculus, are identified more easily while working, becoming visible both supra- and subgingivally. This allows us to target them more accurately in our work. We protect our patients from being treated unnecessarily. That should be a consideration of all treatments performed on patients.

We consider more carefully what instruments are in fact necessary and select them accordingly. We should step in only where there is a real need for treatment. It is now easy to remove young calculus and stains. We are gentler on the patient in our work. It has now become possible to apply an approach that is extremely gentle, minimally invasive, atraumatic and precisely targeted to
the specific problems of each patient. This new cleaning technology is also effective when teeth are malaligned or very close together, and with surfaces that are not easily accessible and impossible to reach with a polishing cup and brush. We can also clean the tongue and palate. If the necks of the teeth are exposed, we can likewise deal with this without damaging the cementum or dentine.

Whether a patient has gingivitis, periodontitis or peri-implantitis: AIRFLOW and PLUS powder allow us to work subgingivally down to a sulcus depth of up to 4 mm. Anyone who has ever caught rubber cups on orthodontic appliances and then administered a powder–water treatment jet will not want to do without this new method.

Step 5: PERIOFLOW

When it comes to removing subgingival biofilm, in 4 to 9 mm periodontal and peri-implant pockets, I recommend using PERIOFLOW. The PERIOFLOW nozzle has enabled the treatment of millions of periodontal pockets, and we have achieved excellent results in the case of peri-implantitis, for example. I recommend using it six to eight weeks after initial therapy. When doing so, it is important to ensure you do not work horizontally on the tooth and the pocket, but pocket by pocket, proceeding slowly and without pressure, ensuring an extremely gentle action. Working vertically is necessary here.

Step 6: PIEZON

If calculus is present, I opt for the latest technology: PIEZON. PIEZON NO PAIN is based on piezoceramic energy conversion of linear movements. Hand instruments are overshadowed here. PIEZON is not only highly precise, but also intelligent and minimally invasive. The PS tip is ideal for supra- and subgingival application, while the PI instrument can also be used on titanium or ceramic surfaces. The instrument is moved over the surface of the teeth without applying pressure (the PS instrument is held parallel to the tooth surface), to avoid any loss of tooth substance or changes to surface structures. Patients find this procedure very pleasant.

Step 7: Control

We must check that we have removed all biofilm and calculus. This is what patients expect of a professional in our field. I recommend performing this check with a fine probe and a pair of dental loupes. The chemical plaque check is followed by final examination and final diagnosis by the dentist.

Step 8: Recall

Our aim is long-term stabilisation, preservation of tooth substance and avoidance of disease. This will only succeed with regular recall. The patient should leave the dental surgery with a recall appointment, which must be scheduled at once based on the findings. This depends on numerous individual factors and risks, which include the patient’s general anamnesis, diet, reconstructions, anatomical structures, cleaning habits and general state of oral hygiene.

Conclusion

We should ask ourselves every day: What is the efficacy and benefit of each method? What is the effect of cleaning? What are the clinical parameters like? How much time can I take? What safety does the method offer me with hard- and soft-tissue and restoratives? What level of comfort can I offer patients? How do I guarantee the health of my patients? Hand instruments and conventional polishing do not provide satisfactory solutions, but GBT is already able to do so.

GBT is a scientific concept for success at every dental surgery, offering intelligent guidance for every clinician. GBT is not only a safe and reliable procedure that smooths your path toward success, it also ensures even better treatment and dental prophylaxis results. I recommend that your entire team at the surgery try out GBT once—you will be delighted with it.
Radiant and healthy teeth throughout life—that is the ultimate goal of the practice run by Dr Ines Laible and Maike Laible. The practice opened in late 2017 near Stuttgart in Germany and saw a real rush of patients within a few weeks—the magic formula: only the best for prophylaxis. In pursuit of radiantly beautiful smiles on patients’ faces, the two dentists opted exclusively for state-of-the-art technology and equipment. prevention spoke with Dr Ines Laible and her sister-in-law Maike Laible four weeks after the opening of the new practice. The conversation touched on how best to plan the opening of a new practice, the importance of good patient education, and the decision to rely on the latest ultrasonic and powder jet equipment.

Congratulations on the new practice. Why did you choose to open a new practice rather than enter someone else’s employment?

Dr Ines Laible: I always wanted to be self-employed rather than being permanently on the payroll. We had ideas and dreams of our own practice early on and we wanted to fulfill them. A regular salaried position was never really an option. However, the search for premises was very difficult and tedious. In addition, we didn’t want to stick with a specific dental depot because of dental units. So we talked to the bank, reached an agreement and decided to go for very high-quality equipment and the new premises.

Maike Laible: I worked for years as a dental surgeon in various practices. I often encountered very old technology, but also old treatment methods. I realised pretty quickly that I wanted my own practice. That’s when every dentist wonders whether to take over an established practice or start a new one.

Dr Ines Laible: I never wanted to take on a practice alone. Of course, we didn’t just want an old practice that would basically have to be renovated for the same money as it would take to start a new one. So we decided to start afresh. My husband called the local business development unit, and a few weeks later, we received a call to say that the owner of a new building could very well imagine a dental practice there. Even when premises for the practice had been found, we had to wait another three years, since everything still had to be built. Rome wasn’t built in a day, but we’re sitting here now!

How long did it take to set things up, from putting up the first wall to receiving the first patient?

Dr Ines Laible: At the beginning of November, after years of hard planning, the walls in the premises were erected and the floor with all the wiring had been laid. Then everything went very quickly. Together with the architect and an amazingly dedicated team, we got the whole practice
together within two weeks. Up to 30 expert craftspeople were in our practice every day. And we were there in the midst of it all. We were able to plan and furnish our space, and we had free rein and lots of fun. There were no compromises to be made. On 20 November, we welcomed the first patients.

Opening a new business involves a great deal of marketing to make yourself known quickly.

Dr Ines Laible: We were naturally visible long before the practice opened. We had been distributing flyers since October and taking out ads and participated in an autumn festival with a stand to gain publicity. In the end, we welcomed over 300 people to the opening, allowing people to have a look at the practice without any fear.

Maike Laible: The logo design wasn’t easy either. We looked at different designs, gathered impressions and tried to find a nice colour. At the beginning, we wanted to combine blue with a tooth.

Dr Ines Laible: But then the architect came and said, Nothing with teeth! That’s what everyone has!

Maike Laible: So we chose pink, a strikingly feminine colour considering the male-dominated businesses in the town of Fellbach. The colour and style are reflected throughout the practice and our communications. Even the “2” in our logo fits—and we did, in fact, incorporate a tooth and two “L”s, for “Laible”.

Dr Ines Laible: Of course, an informative website with fresh colours and good images is as important as having a Facebook page. We dentists are people too and celebrate Christmas like everyone else. If our patients can follow us on Facebook and evaluate us, this is a great opportunity.

The comments prove you right: “Super practice, great emergency service, sensational interaction even with children!”, “When you feel so well cared for, you even like going to the dentist.”, “Brand-new modern practice with a super team and great practitioners! Highly recommended.”

Maike Laible: The patient is king, not just a number. Many practices with long opening hours also have many practitioners. There’s no kind of connection or trust. After root canal therapy, the patient goes somewhere else. In contrast, we want to participate in the development of patients and give them radiantly beautiful and healthy teeth.

How can this connection and trust be fostered?
How did the first few weeks go?

Dr Ines Laible: Within a few weeks, we were booked up for the next one to two weeks, and we still have a large influx of new patients. Prophylaxis is a very big focus at the practice. We’re lucky to still have two further treatment rooms. We need to equip them with treatment units and hire a new worker for prophylaxis. We can say that after just a few weeks. At the beginning, we told our employee, whose job it is to take care of registration and office management, that she would also have to carry out a prophylaxis session here and there. Now, she performs seven to eight prophylaxis sessions per day and has no time at all for admin. And all after such a short time! I think our success has to do with our new equipment but also with prophylaxis.

Maike Laible: Patients soon realised that prophylaxis is the most important thing for us. But only those who are shown and taught prophylaxis can achieve good oral health. If patients don’t see it, how are they supposed to understand it? I don’t know how to repair a car and why it costs so much, but if the mechanic explains it to me, I feel better and have more confidence. One can even build on top of the Leaning Tower of Pisa, but the basic substance has to be right first.

On the topic of equipment, you opted for the AIRFLOW Prophylaxis Master from EMS. Why this device?

Dr Ines Laible: I focus on periodontics and implantology. Prophylaxis is, of course, essential here. We told ourselves early on that, if we want to offer and carry out prophylaxis sensibly, it would have to be with EMS’s new device. We can offer painless, safe and complete cleaning with the Prophylaxis Master. This is good for our patients and, of course, for us too.

Maike Laible: We were also familiar with the previous models and were always satisfied. Plus, neither of us had done a professional tooth cleaning for a long time. At the same time, I recently had a patient with calculus as hard as bone. The PIEZON was able to remove the calculus quickly and easily, without any pain for the patient.

Dr Ines Laible: I have already had several patients who have said they had never had such thorough tooth cleaning. Other patients told me that prophylaxis was always painful. After explaining to them that prophylaxis is extremely important to prevent and treat periodontal disease, they all said that they hadn’t felt a thing after being treated with the Prophylaxis Master. Our patients are really impressed.

How do you approach tooth cleaning?

Maike Laible: We offer professional tooth cleaning sessions of at least one hour. Explaining things plays a major part in this. As dentists, we also talk a lot about tooth cleaning and interdental cleaning.

Dr Ines Laible: We also almost always use staining. Staining is an important factor: the dentist and patient see what needs to be done and where the patient’s oral hygiene can be improved at home. Staining motivates patients and brings them back to the practice.

What’s the future for the Laible practice?

Dr Ines Laible: We will definitely need a second or third EMS device soon. Our goal is to use a careful recall system and sensitive prophylaxis to deliver great results for patients if they come for prophylaxis twice a year and have healthy teeth.

Maike Laible: We want lifelong wellness for teeth.
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“Prevention is not just for children and young people”

An interview with Prof. Ivo Krejci on lifelong dental coaching

Three years ago, Professor of Cariology and Endodontology Ivo Krejci (University of Geneva, Switzerland) published an article titled “Lebenslanges ‘DentalCoaching’ anstelle ästhetischer Zahnmédizin” [lifelong dental coaching instead of aesthetic dentistry] in which he made the case that professional motivation, instruction and check-ups, as well as precise, non-invasive therapies, should be the core competence of a practice team in order to maintain oral health, prevention spoke with him about his assertions.

Prof. Krejci, what is your main message when it comes to modern caries prophylaxis?

Prof. Ivo Krejci: The aim of modern dentistry is not the temporary repair of heavy clinical symptoms in the form of large decaying lesions and deep periodontal pockets, but rather the lifelong dental health of the population, which I define as the absence of clinical symptoms. My article focused on one aspect of this concept, namely the causes, symptoms and treatment of caries, a chronic lifelong infection of the biofilm, the clinical symptoms of which, in the form of decaying lesions, are still some of the most common reasons for extractions. I am aware that I am speaking against the common teaching opinion, which treats caries and periodontitis as non-communicable diseases, but it would be too much for this interview to explain the reasons for this stance in detail.

Besides increasingly criticised fluoridation, bioavailable calcium, acid neutralisation and harmless sugar substitutes can be identified as important factors in preventing caries symptoms in so far as the patient doesn’t want to curb excess sugar consumption. Three further measures are at least just as important: firstly, early diagnosis of the initial caries; secondly, the lifelong, periodical professional motivation, instruction and monitoring of an efficient, atraumatic home dental care routine in the sense of primary prevention; and thirdly, the use of non-invasive adhesive composite restoration to stop or at least delay subclinical caries symptoms in the sense of secondary prophylaxis. Direct and indirect minimally invasive composite restoration complement this philosophy in patients entering into this concept with existing large decaying lesions or with existing restorations.

Why do we still separate periodontitis prophylaxis and caries prophylaxis?

It’s difficult to say, as both problems have to do with immunology and a pathogenic biofilm. This separation makes no sense at all. We should always speak of simultaneous caries and periodontitis prophylaxis, not of separate problems. Depending on the individual patient’s situation, the focus may be more on caries and/or periodontitis prophylaxis, but it shouldn’t be forgotten that a lifelong prevention-orientated concept should take not just caries and periodontitis into account, but also erosion, abrasion, trauma, dental misalignment and infraction.

You mentioned pathogenic biofilm. What do you recommend: completely remove or disrupt the biofilm?

The biofilm actually protects our teeth, so is vital for survival. Its permanent removal from the mouth would therefore be counter-productive. Through its currently unpreventable infection with bacteria that cause caries and periodontitis, it becomes potentially pathogenic. This pathogenicity can only develop if two conditions are present: firstly, the biofilm must be sufficiently structured, which requires around 24 to 48 hours after its formation, and secondly, certain parameters must be present. An example of this is the repeated excess of sugar in the caries process.

These deductions form the basis of the preventative concept: we accept the infected and potentially pathogenic biofilm and do not remove it permanently from the mouth. We acknowledge that a change in the conditions—for example, through a drastic reduction in sugar consumption—would be very welcome, but difficult to implement in the long term in practice. We therefore approach the structure of the biofilm and prevent its pathogenicity from developing. The solution is simple: we just have to regularly, that is every 24 hours, disrupt the structure of the biofilm intensively on all surfaces of the tooth. Chemicals and medications don’t help a great deal, as the biofilm has very potent defence mechanisms.

In your article, you spoke about lifelong dental coaching. What do you mean by that?

Prevention is not just for children and young people. As caries and periodontitis are lifelong infections and decaying lesions, periodontal pockets, erosion, abrasions, trauma and dental infractions can arise at any age, lifelong prophylaxis is unavoidable. This lifelong dental coaching is based on the preventative measures already mentioned, complemented by regular professional monitoring with high-tech diagnostics to catch symptoms in the subclinical stage, thereby allowing non-invasive therapy where needed.
Therapy, diagnostics, prevention—what are your concrete recommendations?

We cannot predict reliably enough how much of a risk a patient has of developing symptoms in the form of decaying lesions or periodontal pockets. It is even more difficult to do this for specific areas of the tooth. And even if we could, things can change at any time. The risk of too little or too much prevention on the wrong tooth surface is therefore very high. This applies to erosion, abrasions and infractions in the same way. That’s why it is more efficient in today’s dentistry to wait for symptoms to develop, providing site-specific risk information. However, if we wait long enough for the symptoms to be clinically visible, it’s already too late and we fall back on dentistry from the nineteenth century. If one has the diagnostic opportunity to recognize symptoms long before their clinical manifestation, such a concept suddenly becomes very interesting.

We know that it takes years for clinically evident symptoms to develop in caries and periodontitis alike. If diagnostics are carried out with sufficient reliability and if diagnostic methods are available that catch symptoms in the subclinical stage, one will have enough time to tackle these with non-invasive methods.

As dentists, we only tackle the symptoms of caries with our restorative methods. For technical and practical reasons, we used to only treat symptoms at a later stage, when the decaying lesions had already developed into cavities, because diagnostics weren’t as advanced and restorative therapy was based on macro-mechanical principles. We needed the hole so that we had something to fill. Today, this concept hasn’t really changed in principle. From a professional perspective, we are still treating symptoms, but we have other diagnostic tools and therapies, so we don’t need macro-retentions for restoration. This lets us act much earlier and use non-invasive therapies.

Should we be concentrating on primary or secondary prophylaxis?

Individual primary prophylaxis is the foundation of everything, but nobody’s perfect. With the primary prophylaxis tools we have today alone, we will not be able to save humanity; despite our best efforts, symptoms will arise. That’s why our concept is not solely based on primary prophylaxis. It also integrates secondary prophylaxis, which aims to halt symptoms non-invasively in the early stages so that they do not become more clinically serious. Non-invasive secondary prevention seems to me the tool of choice, given our current circumstances and the resources we have available today.

What role does individual home oral hygiene play in caries prophylaxis in your opinion?

Individual home oral care by the patient is the most important aspect for me. It might sound presumptuous, but many people can’t brush and don’t know which tools, products and techniques are the best and most efficient for their individual situations. I am convinced that oral care at home can only have a long-term effect when it is overseen by a dental professional. This professional cannot heal the patient, and it wouldn’t make sense for the professional to perfectly remove the patient’s biofilm each day, as this would require that the patient come to the practice every day. Even if he or she could afford this, it would lead to public transport chaos and would make very little sense. Therefore, it is more sensible to delegate this job to the patient and inform, educate and monitor him or her as needed, as well as correct and motivate when necessary, not just once, but again and again.

Manual or electric toothbrush, floss or interdental brush, toothpaste with or without fluoride—the individual case should stipulate what tools are needed. As dental professionals, we have the knowledge to provide the correct diagnosis and to advise the patient on which tools, products and techniques would be the most effective, quickest and cheapest for his or her individual circumstances. We can still get involved if professional therapy is needed and before clinically visible symptoms arise.

Finally, how’s your own oral hygiene?

Very good. Although I had to live through the dentistry of the 1960s as a child, I still have all my own vital teeth and they’re all doing well. It helps that my wife is a dental hygienist. She’s the best thing that could have happened to me in many respects.
Over the last few decades, the use of ozone in dentistry has been established as an effective, minimally invasive therapeutic modality with an increasing number of applications. Sixty years after Dr Joachim Hänsler patented his OZONOSAN, the first medical ozone water generator with an exact dosage output, family-owned company Dr. J. Hänsler has become a leader in ozone technology with applications in medical and dental hygiene. We interviewed Managing Director Dr Renate Viebahn-Hänsler, who is also a board member of the European Committee of the International Ozone Association, and Yvonne Hoffmann, Managing Director of Hoffmann Dental Manufaktur, which took over the global sales and distribution of the OZONOSAN dental water unit in 2017.

What is ozone used for in dentistry?

Dr Renate Viebahn-Hänsler: The use of ozone in dentistry extends back to the 1930s, which is when scientists first discovered its properties and started to use it for a number of applications, such as wound cleansing, mouth rinsing and disinfecting. Ozone is also notably effective in accelerating pre- and postoperative healing of the oral mucosa. Nowadays, ozone therapy in dentistry is mainly used in clinics for holistic dentistry, but owing to its disinfectant properties, ozonised water could be of great help after dental implant surgery and should be introduced in periodontal treatment, as well as any form of oral or dental surgery, in the future.

How did you become aware of ozone’s potential?

Viebahn-Hänsler: I have been in the medical ozone business for over 30 years. In this time, a significant amount of research on the topic has been conducted, including much research specifically related to dentistry. Those who are interested can find these publications listed on our website, www.ozonosan.de.
Yvonne Hoffmann: In 2014, Hoffmann Dental took over Proxidentis Dentale Biomaterialien, a producer of natural oral health products, including ozone oil for periodontal treatment. After learning about ozone oil, it was only a small step towards developing ozone water rinses.

What are the differences in application between ozone as a gas mixture and ozone dissolved in water?

Viebahn-Hänsler: Gaseous ozone cannot possibly act as a disinfectant. Owing to its polar molecular structure, ozone has great solubility in a polar solvent like water. As hydrogen bonds stabilise ozone, ozone’s half-life in water far exceeds that of its gaseous version. As such, we recommend ozone water or oil for disinfecting wounds, not an ozone–oxygen gas mixture. Moreover, the gas mixture cannot be used safely in dentistry owing its toxicity to the respiratory epithelium. Ozone water, however, can be used as a mouthwash to rinse wounds and periodontal pockets. Owing to its pronounced disinfectant and healing effects, ozone is a perfect alternative to tooth cleaning with sugar alcohols or sodium bicarbonate.

Ozone water must be generated on-site. Is training necessary?

Viebahn-Hänsler: Our ozone water generator is subject to the Medical Device Act and requires instruction and training by a medical device consultant. Nonetheless, its handling is very simple.

How does ozone inhibit anaerobic periodonto-pathogenic bacteria? What advantages does it have over conventional periodontal treatment?

Hoffmann: Rinsing with ozone water followed by the application of ozone oil is a great complement to conventional periodontal treatment or professional dental cleaning.

Viebahn-Hänsler: Ozone water does not distinguish between aerobic and anaerobic bacteria. It destroys the cell membrane and ultimately the DNA/RNA of bacteria and viruses that come into direct contact with the ozone molecules. Additionally, ozone water improves healing processes by activating the cellular metabolism.

Hoffmann: Ozone oil works differently in that it only kills anaerobic bacteria, which are the bacteria specifically linked to periodontal disease. Because of its density, ozone oil easily adheres to interdental spaces and periodontal pockets, where it is retained for longer than ozone water.

Unlike chlorhexidine, ozone water and ozone oil in excessive amounts cannot possibly lead to altered taste or tooth discoloration. They do not provoke any allergies, have no known side-effects and are a safe, effective way to reduce the postoperative use of antibiotics and cortisone.

What are the benefits of ozone beyond dentistry? Is it used elsewhere?

Viebahn-Hänsler: Medical ozone is used for wound disinfection and treating chronic inflammatory diseases. Other therapeutic applications are auto-haemotherapy, in which the patient’s blood is exposed to ozone and then reinjected, or rectal insufflation.

Hoffmann: Ozone is also used in water purification in municipal waterworks to destroy bacteria and parasites such as Cryptosporidium and Giardia. Unnoticed by most of us, it is also used in public swimming pools to reduce the total chlorine level needed to improve the water quality.
optimal management of interdental biofilm

Optimal prophylaxis with interdental brushes

An increasing number of dental professionals are emphasising the importance of interdental brushes in primary, secondary and tertiary prophylaxis. These interdental cleaners are indispensable when it comes to optimal management of interdental biofilm to maintain oral health.

In dentistry (and medicine), there are three types of prevention: primary, secondary and tertiary. Primary prevention is concerned with avoiding diseases and their causes. Four factors are important here: good oral hygiene, a healthy diet, professional preventative measures (such as fluoridation, cleaning and fissure sealing) and education. While patients are able to remove supragingival biofilm through manual plaque control, subgingival biofilm can only be eliminated by a professional cleaning. Primary prevention, especially daily oral care, forms the foundation to prevent caries, periodontal disease and other inflammation, keeping the mouth healthy. This reflects modern practice philosophy: it is best when the patient is already healthy when he or she enters the practice. This requires proper instruction in oral care, establishing good oral hygiene habits, and the use of the optimal products and techniques in perfect combination.

Secondary prevention aims to slow down the progression of disease, for example during the development of periodontal disease or peri-implant mucositis. Secondary prophylaxis diagnoses caries and periodontal disease as early as possible, proactively remineralises enamel and treats orthodontic misalignment early on. Tertiary prevention begins when tooth function has been lost. Secondary and tertiary prophylaxis are everyday matters in many Swiss dental practices, but primary prophylaxis is our ambitious aim. Owing to modern dental prevention, the team can ensure that a patient keeps his or her teeth for life. How can we achieve the best possible prophylaxis?

Modern prophylaxis encompasses the following factors and steps: recognising the patient’s individual problems in maintaining his or her oral health and his or her daily oral care habits, removing supragingival plaque and calculus, providing individual instruction on the use of oral hygiene tools, establishing a bleeding index, monitoring via radiographs, providing nutritional advice and following a fluoridation programme. Furthermore, prophylaxis individually adapted to the patient ensures the therapy’s long-term success. Properly coached oral health practitioners are indispensable.

That is where CURAPROX comes in. Individual coaching programmes with the best products, personal advice and preventative instruction for patients on how to use the oral hygiene products ensure the therapy’s success. CURAPROX products and educational concepts are the key to prophylaxis that is successful in the long run. Proper and regular use of high-quality toothbrushes, dental floss and, most importantly, interdental brushes from CURAPROX means that patients achieve complete cleaning. CURAPROX is an indispensable part of any prophylactic treatment.

Healthy gaps need care

Today, the focus of biofilm management is on the interdental area. A toothbrush only cleans around 60–70 per cent of the surface area of the teeth, the remaining 30–40 per cent being interdental surfaces and thus impossible for a toothbrush to access. From the perspective of optimised prophylaxis, CURAPROX offers the finest interdental brushes on the market, providing a more effective and gentler alternative to dental floss. The interdental brushes in the CPS prime and CPS perio lines are easy to use and long-lasting. Owing to technological innovations, CURAPROX interdental brushes are produced with long, fine bristles and very thin CURAL wires. The wire means that the bristles are very pliable, ensuring a thorough clean—even of the smallest interdental spaces. Before and after every professional tooth cleaning, the practice team should recommend the use of CURAPROX interdental brushes and thoroughly instruct patients in their use.

The fine CPS prime is ideal for closed interdental spaces. In a study titled “Efficacy of interdental calibrated brushes on bleeding reduction in adults: A 3-month randomized controlled clinical trial”, French researchers at the University of Lyon spent three months investigating whether interdental brushes could reduce interproximal bleeding in patients with gingivitis. One test group used a manual toothbrush twice a day, while the other group also used CPS prime interdental brushes. The researchers used a calibrated colorimetric probe to establish the size of the interdental spaces and therefore the correct brush sizes. The result was that interproximal bleeding was reduced by 47 per cent after one week and 71 per cent after three months.

Secondary prophylaxis just with the CPS perio

Many dental practices now offer secondary prophylaxis programmes. As soon as the active therapy phase is complete, the patient follows a specific periodontal care protocol that takes into account his or her oral health status, for example if the patient’s papillae are badly injured or if there are black triangles. Regardless of the method used in periodontal treatment, the periodontist’s work only constitutes around 30 per cent of the treatment’s success. Patients themselves are responsible for the other 70 per cent.

Cleaning interdental spaces is an intrinsic part of secondary prophylaxis. The CPS perio is ideal for periodontal patients: it...
is sufficiently rigid to clean efficiently enough to contribute to secondary prophylaxis, yet soft enough to avoid causing any discomfort. Most interdental brushes do not fill the whole interdental space and are far too hard, their use resulting in pain. The CPS perio is the first choice for secondary prophylaxis. Owing to extra-long and -fine bristles, it cleans the large spaces between bridges, crowns or fillings both effectively and gently. An especially strong core is used in the CPS perio to ensure that the bristles are stable.

The practice team’s use of a calibrated CURAPROX Interdental Access Probe to determine the correct sizes of the interdental brushes needed will support patients in optimal primary and secondary prophylaxis. The chairside box for dental professionals includes pre-mounted CPS prime and CPS perio brushes, as well as Interdental Access Probes to precisely measure interdental spaces. Holders can be reused as required. All interdental brushes and probes can be hygienically and tidily stored in the treatment unit within easy reach.

In summary, CURAPROX interdental brushes with their long, stable bristles can reach and clean pockets and other critical interdental areas to prevent periodontal disease and caries. This reflects the latest understanding of prophylaxis.

improving long-term outcomes

Chronic Periodontitis: Probiotics as valuable adjuvants to Scaling and Root Planing

Periodontal disease is a widespread condition that affects a significant portion of Europe’s adult population. Studies show that 3 out of 4 adults develop some form of gum disease in their lifetime. A growing body of evidence indicates that Periodontal disease in its most severe form may not only severely damage the oral cavity and lead to tooth loss, but also be a risk factor for challenging systemic conditions such as diabetes, coronary artery disease and pulmonary disease. New treatment options in the form of advanced probiotics—to be administered as adjuvants to SRP—are now available to improve the long-term outcomes of Chronic Periodontal disease management.

Optimising Chronic Periodontitis treatment with probiotic bacteria. Scaling and Root Planing is the treatment of choice for Chronic Periodontitis. Yet one of the important challenges professionals face following SRP is the frequent re-colonisation of the treated niches by pathogenic bacteria, even when combined with antibiotics. By supplementing SRP with probiotic treatment, professionals can hinder this re-colonization of the oral cavity by pathogens and allow their patients to profit from the antimicrobial and anti-inflammatory properties of oral probiotics.

**Lactobacillus reuteri** Prodentis: an advanced and clinically validated probiotic.

*Lactobacillus reuteri* Prodentis is an advanced probiotic bacteria of human origin, adapted to reside in the oral cavity and able to bind to saliva and oral mucosa. *Lactobacillus reuteri* Prodentis is composed of two patented strains of lactic acid with two complementary modes of action. Together, the two strains have been clinically proven to delay the re-colonisation of pathogenic bacteria in cavities treated via SRP and provide anti-inflammatory and antimicrobial properties, strengthen and enhance the host immune response via CD4+ T helper and IgA production and reinforce the natural defences of the mouth.

Clinical studies have shown *Lactobacillus reuteri* Prodentis to be an effective adjuvant to SRP for the treatment of Chronic Periodontitis. When used as an adjuvant to SRP, *Lactobacillus reuteri* Prodentis has been clinically proven to significantly improve critical clinical parameters, reducing Plaque Index, Gingival Index, Bleeding on Probing, Probing Pocket Depth and increasing Clinical Attachment Level in deep pockets. *Lactobacillus reuteri* Prodentis has also been shown to reduce the risk of Periodontitis disease progression, the number of sites in need of surgery, and the number of Periodontal pathogens, and to deliver long-lasting clinical improvement in Chronic Periodontitis.

Sunstar, a global leader in oral health, brings you oral care solutions boosted by *Lactobacillus reuteri* Prodentis.

*A list of references can be obtained from the publisher.*
Oral-B has a long and rich history of being a true partner to dental professionals. We are proud of our 69 years of consecutive innovation and continued mission to improve the population's gingival health since our establishment by a periodontist in 1949.

Periodontal disease is among humanity’s most common diseases. It affects up to 50 per cent of the global population, despite being largely preventable through good oral hygiene and preventative policies addressing common risk factors.1, 2

Oral-B is the global leader in the toothbrushing market. Part of Procter & Gamble, the brand includes toothbrushes and toothpastes for both children and adults, oral irrigators and interdental products such as dental floss. Oral-B’s rechargeable oscillating-rotating electric toothbrush, with its iconic round brush heads, has been validated consistently externally and internally by clinical research. Through decades of innovation and clinical research by Procter & Gamble, its stabilised stannous fluoride toothpastes have been shown to reduce gingival problems and provide protection from erosive tooth wear by creating a protective shield on teeth against acids.

Procter & Gamble is a founding supporting partner of the Global Periodontal Health Project led by the FDI World Dental Federation. Over the course of three years (2017–2019), the project aims to reduce the burden of periodontal disease by raising awareness of its impact and of effective strategies and preventative measures to control the disease.

A list of references can be obtained from the publisher.
Our story begins almost 50 years ago, in 1969. Researchers of the day knew that saliva was rich in enzymes and proteins that could protect against infection and disease. They had already shown that lactoperoxidase played a part in saliva’s ability to inhibit bacterial growth. This inspired Dr Henk Hoogendoorn, a Dutch microbiologist, to investigate the lactoperoxidase enzyme system. He demonstrated that the enzymatic reaction led to the production of hypothiocyanite by hydrogen peroxide and that hypothiocyanite had a natural antibacterial effect against *Streptococcus mutans* in plaque.

Hoogendoorn believed that a toothpaste containing the right combination of enzymes and proteins could boost the mouth’s natural antibacterial system. Over the coming years, Hoogendoorn collaborated with other scientists to investigate the potential of different enzyme and protein combinations in toothpaste. His formula was refined and tested until he found the optimum balance: a ground-breaking toothpaste called Zendium. It is only now with scientific advances, including next-generation genomic sequencing, that we are able to discover so much more about how Zendium works and the positive effect it has on the bacterial species in the mouth.

A landmark microbiomics study published in 2017 showed that Zendium significantly increased gingival health-associated bacteria and reduced periodontal disease-associated bacteria in gingival plaque, resulting in a healthier gingival plaque microbiome. The clinical benefits of this microbial shift were demonstrated in two further studies, presented at the 2017 meeting of the Continental European and Scandinavian divisions of the International Association for Dental Research, that showed that Zendium users had significantly better gingival health.

Zendium now contains natural enzymes and proteins reflecting some of those found in saliva. Zendium’s triple-enzyme system of amyloglucosidase, glucose oxidase and lactoperoxidase works in a cascade to boost the levels of hydrogen peroxide in saliva and catalyse the formation of hypothiocyanite. Zendium also contains three other ingredients: lysozyme, lactoferrin and colostrum, as a source of immunoglobulin G, which can be found naturally in saliva and work in harmony with enzymes to protect the mouth naturally.

Zendium contains standard levels of fluoride (1,450 ppm as sodium fluoride) for effective protection against caries and contains no sodium lauryl sulphate, offering a gentle approach to oral care that is suitable for all patients.

Today, Zendium is the number 1 trusted brand in Scandinavia. Our goal is to continue to enhance our understanding of the mouth’s natural defences, deliver products that boost the protective power of saliva and promote all-round oral health.

For more information, visit www.zendium.com.
Readers will likely remember Dr Klaus-Dieter Bastendorf from the first edition of *prevention*, which introduced the dentist from near Stuttgart in Germany and his modern views on prophylaxis. Six months later, the retired dentist shows no signs of quitting. Every day, he and his daughter champion lifelong oral health together, explaining the importance of staining in biofilm management to peers, among other things.

Few dentists speak so convincingly and with such scientific sense when it comes to air polishing and the use of erythritol as the powder of choice for biofilm removal. Few dentists profess with such passion that biofilm-induced diseases such as dental caries and periodontitis can be prevented relatively easily through a combination of recall, motivation and the latest powder technology. And few dentists know that any patient seriously questioning whether two professional tooth cleaning sessions and four new toothbrushes a year are really necessary should look 10,000 km to the south-west first.

While we in western Europe often stumble on our way to achieving modern prophylaxis, the road is much rockier in remote Pucyura, located in central Peru, almost 3 hours drive west of the city of Cuzco. In the Andean villages at an altitude of between 2,000 and 4,000 m, people still speak Quechua. Life seems wretched and modest—most of the inhabitants live in clay brick houses without glazed windows. The trip to school sometimes takes 4 hours—each way. This remote location in South America experienced a dental miracle, in which Bastendorf played a significant role.

However, it is Margit and Uwe Meyer who actually deserve the credit. The youthful couple from southern Germany have been working with children in need for...
years and support the non-profit children’s charity Plan International. Uwe Meyer is a member of the board of manufacturer of medical devices EMS based in Nyon in Switzerland, known for its brands AIRFLOW and PIEZON. In coordination with the aid organisation, the couple visited their godchild Diana in January 2011 to do more for the girl. At the village school, they both noticed a girl who constantly hid her chin with both hands. Her name was Guisela Ccanihua, 16 at the time, four years older than her classmates, but smaller and more delicate. When the Meyers approached the girl and spoke to her, they were shocked with her appearance.

Two hours to eat a roll

Guisela could have had a happy childhood, but an accident changed everything. When she was 4, she slipped while tending sheep, fell on her chin and broke both temporomandibular joints. The first aid station 4 hours’ walk away merely stopped the bleeding, but did not provide any further treatment. The fracture healed poorly, causing inhibited mandibular growth and the adhesion of the temporomandibular joints. As the years passed, her ability to open her mouth became increasingly restricted. Ultimately, this was limited to 5 mm. It took her 2 hours to eat a soft roll. The girl’s face was severely deformed and asymmetrical, and she suffered from malocclusion and severe respiratory problems. Daily oral hygiene was out of the question. The child’s family hid her for a long time, but in the end, she started school, albeit four years late.

Back in Germany, the Meyers considered how they might help the girl. As time passed, the memories of Guisela remained.

One night in 2011, orofacial and orthodontic specialist Dr Konrad Wangerin was interviewed by the SWR, a regional public broadcasting corporation serving the south-west of Germany, about new temporomandibular joint treatments and the work of his sponsoring association, Förderverein Faziale Fehlbildungen [foundation for facial malformations]. Wangerin is one of the world’s leading specialists in the field of oral and maxillofacial surgery. His association has been giving children all over the world new faces since 1997. All the treating doctors waive their fees, with sponsors and donations covering the costs. The donations arrive in full where they are needed, and even the administration is performed by volunteers.

One night, Uwe Meyer, unable to sleep, was skipping through the channels and happened to see a rerun of the interview with Wangerin. Insomnia is rarely considered a boon, but fate evidently intervened in this instance. Meyer called Wangerin and told him about Guisela. The Stuttgart-based specialist said that he might be able to help her, but would have to take a look at her himself. This is exactly the man I’m looking for, Meyer thought after the call.

As luck would have it, Wangerin was planning a trip to a convention in Chile and would make a stopover in Cuzco. He and Meyer met for the first time in a hotel on the outskirts of town. It was 5.30 p.m. on 24 October 2011 when Guisela met the maxillofacial surgeon too. The diagnosis did not take long: post-traumatic ankylosis and a total restriction of mandibular mobility. The ends of the lower jaw had fractured, causing the entire posterior region of the jaw to ossify—an exceptionally difficult and very rare case even by European standards. And yet, Wangerin was able to and had to help Guisela. “Otherwise she would have been permanently limited to a liquid diet and her ability to communicate would have been disrupted for life,” said Wangerin, looking back.

While self-motivation, instruction and recall can change the oral health of western European patients, it was fate and coincidence that changed this Peruvian girl’s life.

Potato graters and organ theft

 Barely three months later, Guisela and her mother, Lorenza, landed in Germany. Their arrival soon attracted the attention of the local press. A Peruvian woman living nearby cooked for and spoke with Guisela and her mother. A Spanish-speaking speech therapist got in touch and a psychologist was already there to help Guisela in the clinic. Wangerin’s team opted to perform the surgery at the Paracelsus hospital in Ostfildern-Ruit near Stuttgart.

The entire time, Guisela and her mother stayed on the Bastendorfs’ farm in Eislingen between Stuttgart and Ulm. While her daughter was undergoing treatment, Lorenza learned new recipes, better ways to cultivate her family’s potatoes, and about the respectful interaction between men and women. Sometimes a potato grater is all it takes to permanently improve a person’s life.
To restore the joints, Wangerin’s team of specialists removed most of the bone in two operations. The surgeons then severed the mandible and tilted it forward so that it increased in size and also improved the appearance of the chin area. An unexpected situation arose when taking a blood sample. When the team inserted the needle and the blood began to flow, both the mother and daughter panicked. They had seen blood samples taken by pricking the fingertip, but never using a hypodermic needle. Now the rumours that Guisela had only been brought to Germany so that criminals could remove her organs seemed to be confirmed. However, with their scant grasp of the language and a great deal of empathy, the team was able to restore the necessary trust.

The operations were a complete success. “Imagine, being able to finally touch your lips with your tongue again after 12 years,” recalled Wangerin. When Guisela stuck her tongue out for the first time, her mother burst into tears of joy. The fact that the family lives in the Andes at an altitude of almost 4,000 m means Guisela has a high red blood cell count and this hastened her recovery. Bastendorf restored Guisela’s teeth, as well as her mother’s, and in particular gave the girl the smile that nobody had been able to see before.

From farewell to a new beginning

Three months and countless smiles later, it was time to say goodbye. The thank-you party was attended by more than 40 people, all of whom had either directly or indirectly helped Guisela. Guisela thanked them shyly. A small town in southern Germany said auf Wiedersehen.

The surgery did not just change Guisela’s appearance. Back in Peru, the girl immediately attracted the attention of her classmates. For hours, she talked about her experiences in Germany, a country so far away from her homeland. The young men suddenly started to make eyes at the pretty girl, and her class chose her as their speaker. She became interested in boys. For the first time in her life, Guisela fell in love and was loved back.

Today, she lives happily with her husband and child in a house and has made her dreams come true. Meyer and Bastendorf supported the entire family with donations, enabling them to reach a standard of living equivalent to the average enjoyed by people in Pucyura. While the family of six did not make use of the options to improve their education, Lorenza very gratefully accepted many other donations in kind, for example the property with road access, a gas stove and new furniture. An acquainted dentist takes care of the family’s oral health in Cuzco on a quarterly basis.

Bastendorf and Meyer flew to Peru in November last year and through their trip saw for themselves that their help and their donations were worthwhile and had changed lives for the better. They also realised that they could not apply western European values, for example offering a better education, to Lorenza’s family. The family is happy with the modest life that they now lead. And what could be more important than having good health?

Whether in Eislingen or in Pucyura, we can make a big difference with small gestures. Every day, all employees in a practice can motivate patients to improve their oral hygiene. Every dentist and dental hygienist has the expertise and tools to ensure lifelong oral health for their patients. This must be the daily task of every dentist. Every employee can also do something for those who have not (yet) experienced this luxury. Anyone can help children like Guisela through donations, volunteer work and simply by sharing their stories. Readers who would like to start helping today are invited to visit the website of Förderverein Faziale Fehlbildungen, www.ffffev.org.
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