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DENTAL MAGAZIN Special Print (Presented by EMS)

GBT – Universally applicable and yet individual



GBT – The best oral prophylaxis ever!

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01. ASSESSMENT
AND INFECTION
CONTROL



02. DISCLOSE



03. MOTIVATE



04. AIRFLOW[®]
MAX

THE EIGHT STEPS OF GUIDED BIOFILM THERAPY (GBT)

GBT – Universally applicable and yet individual

Patients prefer state-of-the-art methods: Guided Biofilm Therapy (GBT) has adapted Axelsson/Lindhe's systematic prevention – which was introduced in 1972 – to scientific advances and technical progress to meet today's requirements.

– Dr. Klaus-Dieter Bastendorf and Prof. Adrian Lussi –

At the latest since the work of Axelsson/Lindhe we know: Prevention is the most effective dental treatment for maintaining and restoring oral health. Prevention can avoid dental diseases such as caries, gingivitis, periodontitis, peri-implant mucositis and peri-implantitis (primary, secondary prevention) or help to prevent the recurrence of the disease after performing curative therapy. A disregard of prevention can lead to functional, esthetic and consequently general health impairment in addition to oral diseases.

If prevention is to be successful long-term, then the system of prevention introduced by Axelsson/Lindhe (1972), consisting of homecare and professional prevention as the supporting pillars, must be integrated into everyday practice. Guided Biofilm Therapy (GBT) (E.M.S., Switzerland) has adapted Axelsson/Lindhe's systematic prevention to scientific advances and technical progress to meet today's requirements. By definition, GBT is a risk-oriented, evidence-based, systematic, modular, individual, universally applicable prevention and treatment protocol (Fig. 1). GBT can be applied in all patients, even with complex oral and general health issues and in all age groups. More than 120 publications* on the individual GBT steps form the scientific basis of this protocol with defined terms:

- **Orientation according to the risk of disease:** Medical history, diagnostic findings, age-specific risk determination, diagnosis and, derived from this, targeted (“guided”) systematic prevention and therapy.
- **Evidence-based:** All partial steps are evidence-based.
- **Systematic prevention and therapy:** A basic procedure is specified. The practitioner is led (“guided”) systematically through the protocol in eight steps.

- **Modular:** There are no time constraints for the individual steps as in the “pie model” according to Axelsson/Lindhe. The practitioner decides which modules to use specifically (“guided”) and how much time they require for the modules.
- **Customized:** Both home and professional interventions must be customized to the patient (participation).
- **Universal:** A protocol which can be applied to all oral and general health “cases”, even complex ones, and across all age groups.

GBT STEP 1: INFECTION CONTROL AND ASSESSMENT

Infection control serves to protect and ensure the safety of the dentist, the team and the patients from the risk of transmitting infections. The reason being that virtually all dental treatments generate aerosols or, to be more precise, treatment splatters.

What and how? Rinsing with an antimicrobial agent prior to treatment reduces the number of microorganisms released by a patient in the form of aerosols / treatment splatters, which can subsequently contaminate equipment, surgical surfaces as well as the dental staff. A 40-second rinse with CHX leads to a significant reduction of bacteria. We therefore recommend:

40-second rinse with BacterX Pro. The mouth rinsing solution consists of 0.1% chlorhexidine, 0.05% cetylpyridine chloride, 0.005% fluoride. Recently published studies show that BacterX Pro also eliminates SARS-CoV-2 due to the addition of cetylpyridine chloride. SARS-CoV-2 particles could be eliminated completely in vitro after 30 seconds.

In connection with the reduction of contaminated aerosols / treatment splatters, the evacuation system (high-vacuum evacuation system), the evacuation cannula (Fig. 2), and the



Fig. 1 GBT is a risk-oriented, evidence-based, systematic, modular, individual, universally applicable prevention and treatment protocol.

evacuation technique play a very important role. With a mouth rinse before treatment and a good evacuation technique, the bacterial load of the aerosol / treatment splatters can be reduced to less than 5%. A recent study demonstrated: There are no changes in the ambient air during Airflow or Piezon treatment, if an antimicrobial/antiviral rinsing solution is used before the treatment and then followed by correct evacuation. In addition, personal protective measures must be observed:

- Obligatory for practitioners: mouth mask with a bacterial filtration efficiency (BFE) of at least 95%, gloves, goggles
- Obligatory for the patient: goggles
- Optional for treatments: OpraGate, lip protection with Vaseline, cotton rolls

TIP FOR INFECTION PROTECTION: Before all dental treatments, the patient must rinse with an antimicrobial/antiviral rinsing solution. Equally important is perfect evacuation (high-vacuum evacuation system, coordinated suction cannula, good evacuation technique) and compliance with personal safety measures.

A medical history, age-specific risk determination and diagnostic findings are necessary to establish an exact diagnosis and to perform targeted (“guided”) substance-sparing treatment. The findings provide information about the current individual risk of dental diseases for the patient (caries, gingivitis, periodontitis, peri-implant mucositis, peri-implantitis, erosion, etc.). For this purpose, modern digital aids such as “periodontitis concepts” are available. These not only allow identifying the current individual risk factors, but also enable

monitoring and determining the individual recall intervals. The weak point of almost all digital aids for the collection of findings is to neglect the individual erosion and caries risk. The University of Berne’s findings forms, which are available for three age groups, have proven themselves for determining caries risk.

TIP FOR FINDINGS: It is only on the basis of the collected findings and the resulting diagnosis that patient-specific risk profiles can be created and appropriate targeted (“guided”) therapies initiated.

GBT STEP 2: DISCLOSE

Disclosure leads to insights, states Hellwege. Only disclosure enables complete removal (95–100%) of the supragingival biofilm. This is also confirmed in a study conducted by the *Stiftung Warentest* (consumer organization and foundation) on the quality of PMPR in 10 dental practices. Only approximately 50% of the biofilm was removed, and biofilm removal was particularly inadequate at the critical sites (sulcular and interproximal).

Biofilm must be made visible for:

- creating an exact biofilm index
- targeted oral hygiene instructions and motivation at home (“Guided Oral Home Care”). Disclosure also serves to improve communication with patients.
- targeted, perfect management of biofilm removal (“Guided Professional Oral Care”/PMPR).
- quality assurance, as 100% biofilm removal is only possible with disclosure.



Fig. 2 To reduce aerosols / treatment splatters, the GBT Flowcontrol suction cannula plays an important role.



Fig. 3 Disclosure leads to insights, states Hellwege. For example, EMS Biofilm Discloser can be used for disclosure.



Fig. 4 First, stains and biofilm are removed. Today, modern aids such as powder-water Air-Flowing devices are available for this purpose.



Fig. 5 The Airflow Prophylaxis Master is part of Air-Flowing, a technically, physically and chemically coordinated system.

Special products (EMS Biofilm Discloser) can be used for disclosure (Fig. 3).

TIP FOR DISCLOSURE: Even a highly trained professional misses three times more supragingival biofilm than with disclosure. And: Only disclosure enables minimally invasive work. The reason being that supragingival biofilm is only removed specifically where biofilm is present.

GBT STEP 3: MOTIVATE

Successful prevention always stands on two pillars: domestic and professional oral hygiene. Without proper homecare there is no long-term success in prevention. In other words: there is no absence of inflammation!

What and how? Elicit what the patients are already doing and how they are doing it and adapt education according to their risk of disease. Accessories such as face mirror, dental models,

oral hygiene aids, intraoral camera, comparison in own mouth, photographs, etc. can be used in this process.

TIP FOR MOTIVATING PATIENTS: Homecare is often neglected.

A re-evaluation and correction of the oral hygiene measures taken at home must be performed regularly. Here, disclosure makes its contribution to improving information, instruction and motivation. In addition, nutritional guidance and/or the recommendation of suitable chemical oral hygiene products may be indicated. Similarly, additional risk factors such as smoking, diabetes, cardiovascular disease, etc. are addressed.

GBT STEPS 4 AND 5: AIRFLOW/PERIOFLOW

Biofilm is the main cause of the most important dental diseases (exception erosions). This is why discoloration and biofilm are removed first (Fig. 4). Only then are the hard deposits (mineralized/calcified biofilms) removed.

What and how? In the past, professional prevention focused mainly on hand instruments and classic polishing (Rubber

Cup Polishing/RCP). However, hand instruments are not very effective in biofilm management and lead to unnecessary loss of tooth structure and damage to the soft tissues. These days, modern aids (powder-water jet devices) are available which, in addition to efficient biofilm management, focus on substance protection as well as patient and practitioner comfort during treatment.

To proceed correctly with regard to terminology, the terms Air-Polishing (AP) and Air-Flowing (AF) must be differentiated from each other: Both work according to the same principle of powder-water-jet technology.

AF is a technically, physically and chemically coordinated system (Airflow Prophylaxis Master (Fig. 5) and Airflow, Perioflow handpiece, minimally invasive erythritol-based Airflow Plus powder) which operates at a constant and regulated powder flow rate. For perfect removal of supra- and subgingival biofilm (probing depths up to 4 mm) from all tooth surfaces, a continuous powder flow (Airflow Prophylaxis Master/AFPM) and an Airflow Max handpiece with patented laminar airflow technology (Fig. 6) are required.

The advantages versus classical aids include: complete removal of biofilm in fissures, pits, on implants, in the interdental space, in crowded areas, in the sulcus, in fixed orthodontic appliances, all without damaging the natural tooth structure. Far less aggressive when cleaning exposed tooth necks. Air-flow technology with low-abrasive powders can also remove approximately three times more biofilm subgingivally than with hand instruments. Further benefits include reduced treatment time as well as maximum practitioner and patient comfort. This results in improved compliance and a higher recall adherence rate.

TIP FOR AIRFLOW/PERIOFLOW: To achieve the optimal success of supra- and subgingival biofilm management while reducing dust and aerosol/backspray formation at the same time,



Fig. 6 The supra- and subgingival biofilm (up to 4 mm) is removed with the Airflow Max handpiece.

the guidelines for the correct application of the Airflow and evacuation technique must be learned and observed.

GBT STEP 6: PIEZON/PS/PI MAX

Calculus is neither the cause of caries nor of periodontitis. However, due to its porous surface, calculus facilitates good adhesion of the biofilm and thus also of the metabolic products of bacteria. Calculus also prevents optimal homecare. Perfect, targeted removal of calculus from all tooth surfaces is an essential part of GBT. Targeted (“guided”) supragingival scaling is possible more specific and gentle after disclosure of the biofilm.

What and how? Piezoceramic technologies have proven themselves in the mechanical removal of deposits. The Piezon No-Pain technology with the PS instrument (Fig. 8) removes the now visible calculus in a minimally invasive and virtually painless manner. The advantages versus hand instruments include:

- universal applicability (supra- and subgingival up to 10 mm) for the removal of mineralized plaque and bacterial biofilm
- tissue-friendly and low-pain
- shortened treatment times (economy)
- less painful due to dynamic power control with linear movements (patient comfort)
- can be used after a short familiarization period

TIP FOR GENTLE REMOVAL OF CALCULUS: To achieve optimal success in supra- and subgingival calculus removal, the guidelines for the correct application of the Piezon technique must be learned and observed.

GBT STEP 7: CHECK

This is an important aspect in checking one’s own performance and thus meeting the patients’ demand for perfect biofilm and calculus management. In addition, supervision of the dentist is also indispensable for proper delegation from the legislative side.

What and how? This concerns self-monitoring of the prevention staff with regard to the degree of perfection of the treat-



Fig. 7 The Perioflow handpiece with “Nozzle” is used for probing depths of 5–9 mm.

ment performed. Magnifying glasses (preferably with integrated light), dental floss, explorers etc. serve as aids.

During the learning phase, biofilm control disclosure should be performed in particular. This is followed by a checkup by the dentist. They also evaluate the individual risk of disease, make the final diagnosis and plan any further necessary therapies. At the end of this treatment step and once the tooth surfaces are perfectly clean, fluoridation is performed.

TIP FOR EVALUATING AND FLUORIDATING: GBT has made it possible to achieve a high standard of quality (100% supragingival biofilm and calculus removal) in prevention respectively prophylaxis. GBT demonstrates a high level of comfort for both practitioners and patients, according to feedback from over 200,000 patients: 92% recommend GBT to their family members and acquaintances. The systematic treatment can be performed almost completely painlessly.

GBT is a protocol which saves time and also allows for economic efficiency.

GBT STEP 8: RECALL

The importance of maintenance therapy for oral health has long been recognized. The German Oral Hygiene Study (DMS-V Study) of August 2016 confirms this yet again: adults who attended recall appointments regularly within the last five years have a lower history of caries than those without regular recalls. This difference is also evident in periodontal diseases.

What and how? The patient arranges for a new recall appointment immediately after treatment. The recall intervals are determined individually based on the findings and the resulting diagnosis.

The great professional importance of regular recalls for oral health is contrasted by figures on a high “drop-out rate” in the adherence to appointments. On the one hand, recalls require rigorous management by the dental practice and on the other hand, patient compliance must be improved through painless treatment. GBT correlates with better patient com-

pliance as patient comfort is very high. This is also reflected in the latest patient surveys on satisfaction with GBT.

TIP FOR MAINTENANCE THERAPY: Achieving lasting success in prevention is only possible with a well-organized and patient-specific system of recalls.

CONCLUSION

GBT has succeeded in integrating new scientific findings and technical progress into a modern recall procedure protocol. The current approach (GBT) is superior or at least equal to conventional therapy in clinical and microbiological outcomes. In terms of the increasingly important additional effects such as substance preservation, patient and practitioner comfort, time savings and cost-effectiveness, GBT is superior to conventional therapy:

1. Infection control by rinsing before treatment
2. Making the biofilm visible by disclosure
3. First removing the biofilm with Airflowing/Perioflow/Airflow Plus Powder (minimally invasive),
4. followed by targeted removal of calculus with Piezon PS (minimally invasive)
5. No final polishing necessary

An important factor in converting the prevention workflow protocol to GBT is achieving a high level of structural and process quality. The proper application of the devices and the systematic approach to GBT can, for example, be learned at the Swiss Dental Academy (SDA), the E.M.S. training institute.



Fig. 8 The Piezon No-Pain technology with the PS instrument removes calculus in a minimally invasive and virtually painless manner.

In addition, patient satisfaction (quality of results) also plays a very important role in the success of prevention. This correlates significantly with long-term patient loyalty, which in turn is closely related to the quality and comfort (feeling at ease, low pain) of the treatment performed. Here the advantages of GBT have been impressive. A further advantage is general applicability, which allows relatively easy individual adaptation to the patient. ■

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THE LITERATURE LIST

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Foto: private

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