minimum intervention
maximum return

issue 5

# mid

# 21st Century dentistry

**MI Advisory Board:** Practising MI Dentistry in challenging economic times.
**Case study:** Surface properties of a glass ionomer restorative after 2 years of clinical use.
**Clinical Corner:** Let's hear it for dental hygiene. **Toolkit:** GC Tri Plaque ID Gel

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Dr José Ignacio Zalba Elizari

# Practising MI Dentistry in challenging economic times: the Spanish perspective

In our country it is clear that almost all sectors are going through difficult times. The crisis is changing habits and customs: a recent study has shown that one in four people have stopped going to the dentist. This trend is further reinforced by a survey from the Centre for Sociological Research (CIS), according to which 24% of respondents claimed to have delayed starting or completing certain dental treatment.

We find ourselves in a situation in which it is difficult to establish the impact this can have on MI Dentistry. Today the idea has expanded oral health and encompasses not only the disease or pain, but also involves health, function, aesthetics and subjective comfort experienced by the patient. This oral health awareness encourages prevention on the part of patient and therefore an increase in the number of visits to dental clinics, allowing the development of models of minimum intervention dentistry.

It is clear from this perspective, that patients will see certain procedures as secondary and non-essential, valued as a 'luxury' due to their higher cost. As a result, in many cases the decision to have implants, orthodontics and cosmetic dentistry, among others, can be postponed.

MI Dentistry increases the value of 'basic' procedures, which collectively can mean a steady income for a practice in tough economic times. Across Spain, dental practices and university dental hospitals alike are responding to an increased demand for MI Dentistry, showing that patients want to understand the 'why' of disease and treatments and become more involved in their own health.

The irrefutable fact is that in an economic downturn, when it comes to dentistry, the most financially successful models are those geared towards prevention.

**Dr José Ignacio Zalba Elizari has a private practice in Pamplona, Spain. He is a member of the GC MI Advisory Board and director of the Center for Advanced Dental Prevention www.capdental.net**





# Expand your knowledge on MI Dentistry through these channels

## MID ezine

If you have missed any of the previous issues of MID ezine you can download them free of charge via mi.gceurope.com. Highlights include:

■ **Materials: the building blocks for MID**
Professor Martin Tyas from the University of Melbourne in Australia, discusses the limitations and opportunities of advances in dental materials and the role they play in minimum intervention dentistry. ***Click here to download issue***

■ **The journey to Minimum Intervention Dentistry**
Graham Mount reflects on his work in MID, dentistry's advances in the field over the last few decades and what elements are needed to make this approach more widespread and established in order for more patients. ***Click here to download issue***

■ **Hands on, drills off**
Dr Kirk Young is the practice principal and owner of Young's Dental Practice, which was awarded the 2009 Preventive Practice of the Year award. MID recently spoke to him about his practice and what motivates him to pursue MID. ***Click here to download issue***

■ **EQUIA versus amalgam**
Minimum intervention dentistry for the 21st century dentist by Professor Ivana Miletić, DDS, PhD and Anja Baraba, DDS. ***Click here to download issue***

*Subscribe to receive* ***MID ezine*** *in your inbox – click here*

## A vision of caries management in the 21st Century

*Download the document here*

Designed by GC Europe as a handy guide to dental professionals who want to learn more about MI Dentistry, this document outlines the MI Treatment Plan and essential GC products geared towards each stage, namely: Identify, Prevent, Restore and Recall.

## Journal of Minimum Intervention Dentistry

The JMID is the official journal of the SYSTEM initiative. Its aim is the rapid first-view dissemination of its unabridged Systematic review reports to topics related to Minimum Intervention in dentistry. The JMID aims further to disseminate SYSTEM's Research Notes to topics that are currently under preliminary discussion. SYSTEM's Research Notes are meant to give transparency to SYSTEM's ongoing work and focus.The journal is open access/peer reviewed and also welcomes contributions from authors not affiliated to SYSTEM in form of clinical case reports, discussion papers and research notes.

*Visit the site* *www.jmid.org*

Laura Rose Brady

# Let's hear it for dental hygiene


**Laura Rose Brady RDH/RDT, United Kingdom, talks about her experiences as a dental hygienist practising according to the MI Dentistry approach.**

I qualified from the University of Sheffield School of Dentistry in 2009 with the Dentsply prize for Best Overall Clinical Performance. There she acquired all the necessary knowledge, understanding, education and skills for infiltrations, ID blocks, alginate impressions, pulpotomies, stainless steel crowns and XLA's of deciduous teeth, simple restorations of both deciduous and permanent teeth (GV Black's class I-V), fissure sealants, placement of rubber dam, OHI, OHE, radiographs, and all non-surgical hygiene treatment, etc. under a prescription of the dentist.

Since qualifying I've worked four days a week in a dynamic, supportive and preventative, family-run NHS dental practice. I have won one of three Oral & Dental Research Trust / Colgate DCP Annual UK Research Awards in 2011-2012. I was also one of eight lucky Molar LTD (Tepe) winners of a luxury holiday to Sweden 2011 and I am a finalist for the DHandT Best Young Dental Hygiene and Therapist awards in London December 2012.

I am lucky enough to be practising equal amounts of dental hygiene and dental therapy as my supportive employer welcomes delegating duties which can be done by other qualified and registered dental care professionals (DCPs) that he trusts. This frees up his time to concentrate on diagnosing, treatment planning and carrying out more complex operative dentistry and research. I personally and especially enjoy working with anxious patients and children and always try to create a relaxed and fun learning atmosphere and environment for them. My slogan is: less drilling and more chilling! Less extracting and more relaxing!

In my spare time I conduct voluntary oral health education for the Sheffield Cancer Support Centre's brain tumour support group. Alongside working and keeping up to date with compulsory personal development (CPD) I have completed additional courses in Tooth Bleaching, St John's Emergency First Aid at Work, Airflow, Clinical Photography, DMG Icon placement and have been actively involved in research projects. One such project investigated the effectiveness of oral health education in schools and another investigated the effectiveness of Fuji Triage on partially erupted teeth in preventing caries. I completed both in collaboration with Dr Bhupinder Dawett and the Nottingham University Research Department.

After gaining comprehensive knowledge and experience my long-term goal is to promote the importance of the role of a dental hygiene and dental therapist in managing dental decay and MID within a dental practice. From what I hear, sadly not all dental hygienists and therapists are

being utilised effectively in the practice setting. Teaching and speaking is something I aim to do and I'm currently in the process of applying to take my Australian initial assessment so that I have a recognised qualification in my favourite holiday destination so I can mix work with pleasure!

I love my profession very much and have wanted to be involved in dentistry since being a little girl. Dreams do come true! I feel very blessed to have met some wonderful supportive peers who have opened my eyes up to a bigger dental world and keep me engaged! I'm also grateful for the support and time I receive to spend with each individual patient because my employer believes in the philosophy of prevention and teamwork.

**How did you first become aware of the principles of MID?**

I first became aware of MID whilst at university but I didn't really start to appreciate the true extent of the principles of it until I saw the importance and how it really worked in practice with my regular patients. Everybody knows about MID. It just clicked and I then realised how important my role really is as a DCP in implementing thorough patient education, repetitively, regularly and inputting as early as possible, protecting pits/fissures and remineralising early white spot lesions where necessary. This also includes focusing on preserving as much natural tooth structure operatively and aiming for plaque control, a reduction in sugar intake, thus trying to reduce one of the world's biggest diseases: dental decay! And it really can work if you get the patients on your side…

**How easy is it for dental practices to become more aligned with the MI philosophy?**

In my opinion, because I have continuity at one dental practice and now know many of the families that have attended my appointments, I can really see the importance of the principles of MID. I patiently practise them daily and thoroughly for the patient's long-term best interest. I find patients are interested in MID and just need telling and reminding! I feel it's important to spend the time educating and not just treating; prevention is always cheaper than the cure! I know this because we hold regular patient focus groups and send patient questionnaires so we can obtain their feedback. The more patients are involved in their own prevention, the more likely and quickly rates of decay can arrest.

**On the whole how do your patients respond to MI treatment strategies?**

The patients welcome our preventative approach and I feel it reduces dental anxiety, as patients don't always require a restoration or 'scary needles'. We show them there are other avenues that can be explored first in trying to arrest any lesions. Our vigilant and preventative approach means that in the cases where we do need to take the operative route we can preserve as much of a patient's tooth as possible, and in so doing extending its longevity. So far, patients respond positively to our strategies.



"Prevention is a big battle but if we all work together I'm positive the world, our patients and their teeth, would be a better place for it!"

**Do you have any particular favourite dental products/equipment that makes MI treatment a great deal easier?**

At my practice, I deliver personal diet advice and tailored oral hygiene advice with written literature to every patient at every appointment. I also conduct saliva testing in patients when we have a concern that they are high risk for caries. It's good fun and gets the patient more involved. I regularly check pits and fissures with a laser detection device called Diagnodent. After obtaining the extra information and radiographs, the dentist makes the decision for me to seal necessary teeth to prevent decay in vulnerable areas.

Over the past few years we've been using GC's Fuji triage to seal vulnerable partially erupted teeth where the conventional resin can't be applied due to retention. So far, we haven't reported any decay in the teeth that have had the protective sealant placed during eruption. It's fast and easy to use as no isolation and bonding agents are necessary. According to GC it has six times the fluoride content of conventional sealants and continues to release fluoride for up to 24 months to help prevent decay from forming. I have a particular interest and support for this material as its part of my own research project and I feel it makes MID a great deal easier due to its easy application and good retention rates.

It's important for dental practices to become aligned with the MI philosophy. I'm sure most practise it daily, but I'm unsure to what extent. The primary pitfall is time and utilisation of dental hygienists and therapists and many practices fail to provide adequate literature to their patients.

**What advice would you give any hygienist who wants to broaden her/his knowledge about MI Dentistry?**

You cannot change the world by yourself. It's a team effort, including the patients and dentists! Always practise a good work ethic and talk to your referring dentists about how you can work together to concentrate on prevention. Prevention is a big battle but if we all work together I'm positive the world, our patients and their teeth, would be a better place for it!

**S. GURGAN, E. FIRAT, Z.B. KUTUK** Hacettepe University, School of Dentistry, Ankara, Turkey

# Surface properties of a glass ionomer restorative after 2 years of clinical use

In modern operative dentistry the focus is on minimal removal of tooth tissues and on the application of adhesive restorative materials that can perform therapeutic actions on demineralised dentin1.

Often misunderstood and definitely underused by most dentists, glass ionomer cement (GIC) represents an important restorative material in our daily arsenal of dental materials. In the fast-growing sector of minimally invasive dentistry, GIC can also be the restorative material of choice for many conservative preparations, thanks to its unique advantages when compared with other restorative materials.

The major drawbacks of conventional GIC has been the relatively low fracture toughness and higher rate of occlusal wear, compared to amalgam and modern composite restorative materials. These materials are regarded as promising for application in Class I restorations in primary and permanent molars2.

GIC has the capability of chemically bonding to enamel and dentin, contains and releases fluoride, and can continuously be recharged with fluoride. With a compressive strength and coefficient of thermal expansion similar to dentin, they also act as a shock absorber under composite restorations3.

Nowadays, GIC offers an interesting alternative in terms of economical aspects which are very important in public health systems where resources are limited. GIC offers a valuable solution for the dentist and the patient in cases where the patient does not accept an amalgam filling, but is not able or willing to pay additional costs for layered composite resin restorations.

## GIC restorative solution

There are a number of good 'true' GIC materials on the market. GC Europe has improved one of its staples, GC Fuji IX, now known as GC Fuji IX GP Extra. The company has reformulated the original material and developed a complete restorative system called GC EQUIA that is simple for any practitioner to incorporate into his or her practice. GC EQUIA focuses on combining the benefits of the highly viscous GIC (Fuji IX GP EXTRA) with a nano-filled, light curing varnish (G-Coat Plus) to provide protection in the early maturation phase for improved strength, an improved surface hardness and combines the benefits of GIC with the aesthetics that our patients seek4.

EQUIA uses reformulated Fuji IX GP EXTRA as its main component. The main differences between Fuji IX GP EXTRA and the original product are increased fluoride release, better wear characteristics, improved shading, and an enhanced surface smoothness. On completion of the glass ionomer restoration and final occlusal adjustment, the restoration is coated with G-COAT PLUS which improves physical properties, including shine and wear resistance. Recent studies have shown that the application of a thin layer of the light-cured resin coating improves the flexural strength of the GIC by as much as 90%5. The resin coating also improves marginal integrity and reduces polishing time of the restoration.

These two materials appear to behave synergistically. The GIC can be placed in bulk and is packable to ensure good contact and adaptation to cavity margins. Even with a large restoration, it is ready to finish and polish in just 2 minutes, 30 seconds. With just a few short steps, EQUIA provides an aesthetic long-lasting restoration.

Thus far, the results of two clinical prospective short-term studies under ideal university environment conditions have been published 6-7. The aim of this clinical study was to evaluate the wear characteristics, surface morphology and marginal integrity of this current posterior GIC restorative system (EQUIA) used in Class I cavities after 24 months using the replication technique comparing with a posterior composite

# Methods and clinical case

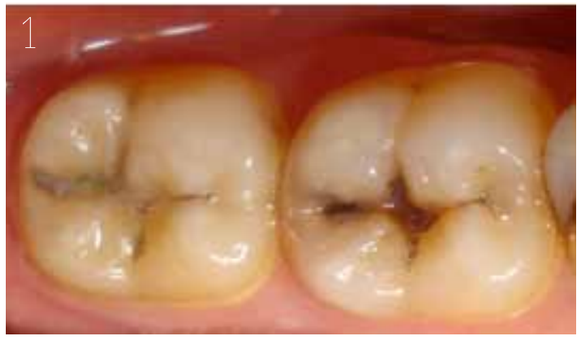
**30 patients having two molars with occlusal decay included to the study, as shown in Figure 1.**

**Figure 1. Preoperative (note the occlusal decay).**

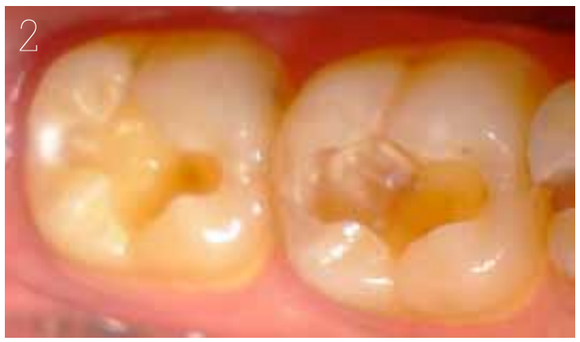
A conventional direct adhesive cavity preparation design was utilised. No special undercuts or retentive features were utilised. As the cavity preparations did not encroach on the pulp, no pulp protection was required. Figure 2 shows the completed Class I cavity preparation.

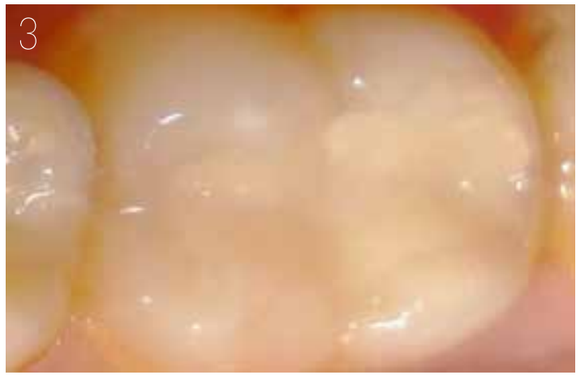
**Figure 2. Cavity preparation**

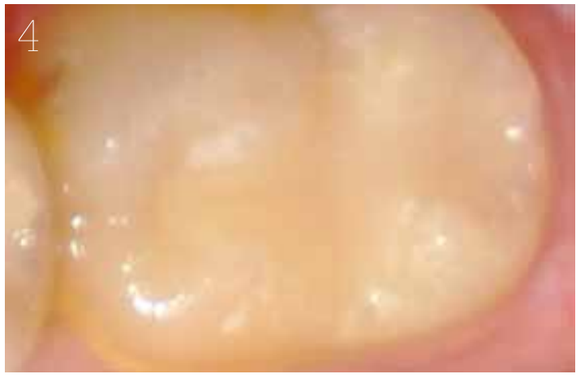
Following cavity preparations, the teeth were restored either with the current posterior GIC restorative system (GC EQUIA); which is a combination of a packable reinforced GIC (GC EQUIA Fil) and a self-adhesive nano-filled coating



(GC EQUIA Coat) or with a micro-filled composite (GC Gradia Direct) in combination with a self-etch adhesive (GC G-Bond) by one calibrated operator according to the manufacturer's recommendations




(Figures 3-4).

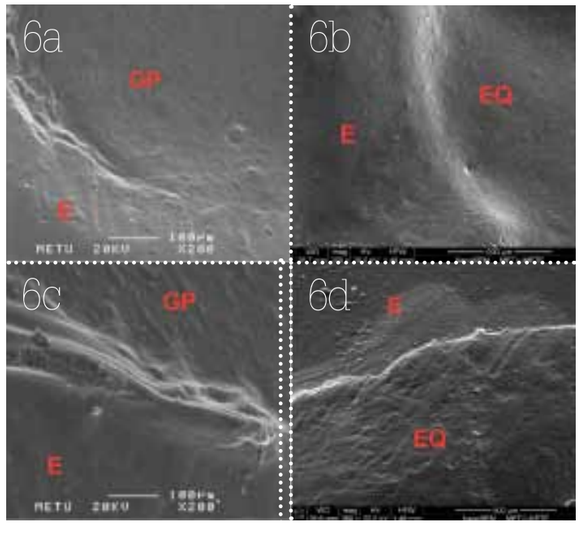
**Figure 3**. **Glass ionomer restoration**

**Figure 4. Composite restoration**

After evaluation of the restorations at baseline, all patients were subjected to a strict recall schedule with controls at 6, 12, 18 and 24 months. Polyvinylsiloxane impressions were taken at each evaluation period and used as negative replicas (Figure 5).

**Figure 5. Negative replicas**

The qualitative evaluation of wear characteristics, surface morphology and marginal integrity of the restorations were assessed under Scanning Electron Microscope (JSM-6400 SEM, JEOL, Tokyo, JAPAN)




"GIC offers a valuable solution for the dentist and the patient in cases where the patient does not accept an amalgam filling, but is not able or willing to pay additional costs for layered composite resin restorations."

## Results

In this pilot study both materials exhibited acceptable surface characteristics and continuous marginal adaptation. There was no significant wear, surface porosities, cracks and marginal gap formation at 6, 12, 18 and 24 months for both restoratives.

**Figure 6. SEM photographs (E; Enamel, EQ; EQUIA, GP; Gradia Direct Posterior)**

a. GC Gradia Posterior (Baseline x200)
b. GC EQUIA (Baseline x200)
c. GC Gradia Posterior (24 month x200)
d. GC EQUIA (24 month x200)

## Discussion

SEM assessments of consistently prepared replicas of the restorations confirmed that both of the restoratives exhibited superior surface characteristics. In choosing a restorative material, some of the characteristics that one must take into account are its ease of placement, ability to be used in a variety of situations, options for colour matching, and advantages over present systems. EQUIA fulfills all of these parameters and is a must-have addition to any state-of-the-art restorative dental practice.

While direct composites have become the preferred aesthetic material for restoring posterior teeth, they are far from perfect for every clinical case. The latest generation of restorative GIC offers unique properties and advantages and should be considered an excellent alternative to composites. The introduction of EQUIA utilises a second-generation GIC which is infiltrated on the exposed surface by a light-cured resin coating. This rapid system offers the advantages of high fluoride release, tolerance for moisture, bulk placement, absence of postoperative sensitivity, and it does not require the separate application of a dental adhesive.

The Class I restorations in this article also demonstrated the excellent aesthetics one can create when using this system. This system should be considered for posterior restorations in the geriatric, paediatric, or special needs patient, where its clinical advantages would be beneficial. Additional long-term re-evaluations are necessary for a more detailed analysis of current restorative material.

## Conclusion

The SEM evaluations after 24 months revealed that the current posterior GIC restorative system can be used sufficiently to restore the load bearing Class I cavities.

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# PROFESSOR SEVIL GURGAN

Sevil Gurgan was graduated from the Hacettepe University School of Dentistry, Ankara, Turkey in 1980, obtained her PhD in the Department of Restorative Dentistry of the same school in 1985, became Associate Professor in 1988 and Professor in 1995. She had been a visiting Professor at the New York University School of Dentistry in New York in 1995 and at the Tufts University School of Dentistry in Boston in 2005.

She is an active member of International Association for Dental Research and member of Nominating Committee, board Member of International Association for Dental Research Continental European Division (2009-2012), board member of the European Academy of Operative Dentistry, member of Academy of Operative Dentistry, and the World Federation for Laser Dentistry. She acted as the vice President of Hacettepe University in 2008-2012 and head of the Department of Restorative Dentistry of the Dental Faculty in 2005-2011. Currently she is professor at the same department. She has several articles published on dental materials and dental bleaching and has been giving lectures and courses in national and international congresses and meetings for more than 20 years.





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# MI Dentistry in France

**Focus on dental trends, culture and preferred techniques**

For many years GC France has undertaken a number of initiatives to promote the MI concept in France and to make a positive contribution in dentistry. The branch has dedicated many resources towards changing the attitudes of dental professionals and encouraging them to adopt a preventive approach that reduces the number of caries treatments and traumatic crown and bridge restorations.

The first step was a symposium organised in December 2003 (attracting 150 participants) to draw interest from the country's major opinion leaders in dentistry. The aim was also to demonstrate that the MI approach opened up new ways for the most conservative dentistry, in terms of reducing trauma to a minimum. GC France fully endorses this approach and has shown its support through a series of advertising campaigns, sampling campaigns to inform dental professionals about GC Tooth Mousse and its benefits, in addition to sponsored lectures around the country.

**What does MI mean for you?**

For GC France the MI concept offers a positive signal to the dental health community, as well patients, about the possibility of dental tissue preservation and reducing the need for major dental intervention by early diagnostic and treatment solutions.

When you say 'MI' in English, phonetically it actually means 'enamel' in French – we feel this is very appropriate and further enhances the message of preventive dentistry that we are trying to spread.

**What is the perception and acceptance of MI in French society?**

The public awareness about dental treatment is not really effective in France, except for discussions about the cost of crown and bridge-work and

"For GC France the MI concept offers a positive signal to the dental health community, as well patients, about the possibility of dental tissue preservation and reducing the need for major dental intervention by early diagnostic and treatment solutions."

the relative profit made by dentists when they import these from China. Due to the social security system, prevention is not taken into consideration because the cost is carried entirely by the patient. In addition, dentists cannot sell products to patients for legal reasons and pharmacies are not interested to distribute products such as Tooth Mousse due to lack of sales volume. There is no real interest by dentists about MI Dentistry as most prefer to make money with crowns and bridges (where they charge for 2/3 of profit for 1/3 of time). There is some demand from patients to have less invasive dental work but the trend is currently slow.

**What is perception of MI amongst customers?**

Intellectually the perception of the MI concept is always good at university, but the social security system as well education are not taking it into consideration, so dentists are not prepared to promote such a treatment and patients are not willing to pay for it.

MI products that focus on diagnosis and remineralisation have not been popular among dentists who are not willing to pay only to offer it to patients free of charge. As a result there are very few passionate dentists who are passionate about it and product sales are low. At the opposite end, the EQUIA concept, which is a complete restorative solution, has enjoyed more success. The system simplifies the clinical procedure for posterior restorations at a reasonable cost for the dentist and with an aesthetic benefit to the patient. As a result, EQUIA has become one of the bestsellers in the market.

**What is the potential impact of the MI philosophy on future sales?**

Going forward we want to promote the diagnosis and remineralisation aspects of the MI cycle to dentists. We will do this by placing emphasis on improving education and hosting more lectures and workshops, developing a communication programme based on the the MI Treatment Plan devised by the GC Europe MI Advisory Board. With the entry route of EQUIA and Fuji Triage, we feel we can eventually win more people over to the MI side. We also have plans to launch a patient-focused website.





**GC Europe**

# GC Tri Plaque ID Gel


**Unique three tone plaque disclosing gel that identifies new, mature and acid producing biofilms**

GC Tri Plaque ID Gel can not only differentiate between old and new plaque in a few easy steps, this unique gel can also highlight exactly where the bacteria are most active by disclosing the acidic pH. This additional information will be a great help in your daily practice to motivate your patients to improve their oral hygiene.

In the pursuit of preventive dentistry you and your patients need as many tools as possible in order to achieve optimal oral health. GC Tri Plaque ID Gel can become an invaluable part of your daily diagnosis routine.

**Colour-coded for enhanced patient understanding**

**NEW PLAQUE**

When a plaque biofilm is sparse, the blue pigment is easily washed off which leaves behind the red pigment showing a pink / red result.

**OLD PLAQUE (> 48HR)**

When a plaque biofilm has matured, its structure is dense, so both the blue and red pigments are trapped which forms a blue / purple layer.

**EXTRA HIGH RISK PLAQUE**

The sucrose in GC Tri Plaque ID Gel will be metabolised by the acidogenic bacteria within the high risk plaque biofilm.

The resulting acid produced lowers the plaque pH (<pH4,5) and this makes the red pigment disappear which leaves the light blue colour.

**Step-by-step**

Three tones, three easy steps to ensure patient compliance

1. Apply the gel with a swab, micro brush or a cotton pellet
2. Gently rinse the area with water spray and suction. Plaque is revealed on teeth in three tones:
   - blue/purple - old plaque (more than 48 hours)
   - red/pink - newly formed plaque
   - light blue – high risk plaque
3. After diagnosis, simply brush the teeth to remove the disclosing gel.