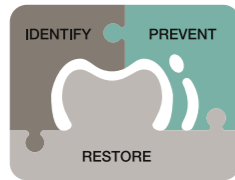


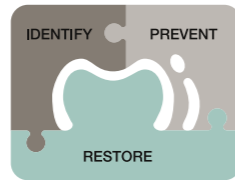
Dental caries is an infectious disease which requires a susceptible host and the presence of cariogenic plaque bacteria that are sustained by a high sugar diet. If all three factors are present, the bacteria ferment the sugars producing acid which lowers the normally neutral pH of the oral environment. The acid then attacks the enamel which leaches out apatite forming ions causing demineralisation and eventually caries. This process is of course a natural one, but saliva is nature's primary protection system against it. Saliva reduces friction on enamel, flushes bacteria and food away from the teeth, helps neutralise the acid and replenishes the ions which remineralise the enamel. It is when this system is in adequate, for example if the saliva is deficient, or if there are too many acid-producing bacteria due to poor oral hygiene or diet that the caries disease process can take hold and progress.

So to prevent caries, you need to identify whether a patient's saliva is capable of protecting the oral environment and if not, why not, so you can specifically address the problem. You also need to know where the plaque is located and how old it can be, and whether the accumulation of acid-producing bacteria in plaque can lead to higher cariogenicity in the mouth. A good starting point is to take a clinical history to identify any medical conditions that may affect caries risk. Ask the patient too, about their lifestyle, dietary habits and oral hygiene practices. Next the oral examination should identify any existing caries and teeth at particular risk such as recent eruptions and eroded teeth, as well as anything else, such as infections. Diagnostic tests make it possible to quickly check further for specific cariogenic bacteria. You can also test saliva to assess its pH level and buffering capacity, as well as its 'flushing' and ion replenishing capability by measuring its quantity and viscosity at rest, and quantity when stimulated. Additionally you can test plaque to motivate patients on improving oral hygiene – demonstrate sites with plaque accumulation and acidogenicity of plaque. Since oral conditions can change, you should carry out these examinations on a regular basis.



Once you've specifically identified any potential caries risk factors, you should be able to advise your patients on optimal preventive measures and implement them. Depending on the diagnosis these could involve:

- Encouraging changes in diet and life-style.
- Educating on oral hygiene, particularly the use of fluoride-containing products, plaque disclosure products and antibacterial mouthwashes and similar products.
- Encouraging attendance for regular check-ups including bacteria, plaque and saliva tests.
- Professional tooth cleaning.
- Correcting mineral imbalance in the oral environment. This is a new preventive option made possible by the introduction of CPP-ACP (Recaldent™). A complex of Casein Phosphopeptide (CPP) and Amorphous Calcium Phosphate (ACP), Recaldent™ delivers extra freely available calcium and phosphate ions to the enamel which reform into calcium phosphate crystals. Products such as Recaldent™ which contain CPP-ACP are already available, sometimes in combination with fluoride, and more are expected in the future.
- Using a fluoride-based glass ionomer to protect the fissures of erupting molars. As you repair cavities you can also take advantage of a simultaneous opportunity to protect the restored tooth by using, for instance, fluoride-based glass ionomers.



Whether caries damage needs to be restored after the identification stage, or it has arisen after preventative measures have been taken, the MI restoration process differs greatly from the traditional approach as it aims to restore and, if possible, protect at the same time. This has largely been made feasible by the introduction of new restorative materials that are ideally suited to MI and more of such products are expected soon.

Firstly, the adhesive properties of the new restoratives mean that large box cavities, previously required to retain amalgam, are no longer necessary. Even small micro-cavities are adequate when these materials are used and so this allows for only the disease itself to be removed, the healthy tooth structure can be left untouched.

Secondly, the adhesive power of the new materials, some of which chemically adhere to enamel and dentin, provides increased protection against further bacterial ingress by improving their sealing ability. In the future, bioactive restorative materials may also help to remineralise enamel and protect against further damage, by supplying apatite forming ions such as calcium, phosphate, strontium and fluoride. Already available for dentine replacement are high strength glass ionomers, reinforced by aesthetic resin composite veneer materials. Today's new technology improvement involves the use of glass ionomer restoratives with a revolutionary surface treatment, a nano filled, self adhesive light-cured protective coating agent. The unique surface agent improves the wear resistance and hardness of the restoration, as well as the final aesthetic.

An exciting prospect for restoration at a very early stage of caries damage, has also opened up with the use of CPPACP (Recaldent™) which may help to eliminate white spot lesions.

## The medical approach to caries management.



"In the 21st century, greater emphasis must be placed on assessing caries risk, shifting patients to a low caries risk status, remineralising noncavitated lesions, abandoning the surgical approach to caries management and repairing rather than replacing defective restorations. There is a clear need for research to improve the sensitivity of diagnostic methods, to develop site-specific indicators of future caries risk, and to establish clear guidelines on management of caries as an infectious disease."

**FDI Commission Project 1-97**

## GC and Minimum Intervention in caries management



GC is committed to the concept and principles of Minimum Intervention dentistry. As part of this commitment, GC already offers or will do so in the future, a range of MI products such as tests for bacteria, plaque and saliva that can identify patients at risk from caries, preventative measures such as CPP-ACP based products (Recaldent™) that help to maintain mineral balance, and bioactive restorative materials that both restore and protect. Educational material for the dental team as well as patients will also be forthcoming. GC offers the complete picture of Minimum Intervention for caries management in the 21st century.

### Reference

1. Tyas MJ, Anusavice KJ, Frencken JE, Mount GJ. Minimal intervention-dentistry – a review (FDI Commission Project 1-97). Int Dent Jnl, 2000, Vol. 50, No 1  
For more information on Minimum Intervention, please visit our dedicated website: <http://mi.gceurope.com>



Recaldent™ is used under licence from Recaldent™ Pty Limited. Recaldent™ CPP-ACP is derived from milk casein and is lactose free. It should not be used on patients with milk protein or hydroxy-benzoates allergies.

**GC Europe N.V.**  
Head Office  
Interleuvenlaan 13  
B – 3001 Leuven  
Tel. +32.16.39.80.50  
Fax. +32.16.40.02.14  
E-mail [info@gceurope.com](mailto:info@gceurope.com)  
[www.gceurope.com](http://www.gceurope.com)

**GC UNITED KINGDOM Ltd.**  
22-23, Coopers Court  
Newport Pagnell  
UK – Bucks. MK16 8JS  
Tel. +44.1908.218.999  
Fax. +44.1908.218.900  
E-mail [info@uk.gceurope.com](mailto:info@uk.gceurope.com)  
[www.uk.gceurope.com](http://www.uk.gceurope.com)

**,'GC,'**

**,'GC,'**

z.O.FD.GB.12.09.03/07



A vision of caries management in the 21st century

# GC - Completing the picture of Minimum Intervention

Minimum Intervention or MI, is the modern 'medical' approach to managing caries.

Its principles are very simple. **Identify** and assess any potential caries risk factors early. Eliminate or minimise these risk factors in order to help **prevent** caries from occurring. And if surgical repair is required, as much as possible of the tooth structure is conserved, whilst bioactive materials are used to **restore** the tooth which help to reform demineralised enamel and protect against further damage. In contrast, the traditional 'surgical' approach of 'drilling and filling' only treats the symptoms of the disease not the cause and there is little to no emphasis on prevention.

To implement Minimum Intervention effectively, all three elements need to be integrated fully into your patient treatment plans. Let's consider each of the principles in more detail.



# A vision of the future

As our understanding of caries disease and management improves, dentistry is shifting from the surgical to the medical MI approach. Within a few years, surgical restoration of caries may be the last course of treatment rather than the first. It's quite possible that one day many dental practices might be designated as 'Minimum Intervention' practices. Thanks to their emphasis on identification and prevention, and the caring 'dentist-patient' relationship this tends to foster, more patients should be attracted to the MI approach. Specifically patients who prefer and are willing to undergo regular tests and simple preventive procedures against caries rather than face frequent surgical intervention. Indeed, caries prevention rather than surgical intervention may become a major income stream in the future.

