Emerging trends
A look at the recent Philips Symposium in Cologne, Germany

The eighth Emerging Trends Symposium initiated by Philips took place in Cologne, Germany the day before the start of the IDS on 20-21 March 2011. It was attended by 50 key opinion leading dental professionals from across Europe, attracted by a roster of international speakers, each adding to the knowledge-base which is redefining oral hygiene intervention. By the close of the symposium the assembled delegates were left in no doubt about closing the gap between the science and art of dentistry.

As a precursor to the introduction of two new Philips products at the close of the symposium, the event kicked off with a lecture about peri-implantitis and what is known and can be done to tackle this condition which can lead to the body’s rejection of an implant.

According to the first speaker, Professor Hugo de Bruyn, peri-implantitis is an inflammatory process within the tissues surrounding the implant components, which in most cases is related to a bacterial infection. It affects both hard and soft tissues around dental implants in a dramatic way because it leads to bone loss and is related to pocket formation and pus evacuation. This often irrevocably affects the appearance as well as position of the gums and the interior zone of the maxilla, and has aesthetic consequences leading to patient dissatisfaction.

Central to the treatment of peri-implantitis is biofilm removal, however there are important differences between the gums around teeth and implants which should affect the approach to oral hygiene for those with implants. Surgical treatment is predominately based on implant surface decontamination and this is typically combined with pocket reduction and regenerative procedures to close the defect. The first option is a radical way to reduce the defect and improve accessibility for oral hygiene measures whilst the second option aims to avoid recurrence of disease and enhance the aesthetic outcome by defect closure.

Currently there are a very limited number of powerful clinical studies available which focus on etiology, pathogenesis and efficacy of peri-implantitis treatment. Yet Professor de Bruyn questioned whether the ‘alarming rise in the disease’ discussed in some papers is the reality of everyday clinical practice. He also questioned whether it is related to changing treatment protocols or changed implant surfaces or designs which have been introduced.

His lecture concluded with an overview of the literature and treatment rationales and showed, by means of case reports, some clinical consequences, protocols and clinical guidelines related to disease prevention and treatment. He was followed on the lecture podium by Dr Klaus Höcker whose discussion about whether oral hygiene is a success parameter during systematic therapy, Dr Höcker explained that chronic periodontitis is primarily caused by the accumulation and mobilisation of bacteria on the surfaces of the teeth.

As we improve our detailed knowledge about these bacterial deposits and the pathways of periodontal breakdown, the improvement of the patient’s individual oral hygiene becomes pivotal to the goal of improved periodontal therapy.

Dr Paul Stoodley took as his theme ‘Biofilm Management beyond Plaque Removal’ and started by explaining that dental plaque biofilm is a living community of many different types of bacteria and microorganisms which attach and grow on tooth and gum surfaces.

The resilience of dental plaque biofilm is underlined by the ongoing management effort required to maintain good oral health. Direct scrubbing using brush bristles is an established method of removing dental plaque biofilm, however there are many locations within the mouth, such as the interproximal spaces, gingival sulcus and pits and fissures in the occlusal grooves, which are difficult to access.

Biofilms can also be removed by fluid flow, if high enough shear forces are generated. Dr Stoodley demonstrated that passive brushing using Philips Sonicare sonic toothbrushes, can remove biofilm formed from Streptococcus mutans, a common biofilm dental plaque cariogenic pathogen, from interproximal spaces and frontal tooth surfaces by the generated fluid flow alone.

In more inaccessible areas, where some biofilm remained, he demonstrated that fluid flow could act as a reservoir for fluoride, delivering the beneficial effect of increasing contact time with the enamel surface.

Fluoride also reduces the degree of acidity at the tooth surface by reducing biofilm activity.

Building on the application of fluid flow for biofilm management, Dr Stoodley introduced the concept of the new Philips Sonicare AirFloss which utilises a small volume of high velocity liquid to create high shears and jet impingement pressures to remove biofilm from interproximal spaces.

By using a typodont model and artificial biofilms comprised by biopolymers produced by biofilms, he showed how he had captured the removal from interproximal spaces using high speed imaging. On impact the artificial biofilm in the interproximal space was immediately pushed back by the flow, the biofilm then stretched until the breaking point was reached and the biofilm detached.

Finally Thomas Clos addressed the need to draw together more closely new toothbrush production methods with marketing requirements and beneficial performance for users. During his presentation he gave an overview of the evolution of industrial toothbrush production and demonstrated the state of the art methods used today.

The pros and cons of each method were highlighted and the presentation concluded with an insight into development and production methods used for the creation of a new Philips Sonicare DiamondClean brush head.

At the climax of the symposium the assembled delegates were given a preview and insight into the research and clinical effectiveness of two new Philips Sonicare products which were launched the following day at the IDS.

The new Philips Sonicare AirFloss is the first interdental cleaning device which uses microburst technology to clean interproximal spaces. Philips Sonicare DiamondClean power toothbrush is considered the most sophisticated, high performance Sonicare toothbrush to date.