Periodontal disease encompasses a wide range of conditions which affect the supporting structures of the teeth. The term “periodontal disease” refers to chronic periodontitis among other conditions.

When presented with a patient with periodontal disease, a risk assessment would be beneficial in order to ascertain the patient’s susceptibility and risk of disease progression. A risk assessment is beneficial for our patients so that appropriate and individualised management and treatment plans can be devised. The benefits of such an approach are multiple. A risk factor is defined as a factor that increases the probability of developing the disease. Smoking is an example of a risk factor for periodontal disease. Numerous studies have shown smokers are more likely to develop periodontal disease compared to non-smokers, and numerous biological explanations have been put forward.

Another risk factor is plaque. The presence of plaque bacteria and the development of a mature bacterial community will lead to development of disease in a susceptible host. Smoking and plaque are risk factors that are modifiable. Perhaps it would be more appropriate to consider plaque as an aetiological factor.

Plaque is considered to be an important aetiological factor in the development and progression of periodontal disease in a susceptible host. Pathogenic organisms found in dental plaque have been associated with the development and progression of periodontal disease. While various periodontopathogenic organisms have been associated with disease, it has been difficult to identify one (or a group) of specific organisms that are specifically causal for periodontal disease.

In the 1960s it was believed that it was the entire plaque mass and its constituent organisms caused periodontal disease. Treatments were aimed at removing the entire plaque mass. The non specific plaque hypothesis was the accepted theory and assumed that it was the collective accumulation of all the bacteria and the noxious bacterial products that caused the destruction of supporting tissues and development of periodontal disease.

Much research work has since focused on trying to identify specific bacterial pathogens that may be contributing to periodontal disease. Although high counts of certain specific pathogens such as P. gingivalis, A Actinomyces and T. intermedia and F. nucleatum have been associated with diseased sites, it has been difficult to identify any specific micro-organisms that are the definite cause for disease. Although the specific plaque hypothesis was suggested, proving it has not been as simple or straightforward. Furthermore, the presence of absence of these periodontopathogenic microorganisms has not been useful to predict future disease activity. Hence, their presence or absence does not indicate cause in all cases.

The ecological plaque hypothesis has therefore been considered. This is somewhere in between the two previous hypotheses. It is thought that the presence of certain bacteria is more likely to cause disease in a susceptible host in the right environment. These bacterial species may be highly associated with development or progression of disease in the right conditions and a susceptible host. This explains the complexity of periodontal disease and how it is influenced by so many risk factors.

Despite having an understanding of the risk factors and susceptible factors, very few factors can be modified. Behavioural characteristics that can be modified include improvements in oral hygiene and smoking cessation. Influencing the host susceptibility is not always possible. Identifying causal microorganisms is not always straightforward and therefore treatment aimed at eliminating only specific periodontopathogenic microorganisms is not always successful. However, removal of the entire plaque mass and aiming to address modifiable factors such as smoking and poor oral hygiene would result in much more predictable outcomes.

In view of this, the main mode of treatment for periodontal disease is aimed at removing the entire mass of plaque. The treatment regime therefore adopts the non specific plaque hypothesis. These limitations therefore explain why the treatment regimes in periodontology have remained unchanged for so many years. What can be questioned is that despite knowing this mode of treatment for so long, why do clinicians still get limited success when treating periodontal disease?

It may be because the success of treatment relies on many factors, some of which are influenced by the clinician and the patient and others which are not.

One of the most important factors is oral hygiene, and the motivation of the patients to achieve and maintain optimal oral hygiene.

When presented with a patient who has established chronic periodontitis, it is important to include patient education and supragingival and subgingival plaque debridement as part of the initial management plan. Evidence has shown that in the presence of plaque, the outcome of any treatment (surgical or non-surgical) will be very poor. It must therefore be stressed to the patient that their role in maintaining an optimal level of oral hygiene is very important.

Achieving and maintaining optimal oral hygiene is vital when combating periodontal disease. Educating and motivating patients is a very important stage in periodontal treatment plan. Patients would normally present with complaints such as bleeding gums, mobile teeth, periodontal abscesses or sensitive teeth. However, a simple “brush your teeth”, or “use an electric toothbrush” advice may not suffice. Following a thorough examination and periodontal assessment, a more detailed and individualised approach in oral hygiene instruction would perhaps yield better results. Such an approach would need time, patience and regular reinforcement from the clinician. A suggested approach may be to approach it using these steps:

1. Explanation and Education
Explain and educate the patient on the role of plaque in the development and progression of periodontal disease. It is important to stress to the patient, their
role in achieving optimal supragingival plaque control and how this would positively influence the outcome of the treatment.

2. Visual Aids

There is no better method of education than visual aids and actually showing the patient the main areas of plaque accumulation in their mouth may have a greater impact, rather than simply saying where the plaque is. In addition, a quantitative method of measuring plaque would help set and achieve targets for patients this can be done using 2 stages.

a. The first stage would be to use disclosing solution so that the areas of plaque accumulation can be shown to the patient (using either a mirror or a photograph). This will act as a visual guide for the patient.
b. The second stage would be to record these areas of accumulation on a plaque chart and calculate the plaque score as a percentage.

It is very useful to record the plaque score as a percentage and therefore provide the patient with a quantitative method of measuring plaque. A measurable amount is very useful to set achievable targets for the patient to reduce their plaque score. Thus the patients are actively involved in their own management, keeping them interested and motivated. Patients also feel that they have a degree of control over the treatment outcomes. If the plaque score is then measured at each subsequent visit, it is possible to inform the patient about their progress in a measurable and numerical form, which they will understand better.

3. Oral Hygiene Demonstration

The next stage would be to show and physically demonstrate to the patient, the best methods to achieve plaque control in the areas where there are visible deposits. This would involve demonstrating effective methods of toothbrushing (such as the modified bass method) and interdental aids such as flossing, tepe brushes or bottle brushes.

The clinician should also ensure that the patient is actually using these aids correctly by asking them to physically use them while in the dental chair. Any errors can thus be corrected immediately.

4. Written Instructions

While good education and instructions in oral hygiene and plaque scoring, actively engages the patients while they are in the dental chair, they may not immediately absorb all the information. Providing them with a written summary of the main points discussed and the targets set for the next visit would actively engage them and also perhaps motivate them to continue to focus on oral hygiene improvements.

The plaque scores and other set targets can then be reviewed at subsequent visits. This method of oral hygiene improvement can be used by the periodontist, the dentist or the hygienist. Its simplicity makes it versatile and allows the patient to get the benefit of a team based approach. It also provides a way in which to assess the patient’s motivation, prior to embarking on a more time and expense consuming course of complex periodontal treatment. There is no doubt that such a process is time consuming and the constraints within the surgery may make this difficult to achieve.

In motivated patients, such an approach would help to improve their plaque control and hence provide more predictable treatment outcomes. However, the clinician must remember that periodontal disease is complex, and various other risk factors and susceptibility factors can influence the outcome. Host susceptibility, genetic factors and systemic factors are examples of these. Therefore while plaque control is the definite mainstay, it is not the only factor.

‘It is very useful to record the plaque score as a percentage and therefore provide the patient with a quantitative method of measuring plaque’