

## Using technology to reduce the costs of dentistry

*In this article in his series on aesthetic dentistry, Geoff Knight, a dental practitioner from Melbourne, Australia, discusses ways in which technology, so often accused of being the cause of expensive dentistry, can be used to reduce the costs of dental treatment.*

Businesses that have survived the recent years of economic recession have often done so by restructuring to emerge with higher quality goods and services, lower costs and improved profitability.

During this period, the professions have watched nervously from the sidelines, casting around for reasons to resist change, often quoting unsubstantiated perceptions of community benefits and standards of practice. For the various professions their qualities of services have generally remained the same while the costs of providing them have increased. Unlike the restructured businesses mentioned above, for many practitioners these changes have been associated with reductions in profitability.

In reality, community perceptions are that whilst the value of goods and services in other sectors have shown improvement, the professions have lagged behind. Indeed governments around the world have been either increasing, or reducing, regulations in order to coerce the professions to implement structural changes. The aim of these changes has been to simultaneously improve the quality of services and reduce the costs to the public they serve.

Added to this state of economic and regulatory flux, the dental profession has grown almost accustomed to

a constant stream of technological breakthroughs over the past decade. Advances in adhesion, osseointegration, tissue guided regeneration and maxillofacial surgery have carried some practices to new heights of achievement, but have also left many dentists in awe of each new wave, often distracted from the real day-to-day issues of dental care.

These new technologies have tended to increase the complexity of providing dental care. While there are a few fortunate individuals with the resources to benefit from the initiatives, many of the 'advances' are neither relevant or practical for the majority of the community who continue to regard dental care as 'expensive' in the overall mix of goods and services which they have to purchase.

Furthermore, many new dental technologies require increased levels of biological invasion, high set up costs and complex infrastructures to achieve their outcomes; processes that are inconsistent with society's expectations of dental care.

### **Making technology the slave not the master**

Harnessing technology to improve the quality and efficiency of dental services, while simultaneously reducing



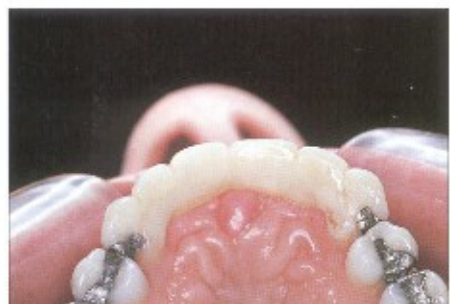


Figure 5



Figure 6

missing tooth. While there are certainly indications for this procedure, the high biological and fiscal costs and the time commitment of both patient and practitioner require the fullest consideration of alternative less complex procedures.

A direct bonded resin bridge is a simple alternative to replace a missing incisor. Tissue preparation is seldom necessary and the shorter clinical time required, together with the absence of laboratory fees, enables substantial cost savings for patients and significant productivity increases for practitioners. Using a multi-layered direct laminate technique and addressing the disciplines of occlusion enables the placement of an aesthetic pontic that will function without further operative attention for many years while affording maximum future treatment options (*Figures 5 and 6*).

Materials research to improve the strength and durability of composite resins and glass ionomer cements will undoubtedly enable the predictable placement of direct multiple pontic restorations without invasive tissue preparation and associated laboratory fees. To illustrate the point *Figures 5 and 6* show an 'experimental' direct, multi-pontic, fibre-reinforced composite bridge, replacing the upper incisors

that has been in situ for over 3 years.

#### Technology required in infection control

Infection control is an area where technological initiatives are urgently required to reduce the high costs of disposable equipment and instrument sterilisation. The manufacturers of these products need to balance the price of disposable products and the subsequently created waste, with cost effective reusable items that can be sterilised within the practice environment.

As the costs of computers fall, and their capacity improves, successful practices are becoming increasingly dependent upon them, not only for accounting and information retrieval, but as communication, forecasting and marketing tools. Improvements in office efficiency enables overhead reductions that may be passed on as lower fees, encouraging more people to seek care, and by so doing, increasing the primary dental market.

Communication technologies can be further utilised to increase dental participation rates by employing such initiatives as a corporate marketing programme. This creates an awareness within the community that routine dental care is an established social

norm and aesthetic dental services form part of the option mix when discretionary spending decisions are being contemplated.

The high stress levels of dental practice exact an emotional cost on the practitioner. Technology must be harnessed to reduce this stress by focusing on simplifying the delivery of dental services, increasing the predictability and minimising the consequences of failure.

Improved productivity create an opportunity for dentists to simultaneously increase their incomes and reduce their fees without adding to overhead expenses, thus reducing the financial burdens associated with running a practice and the costs of dentistry to the community.

A rapidly changing economic environment has forced industries around the world into a process of quality and efficiency improvements and it is only a matter of time before society, through governments, force major restructuring within the professions.

There is a unique opportunity for the dental profession to achieve community expectations with minimal disruption by focusing on technological research to reduce the biological, fiscal and emotional costs of delivering dental care.

## AESTHETICS



Figure 1



Figure 2

the biological, financial and emotional costs to dentists of providing them must rate as vital objectives for the profession's continuing success.

The diagnoses of caries and periodontal disease are two of the most demanding clinical procedures in dentistry and while there are numerous and sophisticated scanning systems available, dentists seem content to rely upon radiographs and probing as their main diagnostic tools. A cost effective scanning mechanism to rapidly and reliably detect these diseases must surely therefore be a priority for dental research.

Minimum intervention dentistry is now achievable using adhesive restorative materials that require little, if any, tooth preparation. These techniques represent significant biological

savings for both reparative and discretionary operative procedures. Advances in materials have often exceeded the ability of dentists to appreciate their clinical potential. Thus, as well as continuing education to maximise the potential of the materials, there is also the opportunity for clinical research to find increased applications for adhesive materials as alternatives to the more invasive traditional procedures.

### Savings in tissue, time and money

The tunnel restoration illustrates the biological and fiscal savings achievable by combining minimal tissue preparation with the adhesive properties of glass ionomer cement and composite resin. The biological savings

achieved by maintaining the marginal ridge assures anatomical integrity of the proximal regions, reducing the possibility of iatrogenic changes due to poor marginal adaptation. The cavity design affords productivity increases due to the simplified placement and contouring of the restoration, which may be passed on in part to the patient as fiscal savings while enabling an increased hourly production rate for the practitioner (*Figures 1 and 2*).

### When implants are too costly

A letter to the Editor in the July 1993 issue of the journal *Quintessence International* expresses concern as to the over-diagnosis and over-prescription of implants to replace a single

Figure 3

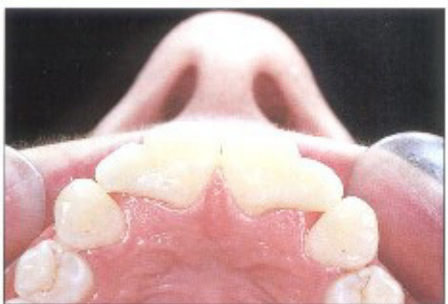


Figure 4

