

Technology Transfer in Dentistry: A Network Resource for Clinicians, Scientists, Manufacturers and Patients

JONATHAN HARRIS AND DAMIEN WALMSLEY

Abstract: This paper heralds a new initiative to improve the rate of implementation of new and existing technologies within dental practice. The rationale behind the establishment of the Technology Transfer Network in Dentistry is described and the aims and intentions of the network are laid out. The relevance of the network to practising clinicians, scientists and manufacturers is described.

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Clinical Relevance: This article seeks the active involvement of clinicians in a new research network that has been established with the ultimate aim of benefiting patients.

Dentists are busy people, but their patients expect clinicians to make time to keep up to date with the latest developments. Unfortunately, the rate at which developments are made, and the methods by which news of these developments are disseminated, makes it a challenge for even the most dedicated of practitioners to keep in touch. A cursory search through the ISI Web of Science Journal Citation reports¹ reveals no fewer than 46 separate journals published under the subject category 'Dentistry, Oral Health & Medicine', and in the year 2000 these journals accounted for a total of 3918 individual articles. The range of publications is therefore daunting, to say the least. Couple that with the fact that research publications are not always readily understood by 'lay' people and we have the makings of a nightmare scenario for anyone trying to

run a practice and ensure that patients receive the benefit of the latest technological advancements.

However, it is important not to lose sight of the fact that even the busiest clinician is capable of having good ideas. Scientific research is based entirely upon ideas, the trick for the researcher being to determine whether they are good or not. The time constraints under which general dental practitioners (GDPs) are placed makes it difficult for them to assess ideas for feasibility routinely, but they are at the cutting edge of dentistry and are a valuable source of first-hand information; therefore any ideas put forward by GDPs for improvements to equipment, materials or techniques, no matter how strange they might appear, should always merit serious consideration as a simple consequence of their origin.

The suggestion from Professor Damien Walmsley of the University of Birmingham School of Dentistry that an enhanced route of communication between the various parties involved with the development of dental technologies was required coincided with

a call for proposals from the Engineering and Physical Sciences Research Council (EPSRC). In their drive to promote interdisciplinary and collaborative research efforts, the EPSRC has recently begun to direct funding toward the establishment of research networks, the emphasis being upon those that could 'link academic and industrial groups in new partnerships'. Accordingly, a proposal was submitted and, following its successful review, the 'Technology Transfer Network in Dentistry' (known as the TTDentistry Network) was formed.

Why do we need a Research Network?

The idea of a research network is basically to put people in touch with each other. In a British Telecom advertisement, Bob Hoskins once said 'It's good to talk', and this applies strongly to the field of research and development. No matter how good the scientist, how customer-conscious the manufacturer or how well funded the research establishment, it is virtually impossible for any one person to have an in-depth appreciation of all the science behind any given development. This is particularly the case in recent years because the technology available has increased immeasurably in complexity and volume. Medical science has evolved into a multidisciplinary field; physicists work alongside materials scientists, who in turn liaise with pharmacologists, biologists and chemists, all of whom routinely engage the assistance of computer analysts (to name just a few of disciplines involved). Although the boundaries between many

Jonathan Harris, BMedSc, PhD, Research Fellow and EPSRC Network Coordinator, and **Damien Walmsley**, BDS, MSc, PhD, FDS RCPS, Professor of Restorative Dentistry, The University of Birmingham School of Dentistry, Birmingham.



Figure 1. Logo commissioned for the Technology Transfer Network.

disciplines are blurred, it is still true that individual scientific disciplines provide the backbone of research and development. Communication between such groups must therefore be an essential component of efficient research methodology and it is one area the TTDentistry Network aims to support.

Direct communication of information relating to dental technology and the various parties involved with its development is only one aspect of the network ethos. Although it would fit reasonably well within the definition of Technology Transfer (transferring technological information between disciplines), it does not fully or accurately describe the principal purpose of the Network, which is to encourage workers in clinical dental practice to investigate and adopt ideas from fields outside of dentistry.

So What is Technology Transfer?

In simple terms, technology transfer is the implementation of technology that already exists in one area into another, for which it is suitable but has not previously been applied. The network aims to encourage the investigation and ultimate adoption of ideas and techniques from outside dentistry into clinical practice.

Such an approach has a distinct advantage in that it streamlines the development process by eliminating much of the research and development work, which will already have been undertaken in order to make the technology viable in the first instance. Avoiding such work leaves the task of implementing the new technology dependent upon optimizing or adapting that which already exists, rather than coming up with something new (or in

the worst instance unwittingly reinventing the wheel), which is a waste of both time and resources.

Current Membership of the Network

Although initiated in Birmingham, the network aims to provide national coverage through the distribution of its core membership. The people involved from the outset and their academic affiliations are listed below:

- Dr David Wood (Leeds)
- Dr Lawrence Mair (Liverpool)
- Professor John McCabe (Newcastle)
- Professor Bill Saunders (Dundee)
- Professor Damien Walmsley (Birmingham)
- Professor David Watts (Manchester)
- Professor Edward Lynch (Belfast)
- Professor Gavin Pearson (QMW, London)
- Professor Peter Marquis (Birmingham)
- Professor Ric van Noort (Sheffield)
- Professor Tim Watson (Guys, London)
- Professor Trevor Burke (Birmingham)

Promoting the Network

To generate awareness of the existence of the TTDentistry Network a series of articles aimed at the dental practitioner will be published in *Dental Update* (for which this is the introductory piece).

Topics coming under scrutiny in following articles will include:

- air abrasion;
- the use of titanium in dentistry;
- lasers, bleaching;
- light curing;
- rapid prototyping;
- ultrasonic instrumentation;
- magnets.

Network members and invited contributors will write articles according to their area of expertise, the idea being that the articles will serve as

reviews of the newest technologies available. They will also aim to examine whether any existing technologies have the capacity to be introduced into dentistry to benefit the patient, or to make the practitioner's life in the surgery simpler with ultimately the same result.

We hope that, by introducing the practitioner first, we can begin to gauge what it is that the people at the 'sharp end' feel would be a significant improvement or benefit to their daily practice that is currently not available.

We have already formally advertised our existence in the *BDA News*² and are using word of mouth combined with our website (<http://www.ttdentistry.com>) to inform as many of our immediate colleagues as we can. To date we have received interest from a number of clinicians around the UK and have also received enquiries from as far afield as the USA.

Discussion Group

An online discussion facility (the *ttforums*) is available at the TTDentistry website to allow those interested in networking to pursue any thoughts or ideas they might have. An active user group has evolved since the forums went live in the second week of February 2002 and a panel of experts is available to provide feedback and considered opinion on the viability of any ideas generated. All ideas are welcome, no matter how far-fetched they might seem. Indeed, it is hoped that the network and the associated article series will stimulate readers to contact us with their ideas.

Contacting Us

For more information, to contact the network or participate in online discussion, please visit the website at <http://www.ttdentistry.com>.

REFERENCES

1. <http://wos.mimas.ac.uk/jcrweb>
2. Networking in Dental Research. *BDA News* 2002; 14: 4.