

“Pulp Afflictions”

Using e-learning to build best practice for primary care practitioners

Project summary

- Pulp Afflictions is a peer-reviewed e-learning program for NHS primary dental care practitioners, released in October 2004.
- The project was developed by The Dental Channel Ltd on behalf of the Department of Health.
- Registrations have grown within a 9-month period by almost 300%, with over 20% (4000+) of UK dentists now using Dental Channel e-learning courses. The project has therefore been responsible for significant growth in the adoption of e-learning amongst the target organisation, with the number of dentists using the resource representing a substantial proportion of the profession.
- The subject area of expertise is known as endodontics, which describes the management of the tooth pulp (“nerve”) that has become infected following extensive decay or traumatic injury. It is a key yet complex aspect of dental care, relevant to both children and adults.
- The project was designed to provide a unique continuing professional development (CPD) self-study resource on CD-ROM that embraces the unique attributes of computer-based learning and complements other forms of postgraduate education, in particular instructor-led “hands-on” training.
- 19,500 CD-ROMs were distributed in the UK from November 2004 to February 2005 to NHS dentists, supported by extensive national advertising, the dental media and other promotional activities.
- Pulp Afflictions is complemented by a web site that provides related information including new developments, instructor-led courses, new technology, an electronic discussion forum, and support by telephone or email.
- Client response has been most enthusiastic, endorsed by reviews in professional journals. The effectiveness of the course when used in combination with instructor-led training is currently being assessed.
- A web-based conference is currently being planned that will provide an online update, which will then be available as an archive.
- Dentists are kept abreast of updates, related information and new titles by electronic and printed newsletters.
- Pulp Afflictions has produced a dramatic rise in the adoption of e-learning amongst the dental profession in a short period of time. The keen response from dentists, with one in five now using Dental Channel e-learning titles, confirms that this project has secured enthusiastic and widespread adoption of this powerful learning technology amongst the profession. A wide range of activities are supporting its adoption, with the numbers continuing to grow.

Project aims & objectives

- Provide an authoritative guide to best practice in endodontics for primary care practitioners.
- Raise awareness of the benefits of e-learning amongst the dental profession.
- Promote e-learning as a complement to other forms of training

Benefits to Department of Health	<p>(blended learning).</p> <ul style="list-style-type: none"> • Increase the number of dental professionals using e-learning. • Provide a cost-effective method of disseminating best practice in a convenient and engaging format. • Assist busy dental practitioners to fulfil their statutory training requirements. • Reduce the cost of training significantly when compared to traditional instructor-led courses. • Enhance instructor-led training with a resource for preparation and review.
Benefits to NHS dentists	<ul style="list-style-type: none"> • Ensure that the dentist is keeping abreast with best practice and thereby providing the best care for patients . • Learn from work or home without having to travel. • Learn when convenient. • Learn in a style and pace most suited to an individual's specific needs. • Time is not lost away from work, removing the cost and patient management implications of attending courses. • Information is always available ready to hand. • Complement instructor-led courses by providing a resource for study prior to after attending the training event. • Meet statutory continuing professional development requirements.
Course subject aims	<ul style="list-style-type: none"> • Review the dental professional's understanding of the principles of endodontic practice. • Evaluate how new methods and materials have influenced the process of endodontic therapy for both adults and children. • Provide a distance learning peer-reviewed resource for best practice, and for integration into blended learning programmes.
Course subject objectives	<p>Once completed the dentist</p> <ul style="list-style-type: none"> • Will have revised the basic science, with particular relevance to dental anatomy and pathology. • Should be confident in assessing, diagnosing and managing the treatment of pulpal and periapical conditions. • May use the resource for blended learning activities.
e-learning in dentistry	<p>Dentistry is a profession that has benefited from e-learning in its various guises for over a decade. These include structured courses on CD-ROM and online, evidence-based databases (e.g. PubMed, Cochrane Library), informal discussion forums, newsgroups and other internet services. Some have been publicly funded, others commercially.</p> <p>The Department of Health has funded the development of e-learning programs for dental continuing professional development since the early 1990s. The first were delivered on floppy disk, with CD-ROM the delivery medium of choice since the late 1990s. Web-based courses were evaluated a few years ago but were not well received. The Dental Channel has produced many of the most recent CD-ROM titles for the Department of</p>

Health since 1999, all of which have met with critical acclaim.

Prior to the advent of e-learning resources, postgraduate dental education consisted primarily of attending courses at regional postgraduate centres and reading journals. Courses are expensive to deliver and require the dentist to travel, sometimes over long distances. Journals can be read at leisure, but are passive and often considered less than engaging!

The potential benefits of e-learning are well known, though realising these is not always straightforward. Content and good design are essential, and the resource must offer something that others forms of learning do not.

Our e-learning programs integrate authoritative text, images, narration, animation, videos and quizzes, and allow dentists to enjoy these advantages from the convenience of a computer, whether at work, home or on the move. They also integrate well with courses. Prior to release they undergo a peer-review evaluation with at least 50 dentists and specialists to ensure their educational and technical merits.

This approach has produced some very popular titles. However the main problem has been raising awareness amongst the profession at large. Until the launch of Pulp Afflictions dentists had to request CDs from their regional deanery, and most were unaware of their existence. It would be common to find that less than 10% of dentists attending courses knew about the CD-ROMs, a frustrating result in view of the tremendous response from those who used the programs. One of the main objectives of this project was to address this obstacle.

Design

The course was designed to maximise the unique benefits of the medium:

- Information presented as cross-referenced text, clinical photographs, X-Ray pictures, 2D and 3D animations, narration and videos.
- Provision of a predetermined sequence or fully interactive navigation so the user may determine the style, order and pace of information retrieval.
- Search facility using whole or partial words and phrases, locating information in context.
- A thought-provoking randomised quiz that is cross-referenced to other parts of the course.
- Progress indicator displaying which topics have been completed, partially completed or not viewed, including time, best quiz score etc.
- Intuitive operation.

Adoption

The educational and technical validity of the design of Pulp Afflictions had already been established with previous titles (e.g. Goldfingered). Some aspects were improved upon, but the main challenge with this project was to increase the number of dentists adopting e-learning as part of their CPD portfolio.

This was achieved by:

- Pre-release marketing including existing clients (approximately 1500), journal articles, press releases, advertising and promotion to dental course tutors for blended learning.
- Official launch at British Dental Trade Association exhibition

(October 2004).

- Distribution of 17,500 CD-ROMs across the UK with *Dental Practice*, one of the longest established and most popular journals for the dental primary care team, in conjunction with front page editorial.
- Post-launch advertising: 2000 CDs were retained for those who missed the CD-ROMs with the journal.
- Journal reviews.
- Support for those dentists who required advice on installation etc (telephone, email, fax and web) .

Maintenance & growth

Adoption of the program (and other e-learning titles) has been supported by:

- Advertising.
- E-newsletters (information on updates, courses, new resources).
- Discussion forum (allows dentists to discuss related topics with their peers).
- Promotion with the dental deaneries (1000 new copies are being replicated to meet continued demand).
- Case study articles in the dental journals (highlight how course content is related to common situations in dental practice).
- Online resource to complement CD.
- Web-conference is being planned to provide an update.
- We are currently evaluating the effectiveness of the course as a blended learning tool with dentists attending hands-on training courses.

Evaluation

275 general dental practitioners with a broad range of experience and subject specialists were sent evaluation versions of the CD-ROM prior to release.

Answers to the question "What do you like most about the program?" included:

- "Able to dip into topics at leisure."
- "Convenient and clearly written content with good explanations."
- "Amount of information, lots of examples and demonstrations."
- "Information whenever wanted."
- "The case studies; much more fun than a book or journal and better than a lecture because you can view a topic any times if you need to and at your own pace."
- "Very comprehensive, very good quality."
- "Ease of use, facility to refer back, depth of information."
- "Easy access to the topics that you want information on rather than having to wade through large amounts of material in order to get the relevant information."
- "The ability to pick up and put down at will, overall an excellent program, obviously a lot of hard work and effort went into it - congratulations!"
- "The fact that it is so comprehensive detailed and making even endo

interesting to learn.”

- “Comprehensive info that can be watched and reviewed at GDP's leisure.”
- “Pictures and video, excellent presentation.”
- “Pause and stop and go or things or your own pace good pictures and explanations.”
- “The diagrams and video images are very easy to use and clarify the points made and complement the text well.”
- “Able to go at your own pace, able to go back over any areas if you need to.”
- “The ease of use for somebody with limited computing experience was excellent, the format was very user friendly.”
- “Can run it at your own pace therefore often better than a course; content varied, good use of different media.”
- “Styles, e.g. video, diagrams; ability to go to questions, case studies etc.”
- “Can do it in my own time/speed, repeat anything I was unclear about.”
- “Being able to do it at home at my own pace, good close up demonstration with the videos.”
- “The versatility and detail of watching the practical approach that it offers.”
- “Very comprehensive coverage; good clear instructions and commentary.”
- “Plenty of information - if you need to know something its easy to find.”
- “Nice logical progression through the subject; not over-complex in content.”
- “I can dip in when I have a few minutes. It remembers where I was up to and allows me to keep notes and pause the progress.”
- “Up to date information from a source that is easily available, and formulated well.”
- “Multiple topics, bite size chunks and extensive information, good 'pace' through material.”
- “Thoroughness, it covers a great deal of information very comprehensively.”
- “Ease of use when time is available, good refresher of knowledge especially 'rusty' areas, good visual learning, enjoyable.”
- “It was easy to do a section at a time and feel a good understanding of that part before moving on to another section.”

Review

The course has been submitted for review in the professional journals. The following are excerpts from the review in “Dental Practice” (April 2004):

- “...once you are hooked the disc will be viewed many times over the next few years. With or without the hours of CPD as a carrot, the content is far too interesting and valuable to anyone practising

dentistry today. With its user-friendly way to update knowledge, this disk is another winner from The Dental Channel and all who took part in its completion.”

The complete review is attached (see “Pulp Afflictions”, *Dental Practice*, February 2005”).

**Client
summary**

From a message to dentists from the commissioning body:

“Funded and sponsored by the DoH and commissioned through COPDEND, KSS Deanery managed the project, Brett Robinson and his team delivered the content and Dental Channel led by Andrew Gould produced it. The program uses all the best processes of e-learning, and is truly interactive, not just a videoed lecture. It gives over 50 hours of CPD in all areas of endodontics, and uses the *Blended Learning* approach. Using *Dental Practice*, there is a series of written articles, there is the e-learning programme, and then there will be tutor-led lecture and practical sessions in the deaneries. COPDEND is delighted with the production, and it trusts that you will all be able to improve your services to the patients you treat after following through the program.”

Conclusion

Pulp Afflictions has been a great success in securing the widespread adoption of e-learning amongst the dental profession, evidenced by the tremendous growth in adopters and feedback from both dentists and dental media.

**For further
details
please
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