EVIDENCE SUMMARY

What 'cost-of-illness' evidence is there about cross-infection-related infections in dental practice?

Developed from the original question submitted by Yann Maidment, April 2010:
'What benefit is delivered for the costs of the new decontamination regulations?'
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Key Terms

Decontamination: processes including cleaning, disinfection, inspection and sterilisation to render reusable surgical instruments safe for further use.[1]

Epidemiological evidence: determination of causes, incidence, and characteristic behaviour of disease outbreaks affecting human populations. Includes the interrelationships of host, agent, and environment as related to the distribution and control of disease.

Cross-infection-related dental infections: any infection which a patient contracts in a dental practice.

Total cost: the eg healthcare impact cost of cases of cross-infection from dental practices.

Background

Decontamination of re-usable instruments aims to make them safe, minimising the risk of cross-infection between patients and between patients and staff[2].

The nature[3,4], application[5], and compliance[6,7] with dental infection control processes – including decontamination - are long term[8] and ongoing areas of practice-related dental research.

In addition, the scientific understanding of infection control has grown with theoretical or actual new risks emerging[9], such as MRSA, HIV, TB, and latterly the role of prion proteins in vCJD[10,11], although in practice the likelihood of infection transmission within the dental workplace is considered to be low[12].

Primary dental care practices are now required to deliver quality decontamination processes[13,14], and from 2011 to be regulated by the Care Quality Commission[15], with baseline audit data presently being collected through the Dental National Decontamination Survey[16,17]. The survey does not appear to collect data on cross-infection incidence nor costs associated with respective aspects of guidance compliance.

Consideration of the cost-benefit to primary dental practice for provision of the new decontamination processes[18,19] invites assessment of the scale of the problem that dental decontamination processes aim to address, of the cost of undertaking these procedures to respond to the problem described, and of the benefits arising.

To address the review question, two sub-questions have been posed:

1. **what epidemiological evidence is there about cross-infection-related infections caused in dental practices?**
2. **what is the total cost of cross-infection-related infections caused in dental practices?**

Review Method

Initial search: Ovid MEDLINE(R) 1950 to March week 5 2010 using search terms decontamination/sterilisation, dentistry, dental economics, cost-benefit analysis, limited to 1999-2010, UK. 5 papers identified, 5 papers excluded.

Further searches: NHS Economic Evaluation Database using search terms cross-infection, infection control, infection and dental, contamination and instruments, decontamination. Two potentially-relevant titles identified and retrieved as full papers. Two papers rejected. Additional searches included CEBD, Cochrane Oral Health Group, CRD, ADA, TRIP database, DARE. Also the Department of Health published evidence-graded references for HTM 01-05.

Further contact: made with the British Dental Association and the National Patient Safety Agency; also initiated with the Department of Health Dental National Decontamination Survey team.

Findings

In total, five titles and abstracts arising from the above searches were identified and two were retrieved as full text, then rejected.

1. What epidemiological evidence is there about cross-infection-related infections caused within dental practices?

We could find no studies that described the incidence of cross-infection-related infections caused within UK dental practices, including cross-infection arising from reusable dental surgical instruments.

On this basis, the scale of the problem that dental decontamination processes aim to address, currently appears to be unknown.

Whilst not answering the review question, in comparison, an estimate exists of hospital-acquired infections. This is approximately 9% of inpatients, including 273,000 non-fatal infections and 4,550 deaths per year[20]. Since 2007, in response, the UK government has undertaken a £57.5 million NHS hospital ward 'deep cleaning' programme. However, these data relate to the medical and hospital context, with uncertain applicability to the dental practice context.

2. What is the total cost of cross-infection-related infections caused in dental practices?

In the absence of incidence data relating to cross-infections caused in UK primary dental practices, or on the severity (including disabilities or deaths arising) of such infections, it is not possible to estimate their cost impact. No studies were found to provide insight into the potential savings in terms of the number of dental-related cross-infections avoided by compliance with infection control guidance.

Only one study, which is both quite old and specific to Australian private dental practice[21], attempted to quantify the costs of implementing recommended infection control procedures. This amounted to an annual amount of AU$22,461 per dentist plus AU$1,912 per practice (1994 $AUS), including loss of billable revenue, disposables, equipment, waste management and nurse time for sterilisation procedures.

Summary

Although there is a literature upon the nature, implementation and adherence to generic dental infection control guidance and practice, there appears to be none, from the UK and beyond, on the epidemiological scale of cross-infection caused in dental practices and therefore also of the cost impact of cross-infection caused in primary dental practices. Consequently, no cost-of-illness, nor cost-benefit assessment, exists or is feasible at this time.

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