Summary of: Availability of manufacturers' information on efficacy and compatibility of detergents used for cleaning dental instruments

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FULL PAPER DETAILS

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Aim To review physico-chemical data supplied for commercially available detergents marketed for manual and/or ultrasonic cleansing of reusable dental instruments. **Method** Manufacturers/suppliers of commercially available detergents for manual or ultrasonic cleaning of dental instruments within primary dental care were invited to supply product information. A structured questionnaire requested details on a range of physical and chemical properties for each detergent. **Results** Seventeen detergent manufacturers/suppliers, encompassing 31 commercially available detergents were identified. Ten of the 17 manufacturers provided information on 23 (74%) of the detergent formulations. Nine detergents were of neutral pH, ten mild alkalis (pH 7.5–10.5) and four strong alkalis (pH >10.5). Sixteen detergents were recommended for ultrasonic and manual cleaning, four stated ultrasonic use and three manual only. Ten detergents cited enzymatic activity as their main mode of action, but only six manufacturers provided detailed information. Four detergents recommended by manufacturers as suitable for manual washing had a strong alkaline pH (>10.5), presenting chemical hazards to users. Two strong alkaline detergents did not warn users of potential adverse effects of such alkaline solutions (corrosion) upon aluminium containing instruments. Only one detergent had investigated the potential toxicity of detergent residuals remaining on instruments after reprocessing. **Conclusion** It has proven challenging to collate physico-chemical data on detergents suitable for use in manual and/or ultrasonic cleaning of dental instruments in general dental practice. Standardisation of information on the nature and efficacy of dental detergents in a readily accessible form would be beneficial to dental practice.

EDITOR'S SUMMARY

The process of effective cleaning is a complex, and expensive, business which has become even more burdensome in clinical dental practice in recent years with the emergence of prions, most prominently but not exclusively, that which mediates Creutzfeldt-Jakob disease (CJD).

Although cleaning requires close attention to several key determinants such as temperature, time, water quality and mechanical energy created by water jets, ultrasonics or manual cleaning, essential components in the process are detergents. It is disappointing then, that the information available on the properties and chemical action of these adjuncts is either obscure or completely lacking. Disappointing but perhaps not surprising. In the world of commerce, products and ser-

vices tend to spring up (and die down) on a fairly regular basis with new developments arriving and those which are not successful departing abruptly. The diversity is well illustrated in this study which identified 17 detergent manufacturers/suppliers with 31 available detergents.

The possibility of establishing specific industry standards often does not arise until well into a period of stability in any given field but in as important a field as cross-infection control the greater disclosure of information is to be encouraged to at least allow informed choice. This choice extends not only to the efficacy of a given product but also to its safety both for the patient and dental team members. The caustic nature of four of the products identified made them unsuitable for use in the primary care environment and this

in particular should be cause for concern, especially for the unwary practitioner or practice manager.

Given that this is an area of dental practice that it is so sensitive clinically, politically and in terms of regulation and governance, the authors should be thanked for bringing to light these gaps in our knowledge. Further, they should be encouraged in their wish to pursue the matter towards the implementation of greater openness and possibly agreed standards.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 212 issue 10.

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IN BRIEF

- Highlights the importance of the appropriate selection of detergents for instrument cleaning in optimizing the efficacy of the cleaning process, staff safety and cost-effectiveness.
- Discusses the challenges in obtaining detailed information to support procurement decisions for detergents.
- Emphasizes that benchmarking for detergent efficacy would be beneficial to general dental practitioners.

COMMENTARY

In recent years, an increased awareness of the need for improvements in dental cross-infection control has been seen. Studies on the standards achieved in general dental practice have not shown favorable results. Renewed interest in cross-infection and decontamination in dentistry has arisen from the emergence of prion diseases such as CJD. These prions are not denatured by heat sterilisation alone, which has led to greater emphasis on single-use instruments and improved pre-sterilisation methods for the reprocessing of reusable instruments. This led to recommendations from the Department of Health for the introduction of washer-disinfectors as 'best practice' in the primary dental care setting (HTM 01-05). Ideally the cleaning of instruments is achieved using a validated cycle (eg washer-disinfector) with little risk of cross-infection to personnel. Where this is not possible or practicable, ultrasonic cleaning or manual cleaning can be used prior to steam sterilisation.

Although general guidance has been provided with regard to the different stages of decontamination (HTM 01-05), there are a variety of commercial detergents available. The practitioner must determine which product is the most appropriate to use. To make an informed decision, information on efficacy and suitability for specific instruments and the type of contaminant is needed. This is clearly a complex process with numerous variables to be considered, for which dentists

have little training or guidance. Our product choice has to be based on the information provided by the manufacturers regarding product suitability in the absence of formal guidance or research.

This questionnaire-based study by Calvert *et al.*, has highlighted the wide variation of detergents available for use in ultrasonic and manual cleaners. The authors have described their difficulties in obtaining information on the properties of commercially available detergents. They have emphasised the complex chemical composition of detergents, providing a very useful understanding of the different types of detergent and the conditions that may affect efficacy of the product.

The results of the questionnaire to manufacturers have presented some interesting findings, which require further investigation regarding the suitability of certain products. Research is needed into the efficacy of these products and also those used with washer-disinfectors, to provide evidence-based guidance to the profession and standards to which these products must comply for manufacturers.

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AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

A number of surveys have identified deficiencies in the decontamination of dental instruments in general dental practice. In particular the use of inappropriate instrument cleaning agents such as chlorhexidine-based hand washing agents and supermarket scouring agents. However, initial work to support practitioners in selection and procurement of suitable cleaning agents proved challenging due to lack of information from manufacturers and suppliers. We therefore embarked on a systematic investigation of the properties of detergents aimed at manual and ultrasonic cleaning in general dental practice. Our aim was to produce a list of suitable agents that could be used to inform procurement decisions in general dental practice.

2. What would you like to do next in this area to follow on from this work?

In order to facilitate improvements in instrument decontamination, general dental practitioners require more support in this technical field. Ready access to data on suitable detergents for use in manual/ultrasonic cleaning would help in this area. Technical information on detergents should also include some benchmark of cleaning efficacy for which none currently exists. We wish to pursue a standardised test for detergent efficacy as our next piece of work.