A survey on the use, care and maintenance of light activating units

The use and maintenance of visible light activating units in general practice by B. A. Mitton and N. H. F. Wilson
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Aim

The present study to investigate the use, care and maintenance of light units in everyday clinical practice was undertaken to complement light unit emission surveys, with a view to developing a protocol for light unit use and care in everyday clinical practice.

Method

The investigative work comprised a survey of selected practices in the Blackburn area with follow-up practice visits to examine light units *in situ*, and to glean additional information in respect of light unit use and care in the practice environment.

Results

Completed questionnaires were returned by 54 of 77 selected practices — a 70% response, including information in relation to 164 light units. Subsequently, 100 (61%) of these light units were examined in 42 practices according to a standardised protocol. The use and care of the light units included in the study was found to be very variable. In addition to finding that 28 (28%) had inadequate light output ($<300 \text{ mW/cm}^2$), many of the light units were found to be damaged or repaired (47, 47%). Thirty five (35%) of the light units inspected were found to have varying amounts of material adherent to the light guide exit portal.

Conclusion

It is concluded that practitioners should address practical aspects of their increasing reliance on light units, and to this end, guidance is offered on visible light curing and the care and maintenance of light units.

In Brief

- As a vital piece of equipment used everyday in clinical practice light units, like hand-pieces, must be maintained and monitored to enhance performance.
- A well-maintained light unit provides quality and longevity of restorations, therefore enhancing the benefits of light-curing to the patient.
- Advice on key points for use, care and maintenance to improve performance of light units.
- Efficiency and efficacy of light units deteriorates with age, therefore replace the lampbulb at least every 6 months.
- Sterilisation methods damage light guide tips and disposable covers reduce the intensity of light output.
- Should we consider the use of single-patient use light guides to improve cross-infection control to patients?

Comment

Photo-initiated materials are essential for the restorative dental practice. The authors have examined the use and maintenance of light-curing units in the dental practice by both a questionnaire and inspection. Seventy per cent of the questionnaires were returned, which is a useful response rate although the sample size of 77 practices was small.

A variety of questions was asked including, curing times for composite, the availability of instructions for use of the curing lights, whether the output of the curing units was checked, methods for both preventing contamination of the tip of the light guide and cross-infection control.

The answers were variable. For example, the intensity of the light output from 52 curing units was not routinely measured because the 35 practices concerned had no means of measuring it. Eighty eight per

cent of the practices used a method to stop composite adhering to the tip of the light guide although for nearly half (46%) this consisted of simply trying not to touch the composite resin. Thirty two per cent used a disposable cover or cling film to prevent contamination. Cross-infection control consisted of using a disinfectant wipe for 69%, 16% relied on the disposable cover or washed the tip with a bactericidal soap with a further 16% using routinely either an autoclave or cold sterilising solution. There appears to be significant poor practice in the use of these units.

The standard of maintenance tended to be low. Forty two lights were inspected: just under a third had outputs that fell below the recommended level. Thirty five per cent of the units had composite adhering to the tip of the light guide. Forty seven per cent of the units were either damaged or had been

repaired while 38% of the light guides were crazed, cracked or chipped.

The results are disappointing as many of the curing lights were in less than optimal condition. Coupled with the response that showed that 56% of practices used a curing time of 20 seconds for a 1 mm increment, many composite restorations are probably being inadequately cured.

Most owners of the lights neither maintained nor used them correctly: there is every reason to think that the results are representative of the UK as a whole. The authors have produced a useful addendum giving guidance on the use and maintenance of light curing units: we should implement the recommendations.

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