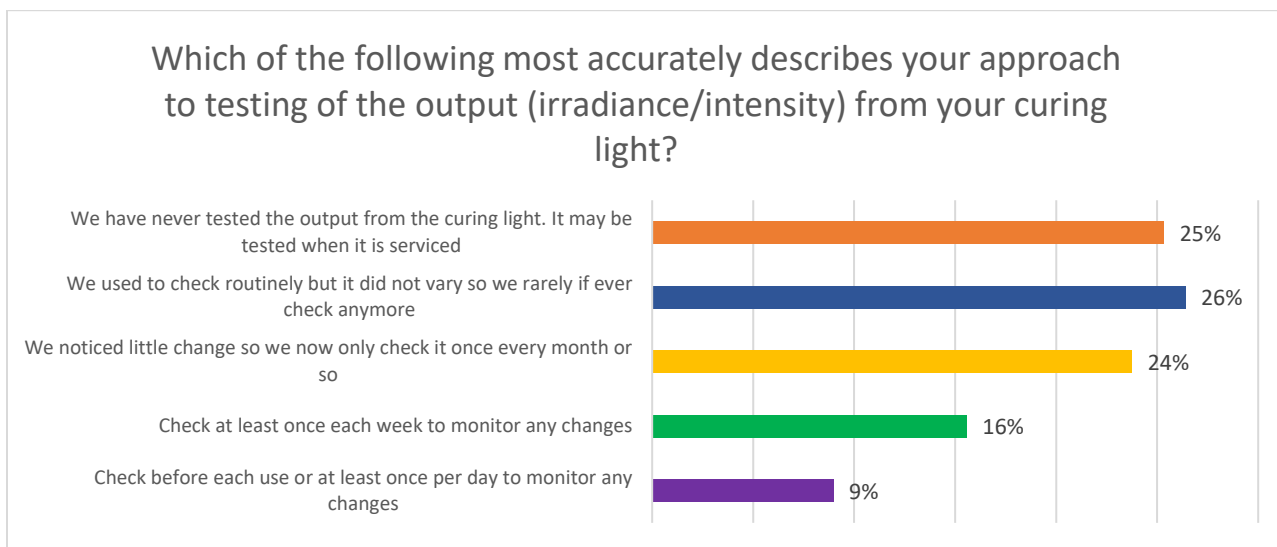


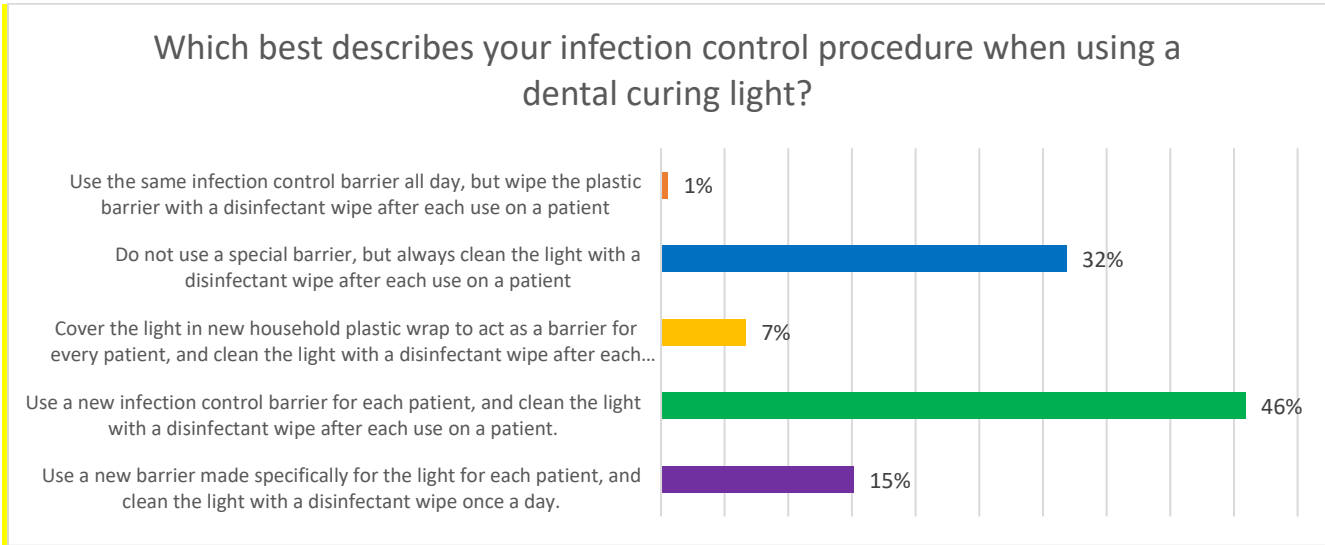
### Quick Poll Results: Status of Light Curing

The light-curing unit (LCU) has become an essential piece of equipment in the dental office. In most countries, the LCU is classified as a medical device, which means it must be tested and approved before it can be used on patients<sup>1</sup>. Dental curing lights emit large quantities of blue light between 430 and 460 nanometers. This covers the range of wavelengths shown to be most damaging to the retina<sup>2</sup>. Therefore, it is important for dental personnel to utilize appropriate eye protection when using these devices<sup>3,4</sup>. This practice not only ensures safety, but also is critical for the proper polymerization of dental restorative materials. The disinfection of the curing unit and use of barriers to avoid cross-contamination are also important for their safe and effective use<sup>1,5</sup>. However, it is often reported that few dentists regularly monitor the output from their light-curing unit, use an infection control barrier, or use adequate eye protection<sup>1,6</sup>.

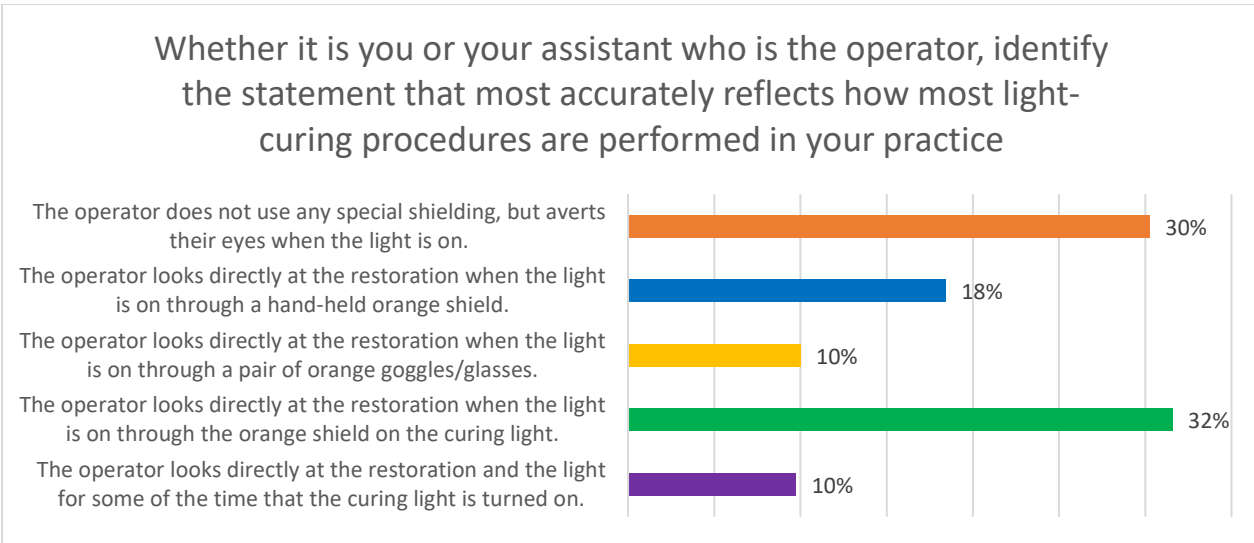
A total of 381 practitioners, 75% of whom were members of the Network, responded to a Quick Poll on Light Curing in August 2020. Of note and as below, 25% of respondents had never checked the output from their curing light, 26% used to check the output but no longer saw the need to do so because the output was always fine, and another 24% check it once a month or so. The remaining 25% check it every time they use it or once per day (9%), or at least once per week (16%), to monitor any changes.



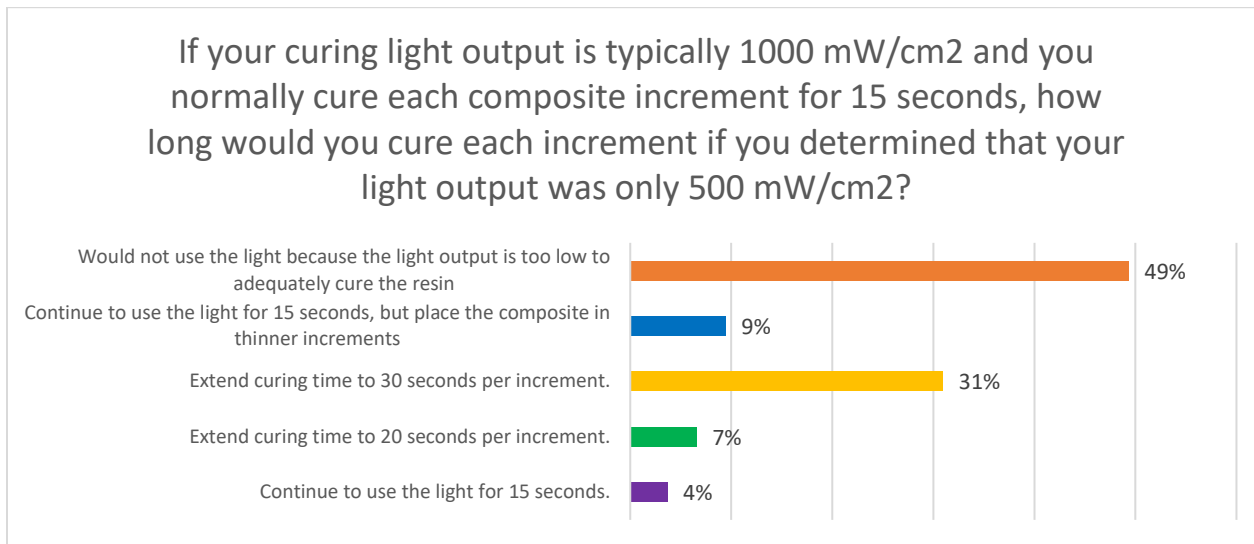
About 46% of the respondents reported that they place a new infection control barrier for each patient and clean the light with a disinfectant wipe after each patient. An additional 15% do so once each day. About 7% use a household plastic wrap instead, but disinfect with a wipe after each use. 32% of respondents stated that they do not use an infection control barrier over the light, but instead wipe it with a disinfectant after each patient.



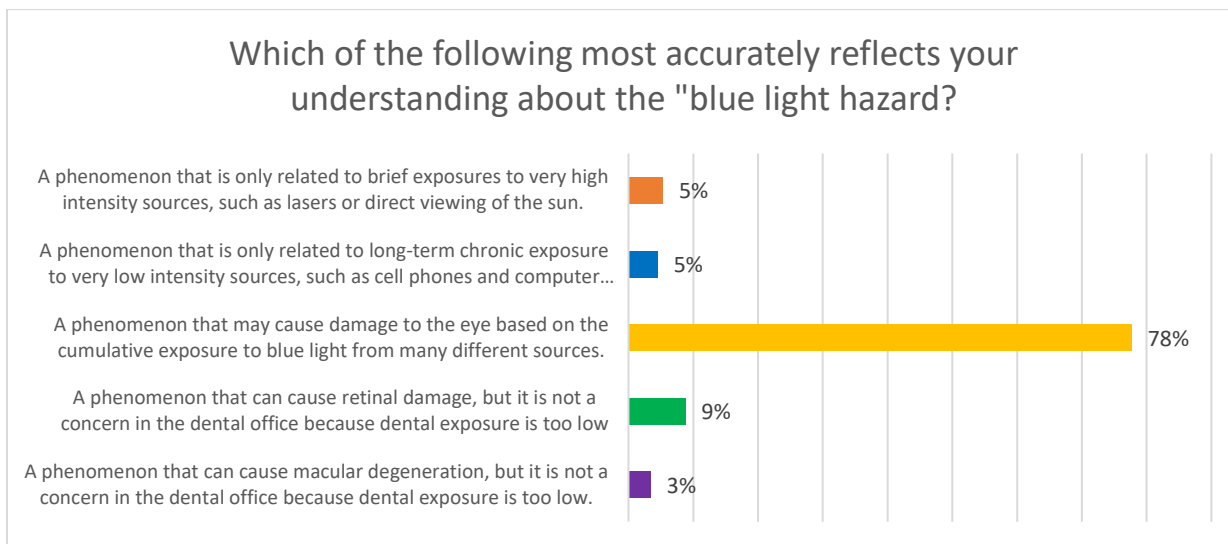
About 32% of the respondents look directly at the restoration during curing through an orange shield on the unit, a handheld orange shield (18%), or orange glasses (10%). About 10% of the respondents look directly at the curing light and the restoration for at least some of the time when they are light curing, and 30% simply avert their eyes while the device is on.



Interestingly 49% of the respondents would not use a light if it delivered below 500 mW/cm<sup>2</sup>. If their light usually emitted 1000 mW/cm<sup>2</sup>, but was now only emitting 500 mW/cm<sup>2</sup>, 49% said they would extend the curing time to 20 (7%) or 30 seconds (31%), and about 9% would use thinner increments.



Most (78%) respondents were aware that the blue light hazard refers to eye damage from cumulative exposure from a variety of sources, but 9% did not think that the curing light could cause any retinal damage because the dental exposure was too low. About 5% thought that the blue light hazard was only related to long-term chronic exposure to low intensity sources, such as cell phones and computers (5%), or from brief exposure to high intensity sources like the sun (5%). An additional 3% saw it as a phenomenon that can cause macular degeneration, but that it is too low to cause concern.



The survey revealed that there remains a lack of awareness that the light should be tested regularly, that it should be adequately covered and disinfected between patients, and that it should be operated by viewing directly through appropriate eye protection in order to optimize curing and prevent ocular damage.

Of note, the participants of this survey are motivated dentists who were willing to participate in the survey, and we thank them.

**References:**

[1] Price RB, Ferracane JL, Hickel R, Sullivan B. The light-curing unit: An essential piece of dental equipment. *Int Dent J.* 2020;70:407-17.  
 [2] ACGIH. TLVs and BEIs Based on the Documentation for Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. ACGIH. 2017; Cincinnati, Ohio.  
 [3] Bruzell EM, Johnsen B, Aalerud TN, Christensen T. Evaluation of eye protection filters for use with dental curing and bleaching lamps. *J Occup Environ Hyg.* 2007;4:432-9.  
 [4] Fluent MT, Ferracane JL, Mace JG, Shah AR, Price RB. Shedding light on a potential hazard: Dental light-curing units. *J Am Dent Assoc.* 2019;150:1051-8.

- [5] Kakaboura A, Tzoutzas J, Pitsinigos D, Vougiouklakis G. The effect of sterilization methods on the light transmission characteristics and structure of light-curing tips. *J Oral Rehabil.* 2004;31:918-23.
- [6] Frazier K, Bedran-Russo AK, Lawson NC, Park J, Khajotia S, Urquhart O et al. Dental light-curing units: An American Dental Association Clinical Evaluators Panel survey. *J Am Dent Assoc.* 2020;151:544-5 e2.