Q.A. Collectible

Sponsored by CRCPD's Committee on Quality Assurance in Diagnostic X-Ray (H-7)

Dental Device for the Normalization and Monitoring of Intraoral Film Processing Systems

The Dental Radiographic Normalizing and Monitoring Device, developed by the Food and Drug Administration (FDA), provides a simple and effective test tool for monitoring intraoral processing system performance in dental offices of all sizes. The Committee on Quality Assurance believes this test tool can be an important part of dental quality control. It is very easy to use.

Normalizing is done when the quality control program is first started by establishing a baseline comparison film. The normalizing process should be carried out using normal bitewing technique settings and new developer solutions. Place the test tool on a flat surface. The same flat surface should be used each time the test is performed to maintain the same amount of back scatter. Insert an intraoral film under the copper square and center the copper square under the tubehead cone. The cone should be in contact with the test tool. Expose the film and develop it as usual. Insert the developed film into the designated area and place the device on a view box. Using the sliding seven-step film strip, match the density on the exposed film to a step on the sliding film strip. A density match of steps three, four, or five will indicate that the technique factors used are adequate and that patient exposure is in the acceptable range. This test will work for any speed of intraoral film.

A chart is included on the device that translates the density achieved on the film to an exposure range for the entrance skin exposure. A density match of "step 3" indicates the ESE is in the lower portion of the acceptable range for the film type and techniques used. A density match of "step 5" indicates an ESE in the upper portion of the acceptable range. If the matched step falls above or below steps 3-5, action should be taken to raise or lower the film density accordingly, and the process repeated. Assuming a fixed kVp system, the first action to be taken would be to increase or decrease the time selection, depending on whether the film was too light or dark.

After establishing a "normalization level," monitoring can be performed on the system by repeating the same steps used for normalization. By comparing the step number obtained by monitoring to the step number obtained by normalization, the facility can determine if their system is still operating within limits. If the step number obtained during monitoring starts to shift, the facility can investigate the cause of the shift and prevent the further degradation of the image by taking whatever corrective action is necessary to correct the problem.

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We feel system quality control in a dental facility is essential and that this device is one way for facilities to monitor their intraoral processing systems. Monitoring of this type will help reduce patient exposure, reduce the number of retakes needed, signal the need to change processing solutions, allow the dentist to track the entrance skin exposure per bitewing exam, and assist the dentist in developing proper techniques for high quality radiographic exams with the minimum amount of patient exposure per exam.

This Q.A. Collectible is not an endorsement of this particular product. It is a description of a product that is currently available and provides a benefit to dental offices.

The most current NEXT data for D and E speed film indicated the 75 percentile for dose should be as follows D speed 262 mR and E speed 183 mR.

A source for the dental radiographic normalizing and monitoring device mentioned in this QAC is X-Ray Quality Control; Ellen Garbarino, P.O. Box 5216, Vail, CO 81658; Phone 970-476-5126; www.xrayqc.com.

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