Exposing the facts on CBCT exposure

There are many misconceptions about the radiation dosages of medical CT compared to CBCT scans, and about exposure of the differing CBCT machines available to dentists today.

Here's a quick and fun true/false test that sheds some light on this serious subject. See how well you do.

1. Compared to medical CT scans, CBCT scans offer reduced exposure to radiation.
2. The radiation exposure of a CBCT scan is significantly higher than a full-mouth intraoral X-ray series.
3. The 2-D pans from CBCT machines deliver higher levels of radiation exposure than those from a traditional 2-D pan machine.
4. The larger the CBCT's field of view (anatomical area scanned), the greater the radiation.
5. The potential of cone-beam scanners for collimating the primary X-ray beam — that is, to scale down the view to a smaller region of the anatomy — can create a reduction in radiation exposure.
6. Compared to medical CT scans, cone-beam radiography takes much more time to gain the radiographic 3-D data.

The answers

1. Compared to medical CT scans, CBCT scans offer reduced exposure to radiation.

True. Medical CT scans of the maxillofacial area can be as high as 2,100 microsieverts, whereas a CBCT scan of the same region can be as little as 31 microsieverts (8 cm by 14 cm, medium resolution from Gendex GXCB-500*).

2. The radiation exposure of a CBCT scan is significantly higher than a full-mouth intraoral X-ray series.

False. At 150 microsieverts, the typical FMX can be as much as four times greater than a CBCT scan.

3. The 2-D pans from CBCT machines deliver higher levels of radiation exposure than those from a traditional 2-D pan machine.

True and false. Because the reconstructed pan is created from 3-D scan data, it has the same exposure as the scan itself, which is higher than that of the standard digital pan that, on average, runs approximately 10 microsieverts. However, if the machine has a true 2-D panoramic function, the exposure is in the same range as the standard digital pan.

4. The larger the CBCT's field of view (anatomical area scanned), the greater the radiation.

False. Some smaller view machines deliver higher exposure than other machines' larger views because of the manufacturers' capturing technologies.

5. The potential of cone-beam scanners for collimating the primary X-ray beam that is, to scale down the view to a smaller region of the anatomy — can create a reduction in radiation exposure.

True. Having a larger view machine that can be collimated to, for example, a single arch, does offer lowered exposure while retaining the flexibility that is important in most dental applications.

6. Compared to medical CT scans, cone-beam radiography takes much more time to gain the radiographic 3-D data.

False. While medical CT scans can take up to 10 minutes to expose the anatomy once the patient is positioned, a CBCT scan can take as little as 8.9 seconds*.

The "multiple slice" capture method of CT scans causes overlapping, and thus greater exposure, while the cone-shaped single rotation of cone beam can acquire a 3-D image more quickly, efficiently and safely.

Learn more at *www.dental-tribune.com/articles/content/id/1311/scope/specialities/section/general_dentistry*.

And be sure to stop by the Gendex booth (No. 1402) to learn more about radiation statistics and the treatment planning capabilities of the GXCB-500. DT

Television viewers experience Icon

Icon, the caries infiltrant system introduced by DMG America in September, made its television debut last year when it was featured on 10 Fox News segments and on BetterTV, a daytime nationally syndicated lifestyle show, in December.

Icon was also featured on "The Doctors," a nationally syndicated television show produced by Dr. Phil, in October.

Dr. Thomas P. Connelly, a cosmetic dentist who practices in New York City, was interviewed in the segments about how quickly and painlessly the Icon system can be used to arrest dental caries and eliminate unattractive white spot — evident after wearing braces — with no drilling, anesthetic or loss of healthy tooth structure.

In the Fox News segment, a patient who said she tries to avoid drilling and needles as much as possible received Icon treatment to arrest an incipient carious lesion.

"With the Icon system … we can prevent it from progressing, fill it without drilling and without anesthetic … and prevent it from becoming a full blown cavity," Connelly explained. "What we're left with is a tooth-resin hybrid structure that is rebuilt, re-strengthened and resistant to decay."

For more information or to view full clips from the shows, visit the Drilling No Thanks! Web site at www.drilling-no-thanks.com. DT