Protecting the Patient from Unnecessary X-Radiation

Radiation Doses

Radiation exposure is measured in units known as roentgens (R). This measure was established in 1937 by the International Committee for Radiological Units. A roentgen measures how much radiation is necessary to alter the air, or ionize it, and produce an electric charge.

Other terms used with measuring radiation include:

- **RAD**, or radiation absorbed dose, is also known as a gray (Gy). This unit is used to measure how much actual radiation was absorbed by an object or substance. It is a measure of dose.
- **REM**, or roentgen equivalent man, is a measure of how much radiation was actually absorbed in a human, taking into account its biological effects.
- **MPD**, or maximum permissible dose, is concerned with how much radiation is safe. This concept was developed by the National Council on Radiation Protection and Measurements (NCRP). MPD is defined as the maximum dose equivalent that a body is permitted to receive in a specified period of time without causing any damage.

**ALARA**

The ALARA concept was designed to help people understand how to approach radiation. ALARA stands for "as low as reasonably achievable." This means exposing patients and operators to the lowest possible dose of radiation that will achieve results. Dental radiographs should never be prescribed on a routine basis. Their use should be based on clinical need.

**ADA Guidelines on Exposure Frequency**
The ADA issued guidelines in 2004 to guide dental offices on patient use of dental x-rays. Before any radiographs are ordered, a complete oral examination should be conducted and a patient history should be taken, including any medical conditions as well as previous exposure to x-rays. This information should weigh into the decision to prescribe x-ray imaging.