What does IR(ME)R stand for?

Ionising Radiation (Medical Exposure) Regulations.

What does IRR stand for?

Ionising Radiations Regulations.

What is the purpose of IR(ME)R 2017?

To protect patients from the harmful effects of ionising radiation during medical exposures.

What is the purpose of IRR 2017?

To protect staff and the public from occupational exposure to ionising radiation.

Who is the Referrer under IR(ME)R?

The registered healthcare professional who requests a radiograph for diagnostic purposes.

Who is the Practitioner under IR(ME)R?

The person responsible for justifying the exposure to ensure the benefit outweighs the risk.

Who is the Operator under IR(ME)R?

The person carrying out the practical aspects of the exposure.

What does ALARA mean?

As Low As Reasonably Achievable — the principle for minimising radiation exposure.

What is the function of a lead apron?

To protect the patient from unnecessary scatter radiation.

What is the role of a thyroid collar?

To protect the thyroid gland from scatter radiation.

What unit measures radiation dose?

The Sievert (Sv).

What is the maximum permissible dose for members of the public?

1 mSv per year.

What is the annual dose limit for radiation workers?

20 mSv per year.

Which legislation requires a Local Rules document?

Ionising Radiations Regulations (IRR) 2017.

What is included in Local Rules?

Procedures for safe working with radiation, responsibilities, and controlled area details.

Who appoints the Radiation Protection Supervisor (RPS)?

The employer.

What is the role of the RPS?

To ensure compliance with Local Rules and safe radiation practices in the workplace.

Who is the Radiation Protection Adviser (RPA)?

A qualified expert who provides advice on radiation protection and compliance.

How often should dental X-ray equipment be tested?

At least every 3 years or according to manufacturer’s recommendations.

What is a controlled area?

An area where specific safety precautions are required to control exposure to radiation.

What is the minimum distance an operator should stand from the X-ray tubehead during exposure?

At least 2 metres away and preferably behind a protective barrier.

What is the purpose of a rectangular collimator?

To reduce patient dose by limiting the size of the X-ray beam.

What is the difference between intraoral and extraoral radiographs?

Intraoral radiographs have the film inside the mouth; extraoral are taken outside the mouth.

Name three types of intraoral radiographs.

Periapical, bitewing, and occlusal.

What is a periapical radiograph used for?

To show the entire tooth and surrounding bone.

What is a bitewing radiograph used for?

To detect interproximal caries and assess alveolar bone levels.

What is an occlusal radiograph used for?

To show larger areas of the maxilla or mandible.

What is an OPG used for?

To provide a panoramic view of the teeth, jaws, and supporting structures.

What is a lateral cephalometric radiograph used for?

To assess facial growth, orthodontic treatment planning, and skeletal relationships.

What is radiographic density?

The overall blackness of a radiographic image.

What affects image contrast?

kV (kilovoltage) setting — higher kV = lower contrast; lower kV = higher contrast.

What affects image density?

mA (milliamperage) and exposure time.

What causes a light radiograph?

Underexposure or insufficient development time.

What causes a dark radiograph?

Overexposure or excessive development time.

What causes a fogged film?

Exposure to stray light or outdated film.

What causes cone-cutting?

Incorrect alignment of the X-ray beam with the image receptor.

What is elongation in radiography?

When the image appears longer due to insufficient vertical angulation.

What is foreshortening?

When the image appears shorter due to excessive vertical angulation.

What is the focal spot?

The area on the anode where X-rays are produced.

What material is the target of an X-ray tube made from?

Tungsten.

What gas is inside a dental X-ray tube?

A vacuum — there is no gas; it is evacuated.

What part of the X-ray tube emits electrons?

The cathode filament.

What converts the electrons into X-rays?

The tungsten target (anode).

What is filtration used for?

To remove low-energy X-rays that do not contribute to image formation.

What is the function of collimation?

To limit the size and shape of the X-ray beam to the area of interest.

What is scatter radiation?

Secondary radiation that is deflected in different directions from the primary beam.

What is the inverse square law?

Radiation intensity decreases with the square of the distance from the source.

Why is lead shielding important?

To protect against unnecessary exposure from scatter radiation.

What is a film holder used for?

To position and stabilise the film or sensor in the patient’s mouth.

Why should the operator avoid holding the film?

To prevent unnecessary exposure to radiation.

What is the ideal temperature for manual film processing?

20°C.

What are the steps of manual film processing?

Developing, rinsing, fixing, washing, and drying.

What happens if a film is not fixed properly?

It appears milky and can deteriorate over time.

What is the ideal developer time at 20°C?

Approximately 5 minutes.

What is automatic processing?

A machine-based method that develops and fixes films quickly and consistently.

What is a digital sensor?

An electronic device that captures X-ray images without film.

Name two types of digital sensors.

Direct (CCD/CMOS) and indirect (PSP plates).

What are the advantages of digital radiography?

Lower radiation dose, instant image viewing, and easier storage.

What is image resolution measured in?

Pixels or line pairs per millimetre (lp/mm).

What causes motion blur?

Patient or tubehead movement during exposure.

What is the advantage of using a long cone?

It reduces magnification and improves image sharpness.

What is the purpose of film speed groups?

To indicate the sensitivity of the film — faster films require less exposure.

What are the common dental film speeds?

D, E, and F-speed is the fastest and requires the least exposure.

What is a latent image?

The invisible image formed on the film after exposure, before processing.

What chemical removes unexposed silver halide crystals?

Fixer solution.

What chemical reduces exposed silver halide crystals to black metallic silver?

Developer solution.

What are intensifying screens used for?

To reduce patient dose by converting X-rays into visible light.

What is a grid used for?

To reduce scatter radiation reaching the film, improving image contrast.

What does kVp control?

The penetrating power and contrast of the X-ray beam.

What does mA control?

The quantity of X-rays produced.

What is exposure time measured in?

Seconds or fractions of a second.

What is the purpose of a bite block?

To hold the film/sensor in position during exposure.

Why is correct patient positioning important?

To avoid image distortion and ensure diagnostic quality.

What is the orbitomeatal line used for?

As a reference line for positioning in extraoral radiography.

What error causes overlapping of contacts in bitewings?

Incorrect horizontal angulation.

What error causes a missing apex in periapical?

Incorrect vertical angulation or sensor positioning.

What appears if the film is placed back to front?

A herringbone or tyre-track pattern.

What is a radiopaque area?

An area that appears white on a radiograph because it blocks X-rays.

What is a radiolucent area?

An area that appears dark because X-rays pass through easily.

What is beam hardening?

The process of filtering out low-energy photons, increasing average beam energy.

What safety signage must be displayed in X-ray rooms?

Warning signs showing the radiation trefoil symbol and exposure light indicators.

What should be done if a film or sensor error is suspected?

Do not re-expose unnecessarily; identify and correct the error cause first.

What should be recorded in the patient notes after radiography?

Justification, exposure details, and findings or interpretation.

Why is radiographic auditing important?

To ensure image quality, safety, and compliance with regulatory standards.