



Radiographs: Is there a better option?

Technology is a wonderful thing. Before you've had the chance to settle into high definition films, along comes 4K HD, closely followed by Ultra 4K HD, seemingly in the blink of an eye. The constant need to evolve and meet the needs of the consumer – or in dentistry's case the patient – has never been greater, especially in these unusual times.

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With information free and fast flowing, patients are better equipped to make decisions about their treatment.

For many, that means matching their will and desire, but for some, it's about safety. How would a world without the need for repeated exposure to radiation during routine maintenance look? I spoke to Dr Elaine Halley from Cherrybank Dental Spa to find out – and discover what's next.

To what extent do you feel patients are concerned about radiation from dental radiographs?

EH These days patients research themselves and the majority are well informed. Most will tolerate radiographs but are aware of the issues with radiation and welcome anything that can reduce the need for exposure. A smaller minority, often those receiving radiation for other reasons in medicine or with a history of that, will refuse dental radiographs for periods of time.

How has technology evolved to meet changing safety and patient expectations?

EH The advent of digital radiography has provided patients and dentists with a degree of reassurance that the radiation doses have

been reduced right down compared with standard x-rays, as the computer can enhance the image. Images are clearer and can be sharpened and analysed digitally. They can be magnified on screens to allow patient information and education. However, the sensitivity of bitewing radiographs to detect early enamel caries can be a challenge. The advent of the Itero 5D and the ability to show the images to patients with very clear images, certainly addresses the concerns of patients about radiography but also gives the dental practitioner confidence in the ability to diagnose and treat early.

How have guidelines evolved to meet these changes?

EH The FGDP(UK)'s guidance on Selection Criteria for Dental Radiography is in its 3rd update since 2018. The guidance on their website states *'The update to the third edition takes into account the Ionising Radiation Regulations 2017 (IRR17), which took effect on 1 January 2018, and the Ionising Radiation (Medical Exposure) Regulations 2017 (IRMER17), which came into effect on 6 February 2018. IRR17 supersedes IRR99, and IRMER17 has replaced both the original IRMER 2000 and the amendments from 2006 and 2011. Both apply in England, Scotland and Wales; dentists in Northern Ireland should continue to comply with the existing local regulations.'*

All radiation exposure requires to be justified according to the risk status of the patient. The GDC guidelines show that this justification must be clearly recorded in the notes.

Is there anything that truly replicates a radiograph?

EH As yet, and in my opinion, there is nothing yet that truly replaces a radiograph, but there are limitations especially with regards to sensitivity with early caries detection. The frequency with which radiographs for high caries risk individuals can be taken without concern of missing information can certainly be reduced with adjunctive methods of detection.

What would you describe as 'unnecessary screenings'?

EH If the regulations are being followed then there should be no 'unnecessary screenings'. However, the increased frequency for high risk individuals of posterior bitewings every six months until no new caries is detected could certainly be reduced if another method

of detecting early interproximal caries was employed. In my own experience, if I detect early enamel caries with the 5D, I can compare this to the findings on a bitewing radiograph but I can then also repeat the 5D at every recall visit without any concern about either missing a progression or needing to prescribe an increased frequency of radiographs. The monitoring aspect of the 5D is extremely beneficial and can be used by hygienists and dental therapists at recall appointments.

The FGDP(UK) Selection Criteria for Dental Radiography 2017 states that 'In the diagnosis of caries in children, the weight of expert opinion supports the statement that caries should be diagnosed as early as possible to allow management before cavitation.' This management and diagnosis in both children and adults is enhanced with the 5D technology.

If dentists may still need to take a traditional x-ray, does this not make the iTero an expensive optional extra?

EH The increased sensitivity of the 5D iTero screening means that lesions are detected with certainty in the early enamel stage and so early intervention can prevent more invasive dentistry. This technology provides early detection. It does not replace the radiograph but it provides more sensitive screening for early caries without the need for additional radiation. In my experience, utilising the 5D routinely with my dental therapist, we have found early enamel lesions that are not obvious on bitewing radiographs because they are confined to the enamel, and certainly not visible clinically. This has allowed us to intervene early, using various techniques for early management including Preventive Resin Restorations, fluoride recommendations and using early sealing of the enamel with ICON by DMG. We are then able to monitor the lesions at regular intervals without having to increase the frequency of bitewing radiographs.

Could you foresee x-rays being completely phased down and out in the way amalgam is?

EH Caries detection is only one reason why we take radiographs. We are also assessing for bone levels, periapical health, pathology etc and so whilst any technology that reduces harmful radiation is welcomed, I do not foresee that radiographs will be phased out without any major technology breakthroughs.

Childhood tooth decay is on the increase. Does this pose a greater risk to safety?

EH As childhood decay is on the increase, it is important to consider other methods of engaging with parents and children. The visual representations of early caries with the iTero 5D help to provide evidence for parents and children as to why early measures of prevention could be of benefit. One of the challenges in practice can be communicating the benefit of prevention and early intervention. It can be hard to justify with words alone, and bitewings often cannot illustrate early enamel interproximal caries to an untrained eye. The images on 5D are real-time and it is easy to compare a healthy site to a site with decay. The images can be used to educate and motivate our patients to value the early intervention and to feel reassured that we can monitor progression and risk status frequently and safely. I found some early enamel lesions in lower premolars on my 18yr old daughter. They were not visible on bitewings. I have sealed them with ICON using separation and as a mother and a dentist, it gives me huge reassurance that I can monitor frequently without additional radiation. ♦



Dr Elaine Halley is a highly trained and experienced general and cosmetic dentist who attracts patients from Perth, Edinburgh, Glasgow, Fife, Dundee, and all over Scotland. In order to maintain her knowledge of the very latest in general dentistry, cosmetic dentistry, and spa treatments, she is a member of societies, academies and associations, including the British Dental Association

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