Caries prevention **for older people**

Martina Hayes explains how to adapt and treat the changing age profile of the Irish patient

Projections by the Central Statistics Office for the Pensions Board (2005) indicate that, in Ireland, life expectancy is expected to increase for both males and females, and that the proportion of the population aged over 65 is projected to rise from 11 per cent currently to 17 per cent by 2026.

This trend is set to continue through to 2056, by which time it is estimated that older people will comprise 29 per cent of the Irish population. This projected pattern of population ageing will have profound consequences for Irish dentistry.

These emerging trends have significant implications for the clinician (Burke et al., 2011). The older, now partially dentate generation, will present with a variety of oral conditions that reflect a lifetime's exposure to adverse activities and pathological influences. The dental diseases to which the older generation are particularly prone include attrition, periodontal disease, missing teeth, poor-quality alveolar ridges, ill-fitting dentures, mucosal lesions, oral ulceration, xerostomia, oral cancers and rampant caries (Chalmers, 2006) *(Figure 1)*.

The available data worldwide shows that dental caries is a major cause of tooth loss in older people, with resulting social and behavioural difficulties. Maintaining a natural, functional dentition of more than 20 teeth into old age plays an important role in having a healthy diet rich in fruit and vegetables, a satisfactory nutritional status and an acceptable body mass index (Mercenes et al., 2003).

Many older people also carry the burden of systemic medical conditions such as arthritis, hypertension, lung disease and cancer. These can all reduce the priority of oral hygiene.

Many older people are also dependent on daily medications, and xerostomia is a side-effect of many commonly prescribed drugs such as antihypertensives and anxiolytics. Dry mouth is a major risk factor for dental decay – saliva is essential to neutralise acid produced by bacteria and to flush away debris.

Loss of manual dexterity, secondary to arthritis or neuromuscular degeneration, presents many older patients with an additional obstacle in maintaining adequate plaque control. Something as simple as holding a toothbrush can be difficult and manipulation of dental floss is often impossible. Diminishing eyesight can also hinder proper hygiene techniques (Shay 2009). Patients may be embarrassed to admit to any decline in physical capabilities. Dentists and dental hygienists should consider this possibility if they observe a decline in oral hygiene in an older patient and highlight aids such as toothbrush grips, electric toothbrushes, holders for interdental floss and mouthwashes. Older patients may experience other barriers to dental care such as limited financial resources, difficulties in accessing transport and dental phobias, due to past experiences or negative perceptions of the profession.

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It is well known that dental caries can be prevented or arrested in its early stages. Patients should have their caries risk assessed at every dental examination to ensure that any changes will be detected as early as possible. Individually tailored oral hygiene instruction and dietary advice should be given to all patients. Any advice should be provided in written form for the patient to refer to, or to give to a relative or carer to read. It is advisable to use a large font and to limit advice to a few key messages.

The simplest home-based measure to reduce caries risk is to incorporate a mouthwash into the daily routine. These are easy to use and do not require a high level of manual dexterity. Alcohol-free mouthwashes are more suitable for patients with dry mouth and there are a number of mouthwashes specifically formulated to ease the symptoms of xerostomia.

One such example is the Biotène system, which includes mouthwashes, gels and toothpastes containing bioactive enzymes, designed to protect teeth and soft tissues *(Fig 2)*. Patients should be advised to avoid using fizzy drinks or acidic sweets to alleviate their dry mouth and instead to direct them to an alternative such as sugar-free chewing gum. While many older patients will be aware of the role of sugar in dental disease, the dangers of acid erosion may be less well known among this group.

Fluoride mouthwashes can be a sensible additional source of fluoride and daily use of 0.2 per cent sodium fluoride mouthwash is frequently recommended for patients at high risk of caries. It may be preferable to ask patients to use the mouthwash at a different time of day to tooth brushing. This allows spacing of fluoride exposure throughout the day to maximise its benefit;

Fig 1

Typical presentation of dental decay in an older patient. (Photo supplied by Dr Gerald McKenna)

Fig 2

Biotène Oral Rinse (GlaxoSmithKline)

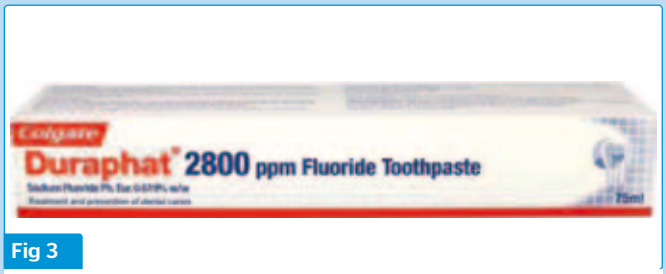

Fig 3

Duraphat 2800ppm Fluoride Toothpaste (Colgate)

after lunch or dinner may be suggested as a suitable time.

Older adults experience faster plaque accumulation than younger adults, due to the duel effects of gingival recession and reduced salivary function. Since the work of Loë in 1970, a succession of studies have proven the effectiveness of chlorhexidine 0.2 per cent mouthwash in plaque inhibition. Chlorhexidine mouthwash is used in hospitals and nursing homes throughout the world to aid oral hygiene and, despite the potential for staining, is a very useful adjunct in elderly patients who have difficulty in maintaining adequate plaque control through brushing alone. Chlorhexidine works best on a plaque-free surface to prevent plaque reforming, but it can also be effective in the presence of plaque (Clarke et al., 1991). Chlorhexidine mouthwash should be used at a different time to tooth brushing, as many brands of toothpaste contain sodium laurel sulphate – a detergent which inactivates chlorhexidine.

High fluoride toothpaste containing 2800ppm is available on prescription in Ireland *(Fig 3)*. A meta-analysis of six randomised controlled trials (Lu et al., 1987, Ripa et al., 1988, Stephen et al., 1988, Marks et al., 1992, Stookey et al., 2004) demonstrated that 2800ppm toothpaste resulted in a significantly lower caries increment than a 1100ppm control (Bartizek et al., 2001). As patients are well used to using toothpaste, a change to a high-fluoride toothpaste such as Colgate Durpahat 2800ppm should be easily tolerated. High-strength fluoride toothpastes should be kept out of reach of young children and patients should be encouraged to expectorate after brushing.

A topical paste containing bio-available calcium and phosphate has been commercially developed as Recaldent, which is sold for professional use as Tooth Mousse or as MI Paste Plus (in combination with 900ppm fluoride) *(Figs 4 and 5)*. As it is derived from milk casein, all potential users of Recaldent products should be be asked if they ever have any allergic reactions when drinking milk.

However, older patients with lactose intolerance can use Recaldent products, as they do not contain lactose. These products can be applied at night time after tooth-brushing and the manufacturers advise application of a pea-sized amount to each arch using a clean dry finger. The paste must be held in the mouth at least three minutes as the longer it is maintained in the mouth with saliva, the more effective it is. After spitting out, patients are advised not to eat or drink for 30 minutes and rinsing is to be avoided.

For older patients with a high caries rate or poor compliance with oral hygiene instruction, there are a number of surgery-based interventions to reduce caries risk. The incorporation of chlorhexidine, fluoride and sodium diamine fluoride (SDF) varnishes in the control of dental caries in older patients is a relatively recent development *(Fig 6)*. All have been shown to be effective at reducing the risk of future root caries in randomised controlled clinical trials. The application of varnishes is simple, quick and non-invasive and can be used in a domiciliary setting. Furthermore, it reduces dependence on patient compliance for success, and treatment can be provided by a dental hygienist.

It is essential for dentistry to adapt to the changing age profile of our patients. A reduction in the future incidence of caries in the elderly is dependent on changing their oral hygiene and dietary patterns. As a profession, we need to consider the changing oral hygiene needs of our patients as they move into old age and to implement caries prevention measures in a timely fashion. ■

ABOUT THE AUTHOR

Martina Hayes qualified from Cork University Dental School and Hospital in 2006. She went on to complete the General Professional Training programme in Scotland, during which time she completed her MFDS examinations. In 2008, Martina returned to Ireland and enjoyed working in Abbeytrinity Dental Practice in Tuam, Co Galway. Martina is currently a clinical fellow in restorative dentistry and is completing a PhD in the area of dental decay in the elderly.

Fig 4

GC Tooth Mousse incorporating Recaldent (GC Dental)

Fig 5

GC MI Paste Plus incorporating Recaldent (GC Dental)

Fig 6

Cervitec Plus chlorhexidine varnish preparation (Ivoclar Vivadent)