Oral Health and Parkinson's Disease

Dr Graeme Sullivan *BA BDentSc PGDip PhD*

Lecturer and Researcher

School of Pharmacy and Biomolecular Sciences

Royal College of Surgeons in Ireland

6th December 2023



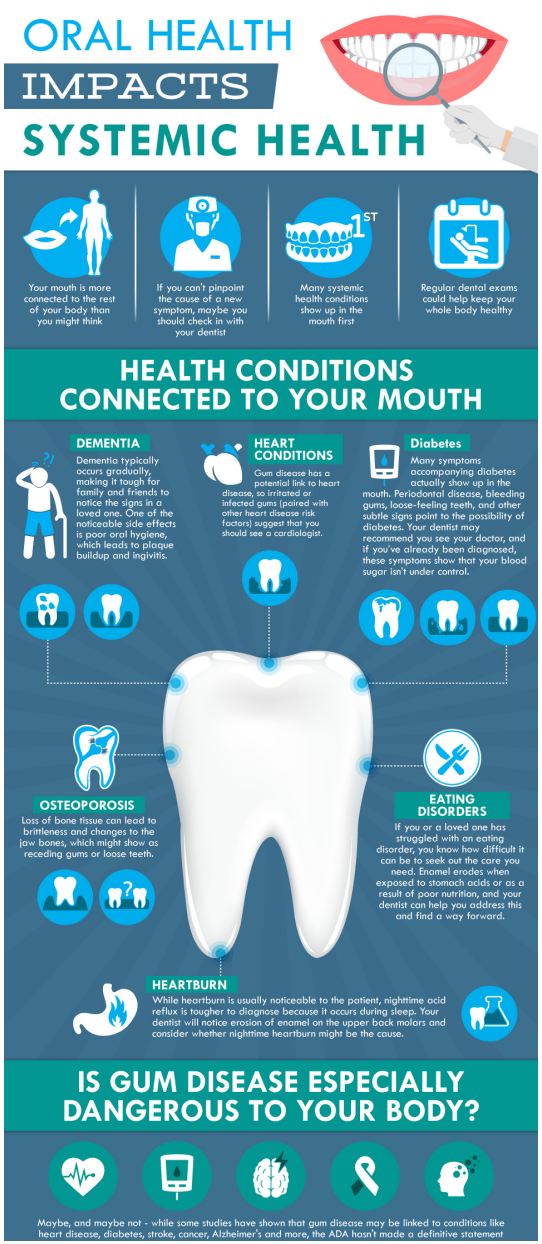
graemesullivan@rcsi.ie

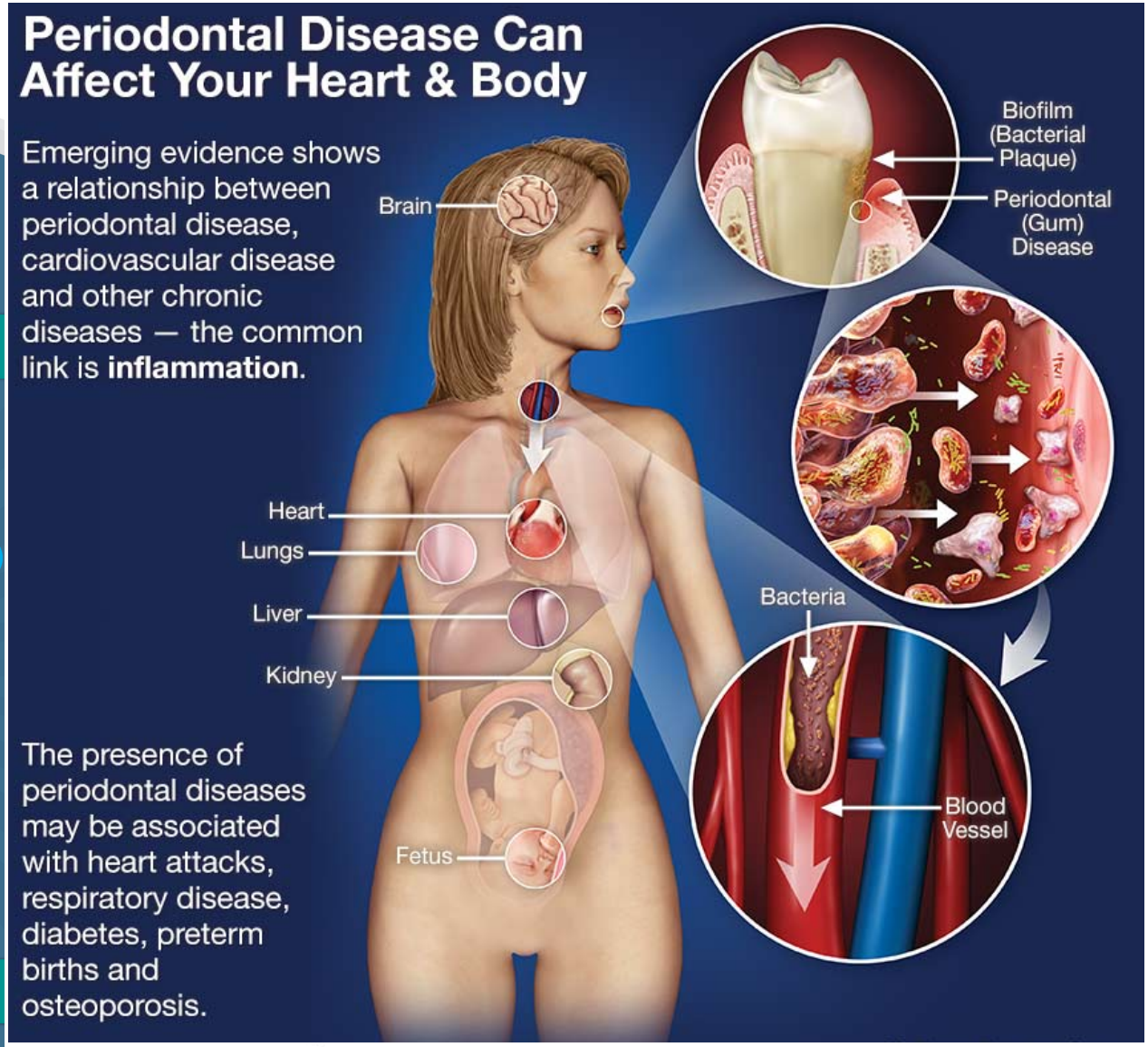
RCSI
Leading the world to better health

The Basics:

- Dental and oral care is very important for general good health.
- Oral diseases such as tooth decay (caries) and gum (periodontal) disease may impact a number of systemic conditions and have been linked to increased risk of cardiac disease, high BP, stroke, dementia and diabetes among others.
- Keeping your mouth healthy is essential for tasting, chewing, swallowing and speaking and will contribute to a better general well-being. A healthy mouth can prevent oral pain and discomfort.
- A good oral hygiene routine, together with a well-balanced diet and regular visits to the dentist, is vital to maintaining a healthy mouth.
- The mouth serves as a “window” or ”gateway” to the rest of the body, providing clues about your overall health, or problems that can affect the rest of your body.

RCSI
Leading the world to better health





Sources:
http://www.webmd.com/oral-health/news/20130731/dental-health-dementia
http://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/dental/art-20047475
https://www.perio.org/consumer/heart_disease
https://www.perio.org/consumer/diabetes.htm

- **>80% of adults (>35 years old) are affected by some form of gum disease**
- **This is a chronic condition**
- **Inflammation is central to this process**
- **ORAL HEALTH IS ESSENTIAL TO OVERALL WELL-BEING**

The Basics:

Advice for good oral health includes:

- Brush your teeth twice per day (for at least 2mins) with a fluoride-containing toothpaste (with *1350-1500ppm fluoride). Replace brush every 3-4months.
- There are non-foaming toothpastes (i.e. without sodium lauryl sulfate/SLS) available now (e.g. OraNurse®, Biotène®, BioXtra® products).
- Brush last thing at night and one other time during the day.
- Floss (or *Waterpik®) your teeth at least once per day (ideally before bed).
- Try not to rinse your mouth after spitting out toothpaste so that the fluoride continues to work.
- Limit sugary food and sugary drinks (including acidic juices) to mealtimes and no more than 4 times a day (frequency of sugar attack is key).
- Visit your dentist regularly (at least every *6 months).

RCSI
Leading the world to better health



Oral Health in Ireland:
A Handbook for Health Professionals

Second Edition 2014

https://www.dentalhealth.ie/assets/files/pdf/ohil_final.pdf

Dental Health Foundation, Ireland

Oral Health Services Research Centre University College Cork





https://www.swissdentalcenter.com/oral-health-overall-health/

How might Parkinson's affect teeth and oral health?

- Keeping teeth and gums healthy can be more difficult if you have PD.
- Motor symptoms, such as bradykinesia and rigidity, may hamper good daily oral hygiene care.
- PD can also affect the orofacial muscular system, causing difficulties in swallowing, chewing and controlling dentures.
- In addition, the oral environmental balance and the quality of the saliva can be influenced by medication.

1. **Increased risk of tooth decay (caries)**
2. **Increased risk of gum inflammation (& periodontal disease)**
3. **Difficulty swallowing (dysphagia)**
4. **Dry or burning mouth (xerostomia or glossodynia)**
5. **Drooling (sialorrhoea)**
6. **Difficulty controlling dentures**

RCSI
Leading the world to better health

How might Parkinson's affect teeth and oral health?

1. Increased risk of of tooth decay (caries)

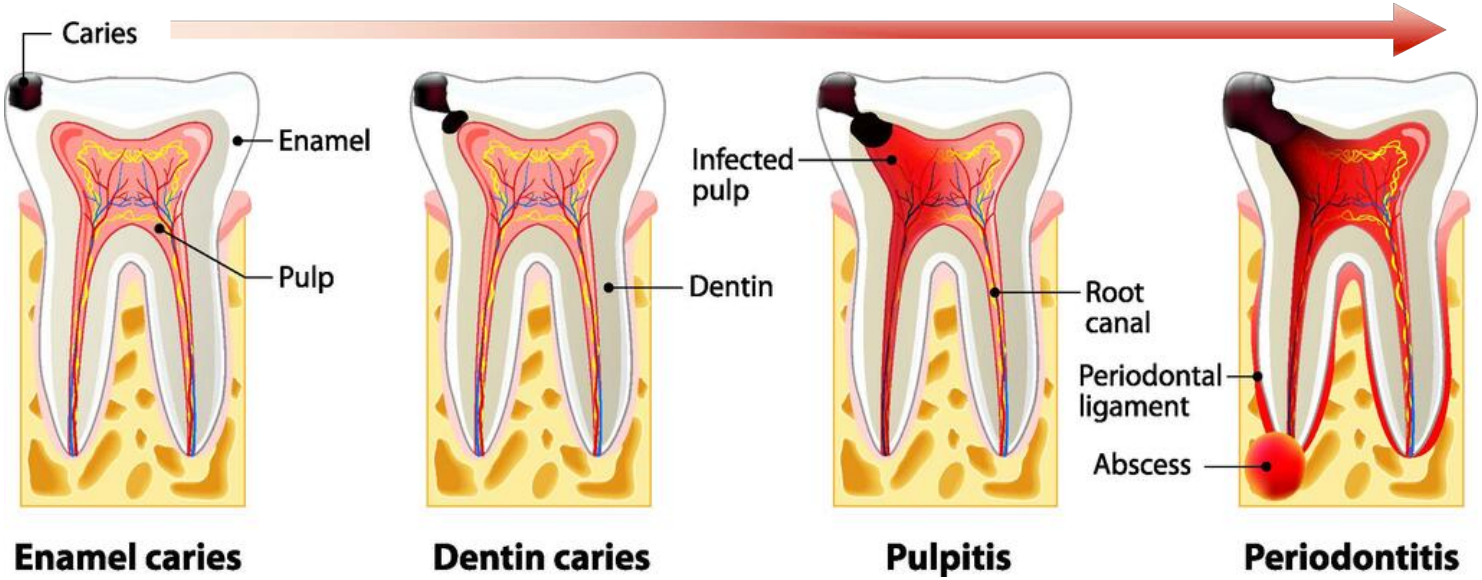
- Caries (known as tooth decay or cavities) is caused by bacteria in plaque. These bacteria convert sugar into acid, which damages the teeth. To prevent caries, it is therefore important to limit the frequency and amount of sugar intake and to remove plaque from teeth surfaces. Fluoride in toothpaste can contribute to stronger teeth.
- Recent research demonstrates that people with PD tend to have more caries.

Advice;

- **Limit sugary food to mealtimes only - no more than four times a day.**
- **Limit sugary drinks to mealtimes only. Tea/coffee should be taken without sugar between meals.**
- **Do not rinse your mouth after brushing your teeth. This allows fluoride to continue to work to protect your teeth.**
- **Avoid eating or drinking for 30 minutes after brushing your teeth.**

RCSI
Leading the world to better health

Dental Caries





Root Caries

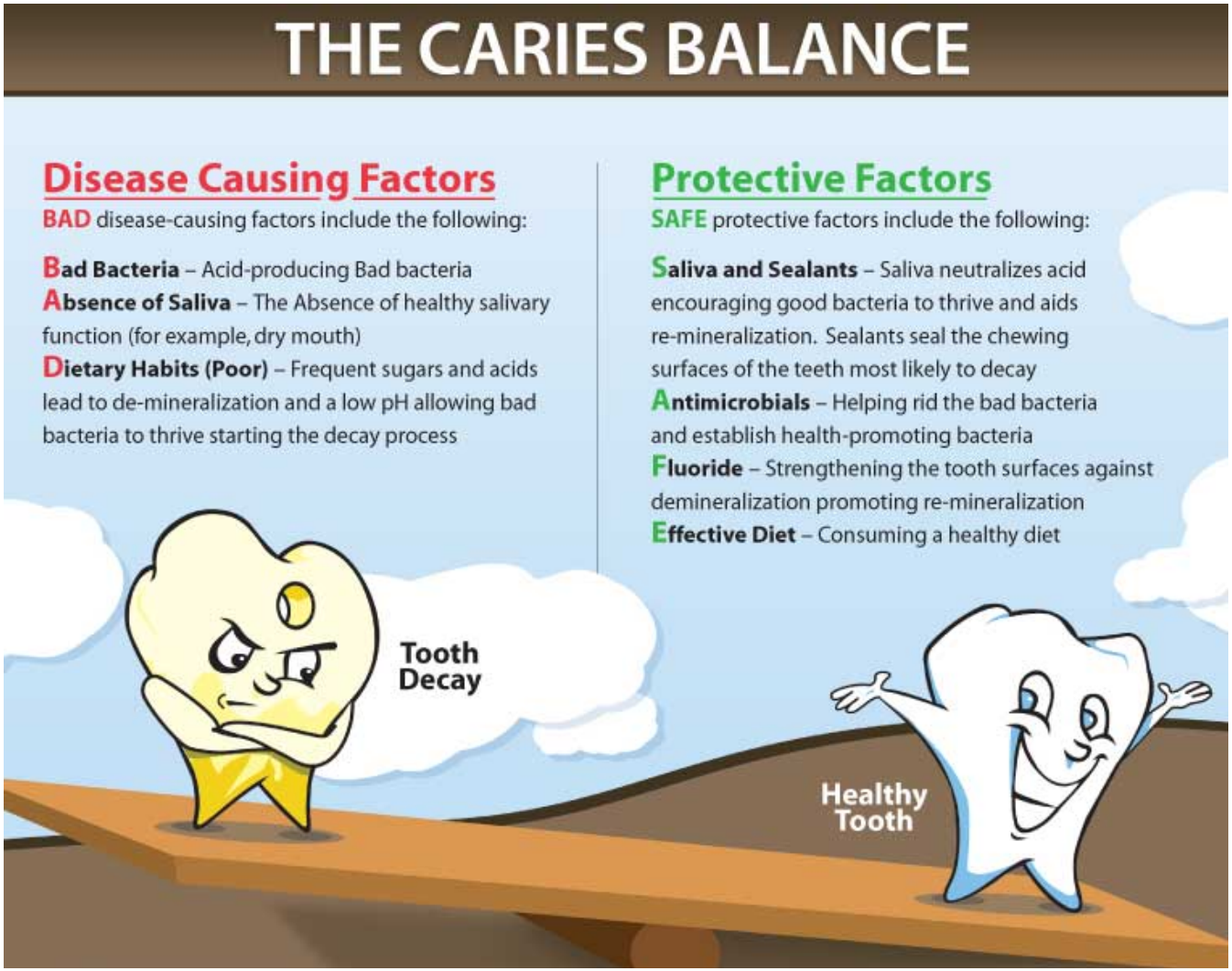






https://www.dentalhealth.ie/adult-oral-health/terms/dental-caries-tooth-decay/

Dental Caries



- Sugary food = mealtimes only (≤4 times/day)
- Sugary drinks = mealtimes
- Chew sugar-free gum between meals
- Do not rinse your mouth after brushing your teeth
- Avoid eating or drinking for 30 minutes after brushing your teeth
- Use fluoridated toothpaste (>1350ppm) and drink fluoridated tap water

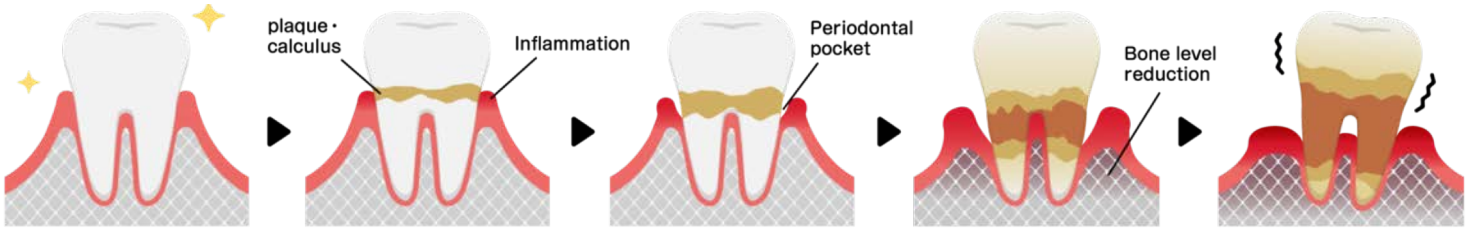
https://www.dentalhealth.ie/adult-oral-health/terms/dental-caries-tooth-decay/

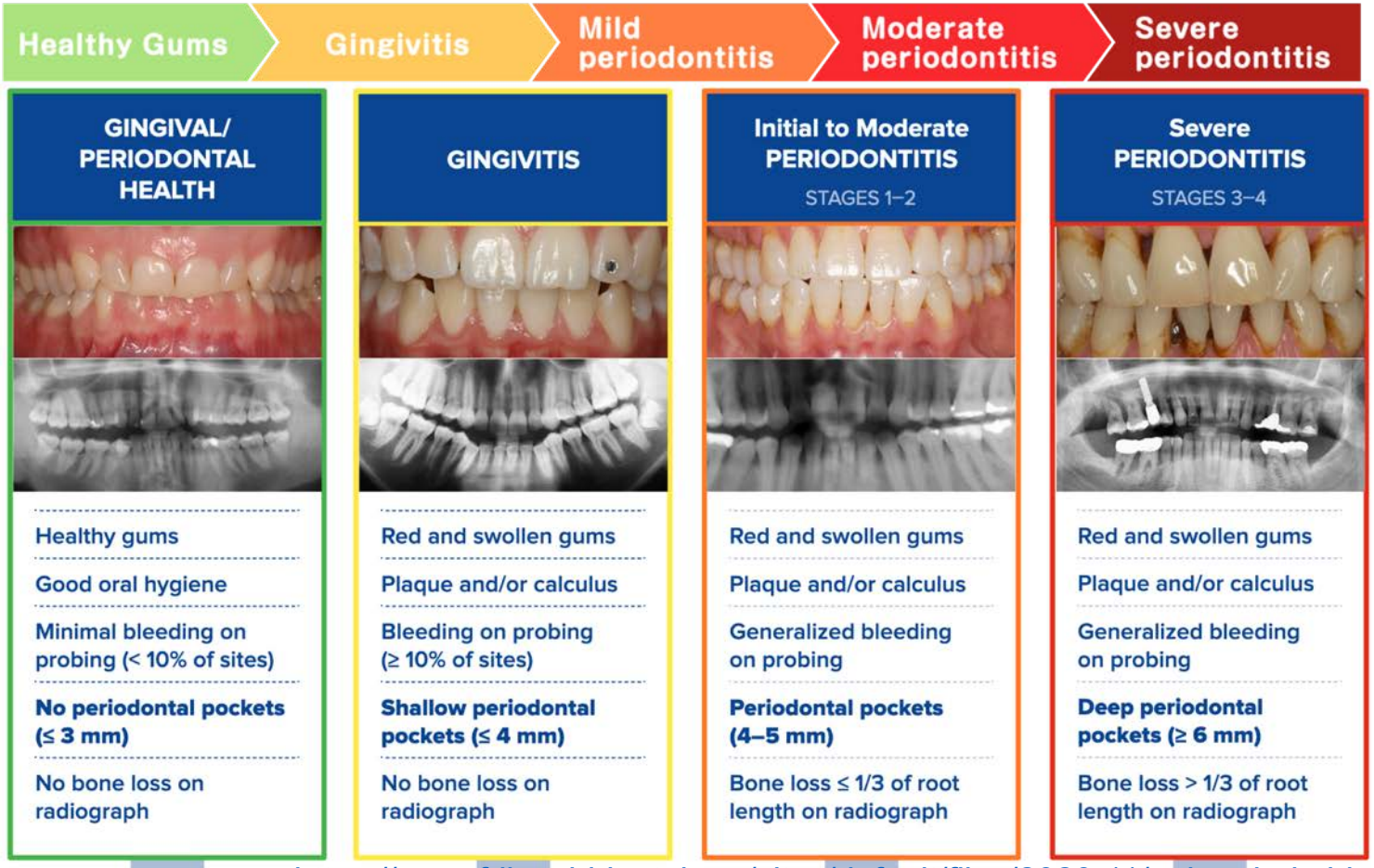
How might Parkinson's affect teeth and oral health?

2. Increased risk of gum inflammation (& periodontal disease)

- Due to the presence of plaque and tartar, gums can become inflamed. The gums look red, bleed easily (e.g. when brushing the teeth) and can feel painful. When the plaque is removed, the gums mostly recover.
- However, when not only the gums are affected, but also the underlying alveolar bone (the part of the jaw which hold the teeth), it is called periodontal disease.
- When you suffer from periodontal disease the supporting bone weakens - as a result teeth can become loose and eventually fall out. This process is irreversible.
- Smoking has a strongly negative effect on the gums and periodontal system.
- Inflammation of the gums and periodontal disease can be prevented by good oral hygiene and regular professional teeth cleaning.

RCSI
Leading the world to better health





https://www.fdiworlddental.org/sites/default/files/2020-11/gphp-chairside_guide_2019-en_0.pdf

How might Parkinson's affect teeth and oral health?

2. Increased risk of gum inflammation (& periodontal disease)

Advice;

- Establish a regular, fixed dental routine: ensure all surfaces are cleaned x 2/day.
- If you find it hard to clean all your teeth thoroughly in one go, you may prefer to concentrate on one half of your mouth in the morning and other half at night.
- Clean systematically from one side to the other and from front to back - remember that each tooth has multiple surfaces that must all be cleaned.
- Some people with PD find it difficult to hold a toothbrush. To overcome this;
  - Slip the brush into a velcro sleeve you strap to your hand
  - Cut an opening in a tennis ball and insert the brush handle to give you something larger to grip
  - Insert the brush into a bicycle handlebar grip so it slips less in your hand
  - Use an electric toothbrush - the extra weight can help reduce tremor

RCSI
Leading the world to better health

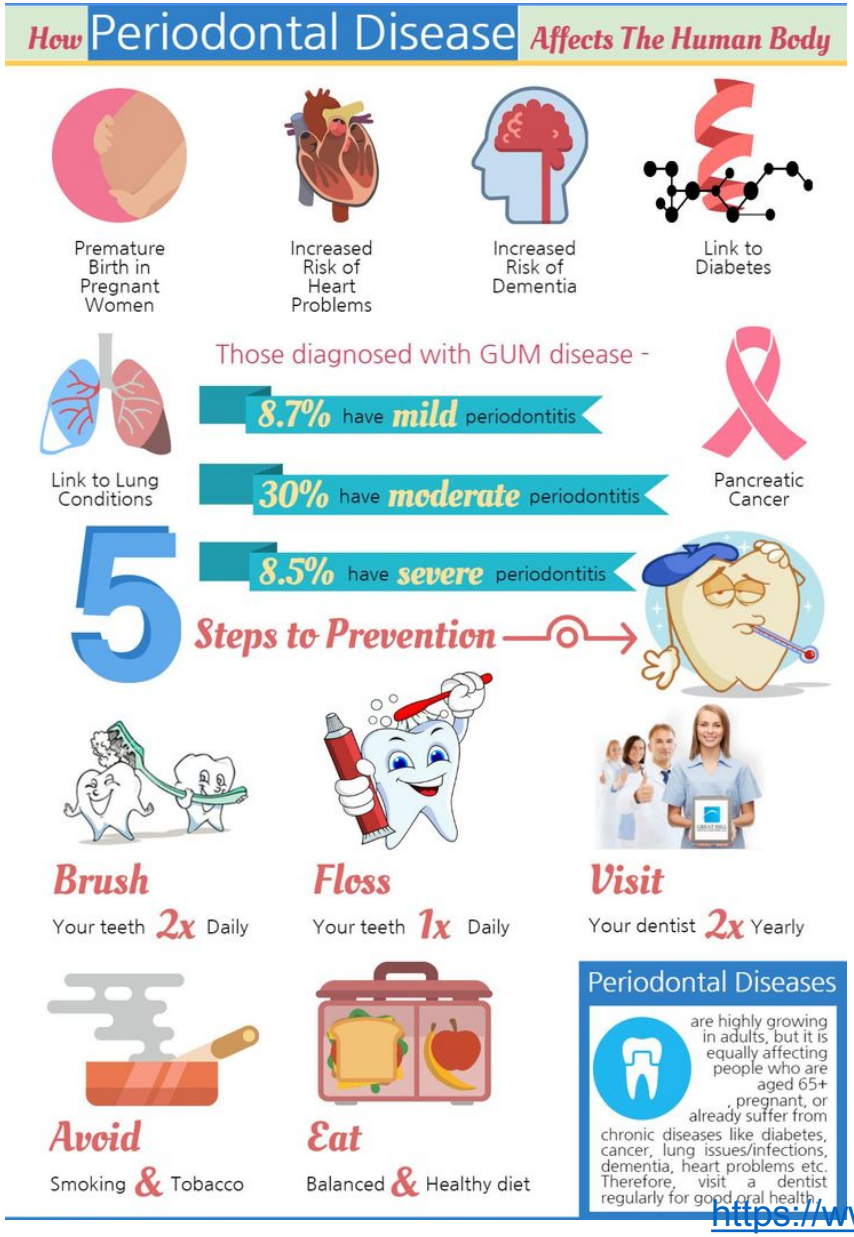
How might Parkinson's affect teeth and oral health?

2. Increased risk of gum inflammation (& periodontal disease)

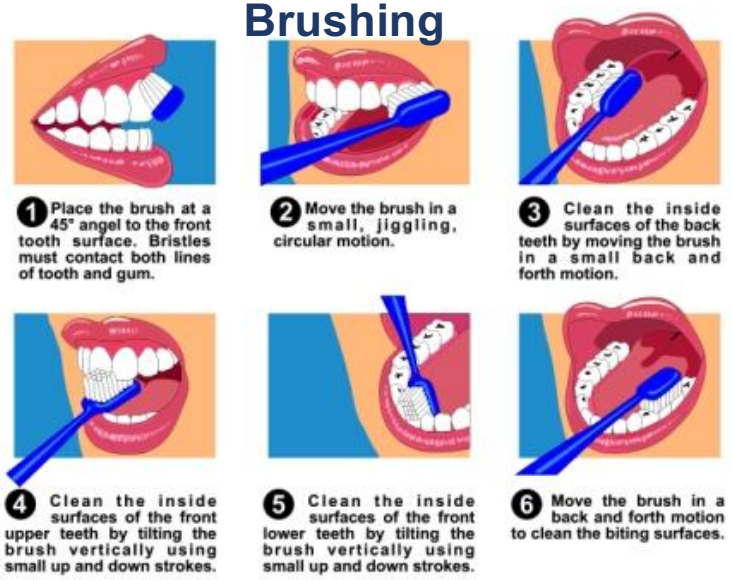
Advice;

- Use a toothbrush with a large-handled grip and soft bristles. A small brush head reaches the corners better.
- Aim to brush after every meal for two minutes, also brushing the tongue. It is best to brush one-handed, using the stronger side of the body. If it is not possible to brush after a meal, simply rinsing the mouth with water will help.
- Flossing. This may mean getting help from a caregiver. Waterpik® or pre-threaded flossing aids may be also helpful options for some.
- Mouthrinses generally discouraged (risk of choking) - if swishing and spitting are difficult, the dentist/hygienist may recommend a brush or sponge applicator. Non-alcohol mouthrinses (e.g. Corsodyl®) preferred.
- It is important to visit the dentist regularly; this will help to identify issues quickly and prevent them from developing further.

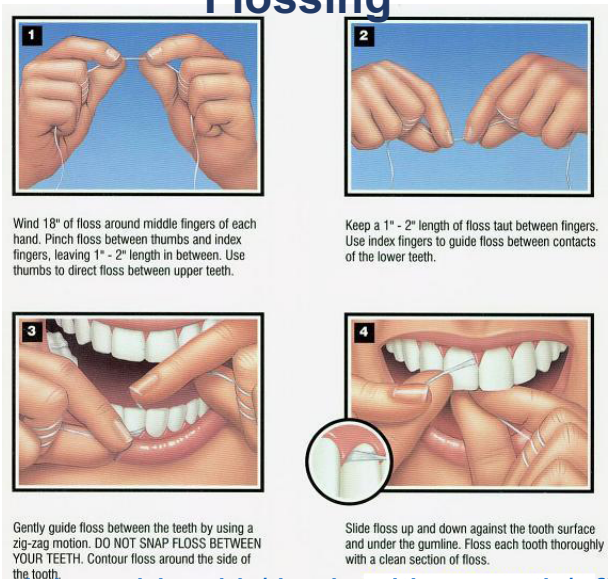
RCSI
Leading the world to better health



Brushing



Flossing



https://www.dentalhealth.ie/adult-oral-health/the-healthy-mouth/effective-toothbrushing/

How might Parkinson's affect teeth and oral health?

2. Increased risk of gum inflammation (& periodontal disease)

Advice;

- If you have DENTURES: clean them thoroughly as plaque can still build up, which can cause irritation or infection in your mouth. You may find it helpful to:

  - Remove them after each meal, then brush and rinse them.
  - Clean dentures with simple soap and water. Use a special denture brush to clean. Do not use normal toothpaste - it is too abrasive and will damage.
  - Clean dentures over a sink with a towel in it so that they do not break if you drop them.
  - At night, brush or clean them in a solution.
  - Never use bleach to clean them. Ask your dentist to remove stains.
  - If it becomes hard to hold the dentures to brush them, a useful trick is to attach a nailbrush to a household surface with a suction cup & move the denture back and forth across the brush.

RCSI
Leading the world to better health

Clean the dentures as follows:



Clean dentures in the morning and at night.

Do this over a sink of water or towel to reduce the risk of breaking if dropped.



Use mild liquid soap on a soft toothbrush or denture brush.

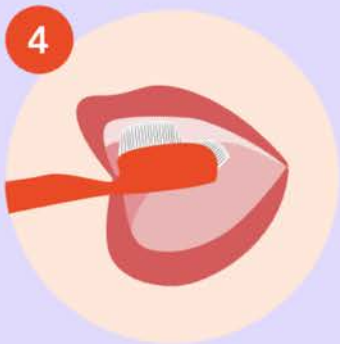


Don't use toothpaste to clean dentures



Brush all surfaces of the denture well.

Rinse with cold water.



Also clean the gums and tongue using a soft toothbrush in the morning and at night.



Take dentures out before you go to sleep at night.

Keep cleaned dentures in a dry container overnight.

Infographic reproduced with permission of Dental Health Services Victoria © 2022.

https://www.health.nsw.gov.au/oralhealth/prevention/Pages/denture-care-factsheet.aspx

How might Parkinson's affect teeth and oral health?

3. Difficulty swallowing (dysphagia)

- Swallowing difficulties are very common, >80% PwP develop dysphagia in the course of PD because motor impairment can also affect the orofacial system.
- Reduced control of mouth, tongue and throat muscles, especially in the later stages can make swallowing slower and less effective.
- People suffering from dysphagia are more vulnerable to aspiration and to developing pneumonia.
- To improve swallowing movements, your doctor may refer you to a speech and language therapist for advice, preferably one who has experience of PD.
- Treatment is vital to prevent serious problems (aspiration pneumonia, choking).
- Dysphagia can also cause drooling.

RCSI
Leading the world to better health

How might Parkinson's affect teeth and oral health?

3. Difficulty swallowing (dysphagia)

Advice;

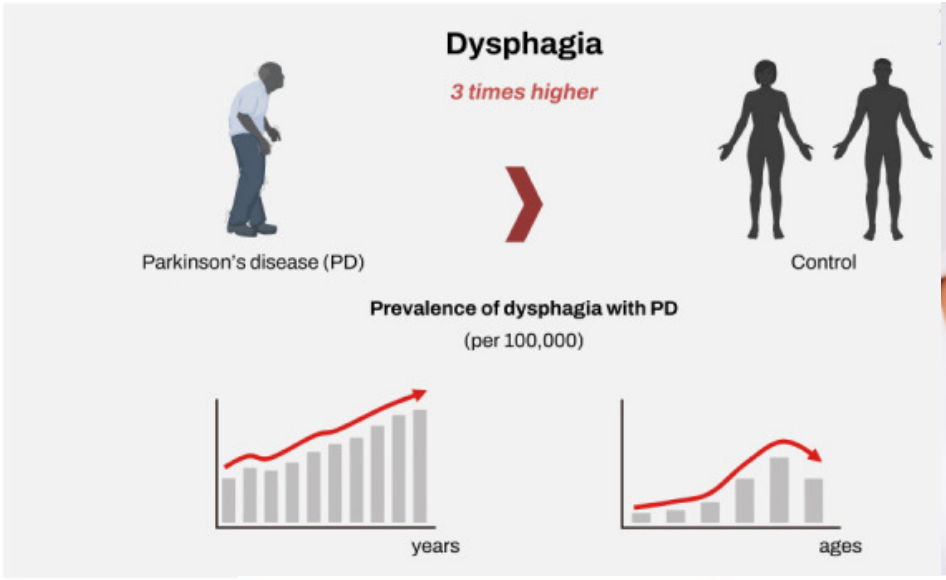
- A speech and language therapist can help;

  - Advise on techniques to help with eating and exercises to strengthen the orofacial muscles

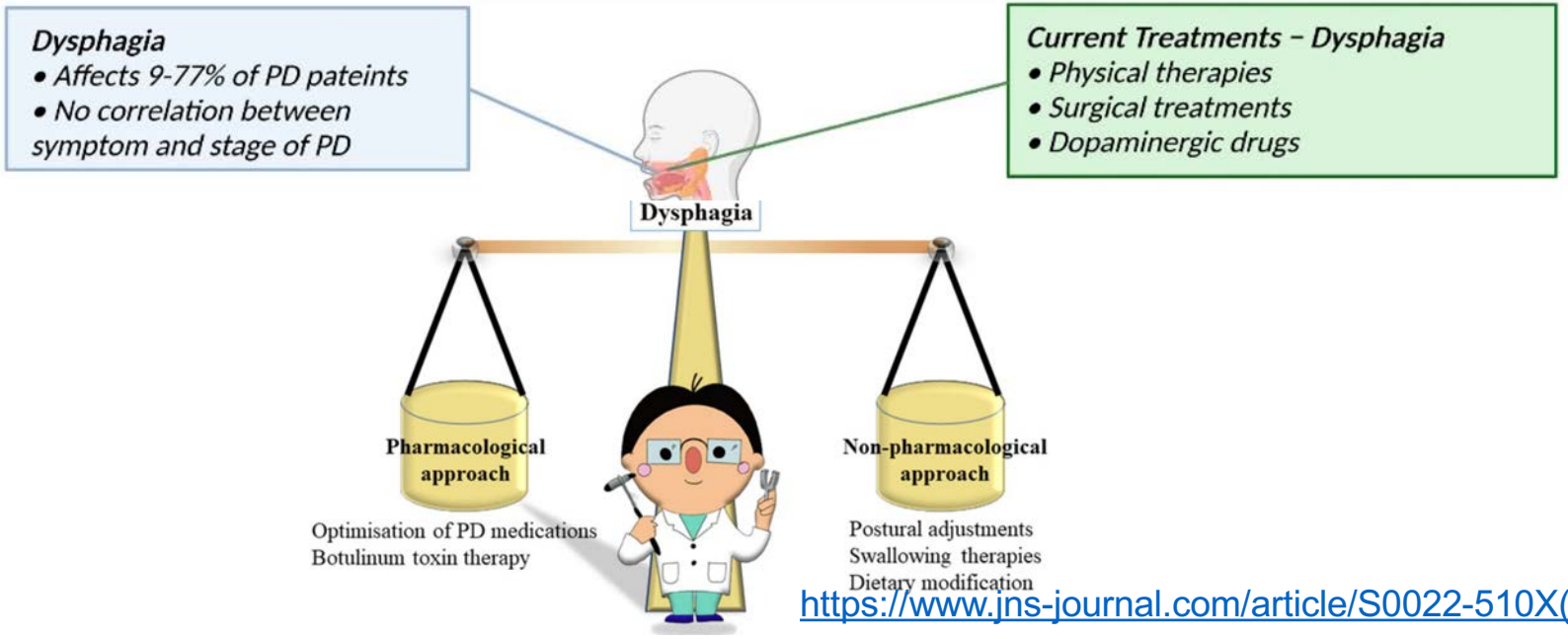
  - Provide advice on diet to make sure you eat and drink enough, including tips on the consistency and texture of foods that are easier to eat

  - Identify specific areas of difficulty with saliva control - for example poor posture, lip seal, tongue or swallowing problems

RCSI
Leading the world to better health







https://www.jns-journal.com/article/S0022-510X(21)02704-0/fulltext

How might Parkinson's affect teeth and oral health?

4. Dry or burning mouth (xerostomia or glossodynia)

- Some people with Parkinson's experience a dry mouth (61% PD vs 30% control). This may be caused by some PD medicines, particularly anticholinergic medications. The lack of lubrication can result in a sore and/or dry mouth, which can make talking, eating and retaining dentures uncomfortable.
- Saliva has a buffering and lubricating effect on the oral environment - a dry mouth can increase the risk of tooth decay and inflammation of the gums. People with PD sometimes report a loss of taste or a burning sensation in the mouth.
- Tell your doctor if you have a dry mouth, because they may be able to adjust your medication.
- Make your dentist aware - together with your doctor or pharmacist, they should be able to advise you on management.

RCSI
Leading the world to better health

How might Parkinson's affect teeth and oral health?

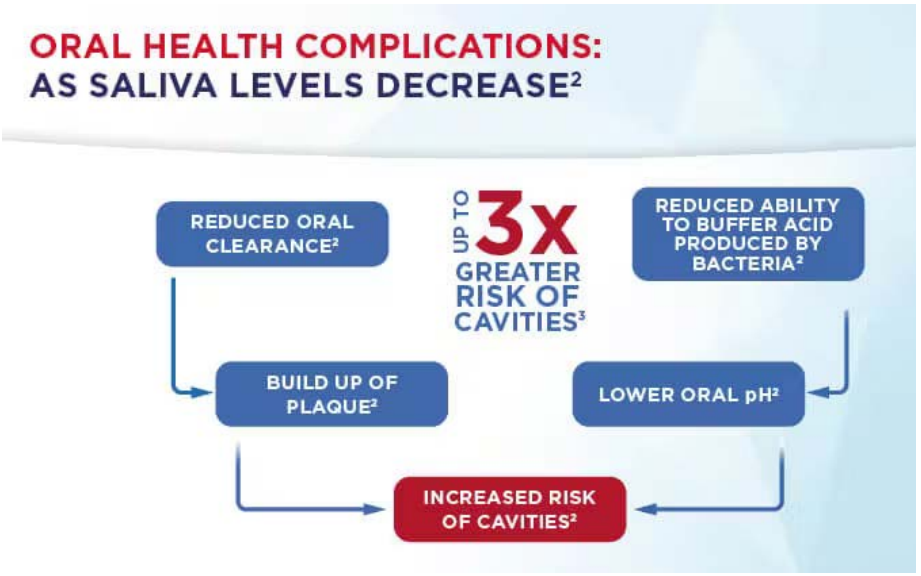
4. Dry or burning mouth (xerostomia or glossodynia)

Advice;

- Taking frequent sips of water or using suitable saliva substitutes may help.
- A lip salve or balm can also help to keep lips moist.
- Caffeine, soft drinks, alcohol and tobacco (which all dry the mouth) are best avoided.
- Chew sugar-free chewing gum to stimulate salivary flow.
- Remove dentures (and clean) at night to allow the mouth time to recover.
- Artificial gels, sprays, tablets and lozenges are available that can provide relief from symptoms (e.g. BioXtra® dry mouth gel, Bioxtra® Gel spray.
- In people with their own teeth, use of acidic artificial saliva products (e.g. Glandosane® aerosol spray) should generally be avoided in order to minimise damage to tooth enamel.

RCSI
Leading the world to better health


Xerostomia - Dry Mouth
Tobacco use
Dehydration
Nerve damage
Sign of an underlying disease or condition :
Sjogren's syndrome,
HIV/AIDS,
Alzheimer's disease,
Diabetes,
Anemia,
Cystic fibrosis,
Rheumatoid arthritis,
Hypertension,
Parkinson's disease,
Stroke and Mumps.
Side effect of certain medications
Reduction or absense of Saliva


ORAL HEALTH COMPLICATIONS:
AS SALIVA LEVELS DECREASE²
REDUCED ORAL CLEARANCE²
UP TO 3x GREATER RISK OF CAVITIES³
REDUCED ABILITY TO BUFFER ACID PRODUCED BY BACTERIA²
BUILD UP OF PLAQUE²
LOWER ORAL pH²
INCREASED RISK OF CAVITIES²


Tips for Relieving Dry Mouth
• Sip water or sugarless drinks, or suck on ice chips.
• Avoid irritants, such as alcohol, tobacco, and caffeine.
• Chew sugar-free gum or suck on sugar-free candy.
• Avoid salty or spicy foods.
• Use a humidifier at night.
• Consider using saliva substitutes.


biotène
DRY MOUTH
Lozenges
Freshens breath
Great for use on the go
#1 DENTIST RECOMMENDED DRY MOUTH BRAND
SUGAR FREE
REFRESHING MINT
27 LOZENGES


biotène
DRY MOUTH
Moisturizing Spray
#1
GENTLE MINT


GEL MOUTHSPRAY
DRY MOUTH
moisturises, comforts & protects
Natural enzymes, Moisturisers, Fluoride, Xylitol
Rapid relief for dry, sore or sensitive mouths
bioXtra
ULTIMATE DRY MOUTH RELIEF
ULTIMATE ORAL HYGIENE

How might Parkinson's affect teeth and oral health?

5. Drooling (sialorrhoea)

- We produce ≅1L litre of saliva daily which we usually swallow without thinking.
- Because swallowing is a motor function, this mechanism can be disrupted by PD (*see also dysphagia*). Saliva may then build up in the mouth and, as the muscles which seal the lips also become weaker, it can escape, causing dribbling or drooling (sialorrhoea).
- The stooped posture associated with PD, with head forwards and chin pointing downwards, can add to poor saliva control.
- Inhaling excessive saliva by mistake is a risk for aspiration pneumonia. Good saliva control is important for your personal safety, quality of life and comfort.
- Problems with drooling or dribbling may lead to irritation, discomfort, cracks and infections around the mouth, especially at the corners of the mouth (angular cheilitis).

RCSI
Leading the world to better health

How might Parkinson's affect teeth and oral health?

5. Drooling (sialorrhoea)

Advice;

- Speech and language therapy consultation is recommended.
- Drooling can be linked to posture. If you're resting, make sure your head is upright and facing forward, rather than slightly more forward or to the side. You can support your head with cushions if that helps.
- Practice lip-seal exercises. Doing these twice a day in front of a mirror, as you brush your teeth, for example, can help improve your lip seal strength:
  - A big grinning smile.
  - Pushing your lips forward for a puckering kiss.
  - Holding your lips tightly together whilst blowing air into your cheeks
- Use swallow prompts. Apps, such as Swallow Prompt, can really help. When you're awake, you typically swallow every 1-2 minutes. Swallow Prompt can help you retrain yourself to swallow more frequently by sending reminders.

RCSI
Leading the world to better health

How might Parkinson's affect teeth and oral health?

5. Drooling (sialorrhoea)

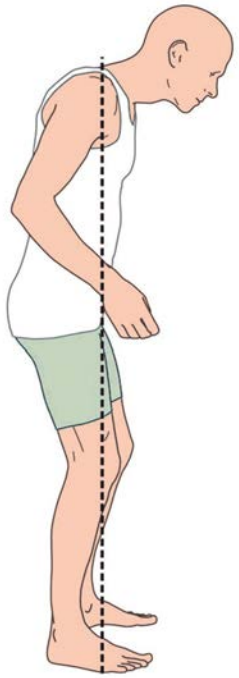
Advice;

- Chewing sugar-free gum, pastilles or sweets tells your brain that you have something in your mouth and helps you swallow more often. It also reduces the build-up of saliva in your mouth.
- Medications in the form of patches/drops/sprays and/or tablets can help control saliva production (e.g. atropine, benztropine, scopolamine among others). Injections of Botox (botulinum toxin) into the saliva glands can also be useful. Botox interrupts the nerve messages from the brain to the gland to produce saliva.
- Radiotherapy, which helps to restrict the glands that produce saliva is another alternative.
- Surgical options, such as salivary gland removal are also available.

All of these medical solutions may then result in xerostomia

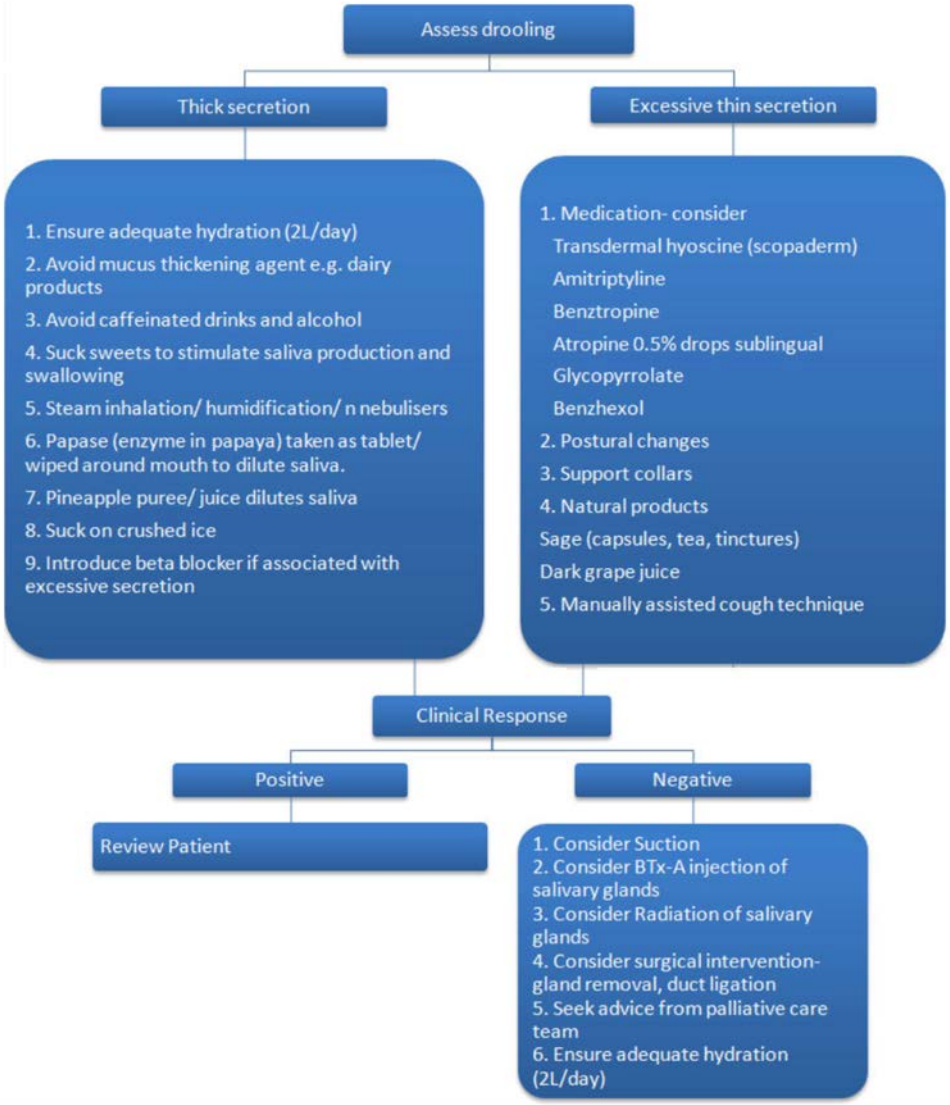
RCSI
Leading the world to better health

- Drooling occurs in 30-70% of PwP over the course of PD (severe in up to 10%).
- Drooling in PD is <u>not because of excessive saliva</u>. Due to swallowing issues (decreased swallowing) = weakening of muscles in the throat.
- Additionally, PwP may have poor posture.
- PwP may sit with neck in a forward position, mouth open without realizing – gravity = saliva pooling in the mouth and overflow.









https://www.bjmp.org/content/management-drooling-saliva
https://www.cmaj.ca/content/191/36/E989

How might Parkinson's affect teeth and oral health?

6. Difficulty controlling dentures

- Controlling dentures can be difficult because the orofacial muscular system can be impaired by PD.
- Dry mouth or pools of saliva building up in the mouth can make it harder to keep a denture in place.
- Poor denture control may lead to ulcers or blisters in the mouth that can be very painful.
- Difficulties in eating and speaking may also occur.

RCSI
Leading the world to better health

How might Parkinson's affect teeth and oral health?

6. Difficulty controlling dentures

Advice;

- It is important that dentures fit well - your dentist can help you with this. They may recommend using fixed (implant-retained) type denture alternatives.
- A speech and language therapist can also advise on improving denture control.
- Schedule the replacement of old fillings, ill-fitting crowns, bridges and/or dentures during the early stages of PD. In particular, if invasive procedures (like restorations/implant-retained denture rehabilitation) are needed, these should be done as early as possible in order to minimise risks associated with these treatments.

RCSI
Leading the world to better health

Problems linked to poorly controlled dentures & some dental solutions



Ulceration caused by denture-induced trauma



Denture-related sore mouth (stomatitis)



Implant-retained dentures and overdentures









Special Considerations for Patients with DBS Devices

Dentistry:

In Ireland, ≅1:500 people are affected by PD (≅12,000 living with PD here) and DBS is indicated in 10-20% of patients. Notable points;

- Firstly, inform your dentist if you have a DBS implant.
- Dental x-rays and panoramic dental x-rays are okay.
- Dentists should not use diathermy equipment (to stop bleeding/cut tissues).
- You can use electric toothbrushes. Ultrasonic scalers – need consideration.
- Prophylactic Antibiotics: As of 2012, the American Dental Association and American Association of Orthopaedic Surgeons no longer recommend antibiotic prophylaxis. Based on these guidelines, antibiotics are no longer routinely recommended for everyone with DBS. However, your dentist may rely more on your personal medical history to determine suitability.

https://www.stephenhancocks.com/download.php?op=view_article&article_id=1496
Clarke P and O'Neill F. The dental management of patients with implantable neurostimulation devices: A suggested protocol. (2015) The Journal of Oral Health and Disability Vol 16 (2)
https://www.parkinsonsecrets.com/blog/parkinsons-disease-5-tips-on-seeing-the-dentist-and-dental-care



Special Considerations for Patients with DBS Devices

Radiology:

- CT Scan and x-rays are okay.
- Regular ultrasounds are okay (e.g. ultrasounds of the heart, kidney etc.).
- DEXA scans okay.

MRIs:

- Careful consideration is needed. Depends on manufacturer/company and type of battery. Ask your DBS provider.
- For all companies and batteries the imaging centre has to be certified to do imaging in DBS patients.

https://cdho.org/factsheets/deep-brain-stimulation/

https://jcda.ca/sites/default/files/l10.pdf

https://www.stephenhancocks.com/download.php?op=view_article&article_id=1743

RCSI
Leading the world to better health

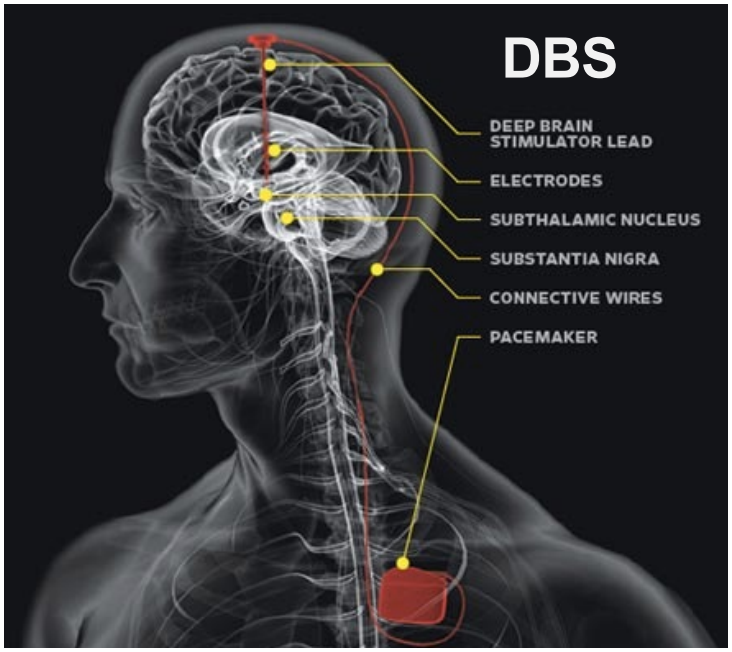
Special Considerations for Patients with DBS Devices

Panoramic/periapical/bitewing dental x-rays





✓



Diathermy (electrosurgical) dental units

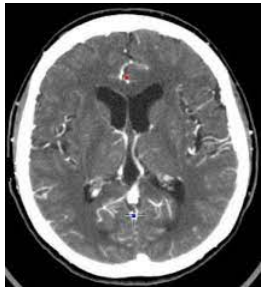


Ultrasonic/piezo-electric scaler units



✓

CT Scans



✓

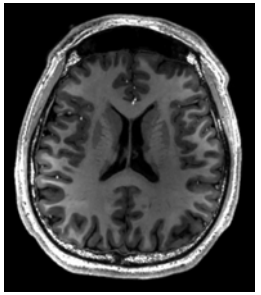
Electric Toothbrush



Antibiotic prophylaxis



MRI



Tips/Advice on Maintaining and Improving Oral Health in PD

- Use an electric toothbrush (or adapted manual toothbrush).
- Try one-handed strategies that allow you use the stronger side of your body.
- Try non-alcohol based mouthwashes using chlorhexidine (if advised).
- Schedule dental appointments in the morning (60-90mins after levodopa dose).
- Ask to keep the dental chair more upright, to make swallowing easier.
- Plan several, shorter dentist visits, rather than fewer, longer ones.
- Get check-ups/cleanings every 3-6 months (3-monthly if gum inflammation)
- Get check-ups and dental treatment(s) early in your PD journey.
- If you wear dentures, the dentist should evaluate the fit of the dentures and discuss options for implant-retained dentures/overdentures long-term.

RCSI
Leading the world to better health

Tips/Advice on Maintaining and Improving Oral Health in PD

- Tell the dental office about your PD and your symptoms when you schedule the appointment(s).
- It is difficult and dangerous for dentists using drills and other sharp instruments to complete procedures on a moving target that can be caused by uncontrolled tremors.
- It is also a challenge for the dentist. PwP often have difficulty sitting in a dental chair/keeping the mouth open for long periods and impaired swallowing risks choking or aspiration.
- Your dentist will value your direction about the timing, length and other aspects of your appointments. NO ONE KNOWS YOU BETTER THAN YOU DO!

RCSI
Leading the world to better health

Useful Aids and Products



Toothbrush Adaptors

Toothbrush adaptors can be used when there is reduced hand mobility (Ask the dental team for advice on how to adapt for your patients/clients).



Waterpik Flosser

Te-Pe Products



Te-Pe products include an extragrip which fits over the handle of the TePe and other toothbrushes, and a selection of various sizes of interdental brushes useful for cleaning between teeth.

(Available from Celtic Marketing or any pharmacy)

Superbrush

A Superbrush works in the same way as a Collis Curve.



(Available from Price's Medical Hall, Celtic Marketing and Dent-O-Care Ltd.)

Dental Shields

Dental Shields or Fingerstalls fit over the finger of a carer, and form a bite-proof wedge which helps to hold the mouth open for cleaning.



(Available from Price's Medical Hall and Dent-O-Care Ltd)

Dent-O-Care have a special needs oral health catalogue which includes a similar product, called the Openwide disposable mouth rest.



Useful Aids and Products



Collis Curve

A Collis Curve toothbrush can brush the insides, outsides and biting surfaces of the teeth at the same time. It is useful for people with poor coordination or those who are dependent or in palliative care.

(Available from Price's Medical Hall or website www.colliscurve.co.uk)

A similar range of products is called **Biotène**, which includes gels & liquids to be used as saliva substitutes, non-foaming toothpastes, and alcohol free mouthwashes to help with oral hygiene.



(Available from GlaxoSmithKline or any pharmacy)

Dry Mouth / Xerostomia



The **BioXtra** range of products include toothpastes, alcohol free mouthwashes (Oral hygiene), moisturising gels & sprays (Saliva substitutes), sugar free chewing gum and sucking tablets (Saliva stimulants), specifically aimed at people with dry mouths.



BioXtra's active ingredients simulate the same healing and protective factors of saliva itself and are also useful for people with Candida (thrush), mucositis and stomatitis. The toothpaste is non foaming and is useful for people who cannot spit, and for those with special needs.

(BioXtra is available from Pamex Ltd., Price's Medical Hall, Dent-O-Care, or any pharmacy)

A patient survey carried out in the Dublin Dental Hospital found that people with dry mouths found the following helpful:

- sipping water (99%)
- BioXtra / Biotène gels (70%)
- Sugar free / BioXtra chewing gum (70%)

(McCarthy & Waldron. 2005.)

The use of a humidifier at night may also be useful as it keeps the air moist.

Sensitive Teeth / Gum Disease





Many toothpaste companies now provide toothpastes designed to help relieve the pain of sensitive teeth. The **KIN GINGIVAL** range of products include non alcoholic antibacterial mouthwashes and non-foaming toothpaste. **PerioKIN** spray and gel are especially useful for people with special needs. The **SENSIKIN** range (Toothpaste, mouthwash & gel) is aimed at people with sensitive teeth.

(KIN products are available from Pamex Ltd., Price's Medical Hall or any pharmacy)

Dent-O-Care Ltd.
7 Cyngus Business Centre,
Dalmeyer Road,
London NW10 2XA
UK
Tel: 0044 20 84597550
www.dentocare.co.uk

TePe Products
Celtic Marketing Ltd.
11 Synge Place
Dublin 8.
Ireland.
Tel: 01 454 6035
Fax: 01 478 3431

Price's Medical Hall
26 Clare Street
Dublin 2.
Ireland.
Tel: 01 6761899
pricesmedicalhall@eircom.net

Pamex Ltd.
14 Moneen Business Park,
Castlebar,
Co. Mayo.
Ireland.
Tel: 094 902 4000
Fax: 094 902 2824
www.pamex.com

ISKUS Health Ltd.
Magna Drive,
Magna Business Park,
City West Road,
Dublin 24.
Ireland.
Tel: 01 404 8380

GlaxoSmithKline
Consumer Healthcare,
Stonemason's Way,
Rathfarnham,
Dublin 16
Ireland.
Tel: 01 495 5000
Fax: 01 495 5575

https://www.dentalhealth.ie/assets/files/pdf/oral_hygiene_aids_3.pdf

Useful Resources and Further Reading

Specific Parkinson's and Oral Health Resources;

https://www.parkinson.org/library/fact-sheets/dental-health

https://www.parkinson.org/living-with-parkinsons/management/dental-health

https://www.parkinsonseurope.org/living-well/wellbeing/diet-exercise-and-physical-wellbeing/teeth-and-oral-health/

https://www.parkinsons.org.uk/information-and-support/mouth-and-dental-issues

https://www.dental-nursing.co.uk/features/understanding-the-impact-of-parkinsons-disease-on-oral-health

https://www.parkinsons.org.uk/sites/default/files/2023-04/INFOB0049_Mouth%20and%20dental%20issues%20in%20Parkinson%27s_FINAL_WEB.pdf

https://www.parkinson.org/understanding-parkinsons/movement-symptoms/drooling

Oral Hygiene Instructions and Useful Aids;

https://www.dentalhealth.ie/assets/files/pdf/oral_hygiene_aids_3.pdf

https://davisphinneyfoundation.org/parkinsons-dental-devices/

https://www.colgate.com/en-us/oral-health/brushing-and-flossing/how-to-brush-your-teeth-properly#

https://www.colgate.com/en-us/oral-health/brushing-and-flossing/how-to-floss-video

RCSI
Leading the world to better health

Useful Resources and Further Reading

Academic and Professional Parkinson's and Oral Health Resources

https://www.hindawi.com/journals/pd/2018/9315285/

https://clinmedjournals.org/articles/ijodh/international-journal-of-oral-and-dental-health-ijodh-6-110.php

https://www.clinicalkey.com/service/content/pdf/watermarked/1-s2.0-S0002817714628439.pdf?locale=en_US&searchIndex=

https://content.iospress.com/articles/journal-of-parkinsons-disease/jpd212605

https://www.parkinsonsecrets.com/blog/parkinsons-disease-5-tips-on-seeing-the-dentist-and-dental-care

https://www.stephenhancocks.com/download.php?op=view_article&article_id=1496

Clarke, P., and O'Neill F. The dental management of patients with implantable neurostimulation devices: A suggested protocol. (2015) The Journal of Oral Health and Disability, Vol *16* (3), 86-95.

https://cdho.org/factsheets/deep-brain-stimulation/

https://jcda.ca/sites/default/files/l10.pdf

RCSI
Leading the world to better health

Thank You!
Questions?


graemesullivan@rcsi.ie