Managed Clinical Network – Special Care Dentistry South East Wales

Dental Care Pathway for Adults with Diabetes Mellitus

March 2020

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With support from SE Wales SCD MCN Members

Version 7 23rd December 2021

1. Background

Diabetes mellitus [DM] is a chronic metabolic disorder characterised by a relative or absolute lack of insulin.[1] Type 1 DM is an autoimmune condition whereas the aetiology for type 2 DM is usually multifactorial and risk factors include a family history, obesity, living a sedentary lifestyle, increasing age and a poor diet.[2] Other potential causes for DM include pancreatitis or pancreatectomy, polycystic ovary syndrome, Cushing's syndrome, glucagonoma and prolonged glucocorticoid use.[2]

There are an estimated four million people living with diabetes in the UK, this is predicted to increase to five million by 2025.[3] In Wales, there are around 199,000 adults being treated for diabetes, accounting for 7.6% of the adult population, this is the highest prevalence of diabetes in the UK.[4] Prevalence of diabetes in Wales is predicted to increase to 11.5% of the adult population by 2030.[5] Type 2 DM is far more common than type 1 DM, in the UK around 90% of adults with DM have type 2.[6]

In Wales, diagnoses of type 2 DM are increasing at an alarming rate and treatment for type 2 DM accounts for a significant proportion of NHS expenditure.[5] Diabetes costs the NHS in Wales approximately £500million per year, accounting for 10% of its annual budget, 80% of this expenditure is spent on managing avoidable complications of diabetes.[4]

2. Rationale for a Dental Care Pathway

A literature review was undertaken to assess the impact of diabetes on oral health (see Appendix). This eview ascertained that DM can have a negative impact on oral health, and adults with DM are more at risk of the following oral health conditions:

- Periodontal disease[7,8,9,]
- Dental Caries[10,11,12,13,14,15]
- Oral infections such as candidiasis, denture stomatitis and angular chelitus [16, 17, 18, 19, 20, 21]
- Dry mouth / xerostomia[20, 22, 23,24, 25, 26, 27, 28]
- Burning mouth syndrome and glossodynia[20, 23, 29]
- Oral conditions such as lichen planus[24] and taste disturbances[30]

The relationship between DM and oral health is bidirectional; uncontrolled oral diseases and infections can have a negative impact on diabetic control.[9, 20] Systematic reviews have also demonstrated that treatment of periodontal disease results in better glycaemic control.[9,31,32,33] The benefits of improving patients' with DM's oral health can be seen, not just from a quality-of-life perspective, but also in terms of cost-saving for the NHS.

Studies have demonstrated that patients with DM are often unaware of their increased risk of oral disease and the increased risk that uncontrolled oral disease presents on their diabetic control.[34, 35] In addition, a study by Bowyer *et al.* (2011) concluded that adults with diabetes are *"receiving limited advice from healthcare professionals"* and that *"training and advice for both healthcare professionals and patients concerning the importance of good oral health in patients with diabetes is needed".*[36]

Given the above, raising awareness within teams who support people with DM (and as a result the patients' themselves) of the bidirectional relationship between DM and oral health would be very valuable.

This is to be achieved by the distribution of a leaflet highlighting the risks of DM on oral health and of poor oral health on diabetic control (Appendix Two). This is to be distributed to healthcare teams working in clinics to offer to patients living with DM.

3. Care Pathway

A care pathway has been developed to support patients with a diagnosis of DM accessing dental care (Figure 1). It will support the healthcare provider in signposting the patient to appropriate oral health services, should this be required. Such healthcare providers may include, but is not limited to, Specialist Diabetic Nurses, Practice Nurses, District Nurses and General Medical Practitioners.

Health care workers are advised when seeing patients for the first time after a diagnosis of DM, as part of a healthy lifestyle checklist, to provide the Oral Health and Diabetes Leaflet (Appendix Two) and to ask whether or not the patient is seeing a dentist regularly for dental care.

If the patient with DM does not have a dentist there are two options:

3.1 People with stable DM and no significant other co-morbidities:

These patients can readily attend a local NHS dentist. The patient is advised to contact local helpline by phone or e-mail indicating they have DM and need to find a dentist.

3.2 People with unstable DM and/or complex medical histories, disabilities or cognitive impairment

The completion of a simple referral form by the diabetes health care provider that can be e-mailed or posted to local health board [HB] central referral hub (Appendix Three). The local HB central referral hub will vary depending on which HB the patient resides. This will be detailed on the referral form with details of where to send the referral. Once the referral has been received, it will be triaged and the patient will be allocated to a local NHS dental practice or community dental service, depending on the needs of the patient. Triaging will be completed by an appropriate member of the dental team.

Health care providers for people with diabetes are asked to check on an annual basis whether or not a patient with DM is accessing dental care and follow the care pathway should the patient not be receiving regular dental care.

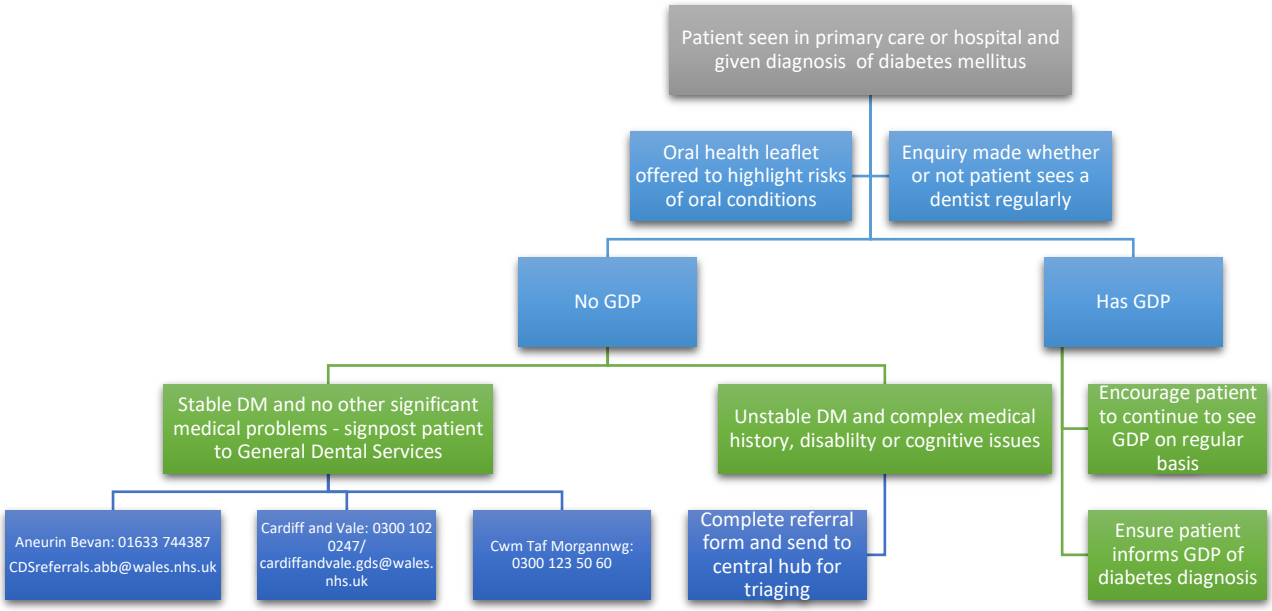

Figure 1 - Outline of Diabetes Care Pathway

Patients with complex medical conditions and poor glycaemic control should be referred using the referral form and triaged so they may require more

Diabetes Healthcare Providers should ask on an annual basis whether the patient is accessing dental care, if not, they should follow this care pathway.

Appendix One –
Literature Review

A literature review was undertaken to determine the oral health implications of DM. The database Ovid via Medline was used as well as the Cochrane Database for Systematic Reviews. The following search terms were used; diabetes mellitus AND oral manifestations, dental caries, periapical periodontitis, salivary dysfunction, xerostomia, salivary glands, taste disturbance, taste disorders, taste alteration burning mouth and oral and mucosal pathology. Only primary research publications were considered, which were available in the English language, involving adult patients and published from 1998 onwards. Exclusion criteria included; when DM was considered with other co-morbidities, review articles, case reports, preliminary studies and oral disease or DM related to pregnancy.

Table 1 details the number of research papers found for each oral health 'topic' and the number of papers then included in the literature review.

Topic	Initial Search	Preliminary Screening	Papers Included
Oral Manifestations	84	21	14
Dental Caries	79	25	8
Periapical Periodontitis	22	11	2
Salivary Dysfunction	82	22	12
Taste Disturbance	15	5	3
Burning Mouth	16	3	3
Oral and Mucosal Pathology	116	4	4

Table 1 - Papers Included in Literature Review

Due to the large volume of literature published around DM and periodontal disease, the search of this topic was limited to systematic reviews and meta-analyses only. Those published from 2010 were included, of which six were utilised in this care pathway:

- Nascimento, G. *et al.* (2018). Does diabetes increase the risk of periodontitis? A systematic review and meta-regression analysis of longitudinal prospective studies. *Acta Diabetological,* 55 (7), 653-667.

- Mauri-Obradors, E. *et al.* (2017). Oral manifestations of diabetes mellitus. A systematic review. *Med Oral Patrol Oral Cir buccal,* 22 (5), e596-94.

A literature search was also undertaken to assess the impact of treatment of oral disease on diabetic control, again only systematic reviews were considered and the following papers were included:

- Madianos, P. and Koromantoz, P. (2018). An update of the evidence on the potential impact of periodontal therapy on diabetes outcomes. *Journal of Clinical Periodontology,* 42 (2), 188-195.

- Teshome, A. and Yitayeh, A. (2017). The effect of periodontal therapy on glycaemic control and fasting plasma glucose level in type 2 diabetic patients: systematic review and meta-analysis. *BMC Oral Health,* 17, 31.

- Simpson, T. *et al.* (2015). Treatment of periodontal disease for glycaemic control in people with diabetes mellitus (review). *Cochrane Database of Systematic Reviews*, 11, DOI: 10.1002/12451858.CD004714.pub3

One review was found (although not systematic), which demonstrated the bidirectional association between DM and inflammatory periodontal disease; they concluded that *"there is strong evidence for an association between diabetes mellitus and inflammatory periodontal disease. Diabetes mellitus increases the risk for and severity of periodontitis and periodontal diseases can aggravate insulin resistance and effect glycaemic control. Periodontal treatment improves glycaemic control in type 2 diabetics: control of periodontal infection is not only important for oral health, it may also improve overall health"*[9]*:*

- Stanko, P. and Izakovicova-Holla, L. (2014). Bidirectional association between diabetes mellitus and inflammatory periodontal disease. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub,* 158 (1), 35-38.

Appendix Two –
Diabetes and Oral Health Leaflet

(Attach once finalised)

Appendix Three –

Referral Form for Patients with Unstable DM or Complex Medical Histories for Dental Care

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Aneurin Bevan University Health Board

APPENDIX THREE – Referral Form for Patients with Unstable DM or Complex Medical Histories for Dental Care

Referral for Dental Care for Adults with Diabetes

This form is to be used to refer adults with diabetes who do not have a Dentist for dental care, if they have:

- Unstable diabetes, other significant medical problems, disabilities, cognitive impairment
- Unable to find a dentist for regular dental care

Patient Information	
Name:	
D.O.B:	
NHS Number:	
Address:	
Telephone:	
Email Address:	

Referrer Information	
Name:	
Position:	
Address	
Telephone:	
Email Address:	

Referral Information	
Reason for referral	☐ No current dentist but not in pain ☐ No current dentist in pain
Any current oral complaints:	
Medical history:	☐ Type I diabetes mellitus ☐ Type II diabetes mellitus
Most recent HbA1c (including date):	
Level of diabetic control (delete as appropriate):	☐ Good ☐ Poor ☐ Fluctuating
Additional Medical history:	
Current Medication:	
Known Allergies:	
Additional Information:	

Signed:	
Date:	

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