Mike: A Case Study in Intervention of Patients with Diabetes at Risk for Periodontal Disease

In the original study on the link between diabetes and periodontal disease, Taylor and colleagues found that individuals with poor glycemic control, or an HbA1c of >9%, were at increased risk for severe periodontitis. Since this first report, longitudinal data from numerous studies have strengthened the evidence that suggests that people with diabetes are at significantly greater risk for periodontal disease. In addition, findings of other investigations have reported that untreated periodontal disease may increase the risk of worsening glycemic control over time. Although inconclusive, some evidence suggests that treatment of periodontal disease may improve glycemic control. Experts have even proposed that evidence of this bi-directional relationship is so strong that periodontal disease should be considered the sixth complication of diabetes. Given the epidemic magnitude of diabetes, and the high incidence of periodontal disease in this population, this bi-directional relationship must be recognized in the long term management of diabetes. This provides a compelling rationale for careful monitoring of the periodontal and metabolic risk factors of patients with diabetes, and active participation of dentists and dental hygienists on the diabetes healthcare (DHC) team.

With this growing body of evidence of periodontal-systemic links, dentists and dental hygienists will increasingly be called on to screen, appropriately refer, counsel, and monitor patients at risk for co-morbid diseases and conditions associated with infections and other pathologies of the oral cavity. The bi-directional relationship between diabetes and periodontal disease is one area of research where this level of clinical application could make a profound difference. Patients with diabetes are one of the high risk populations that could substantially benefit from non-dental healthcare providers (HCPS) and dentists and dental hygienists collaborating across traditional boundaries of professional care. Traditionally, dentists and dental hygienists have not been a part of the DHC team. Further, for most oral HCPs, the task of building collaboration with

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1 Taylor, et al. 1996
2 Shultis, et al. 2007
3 Saremi, et al. 2005
4 Taylor, et al. 1998
5 Thorstensson, et al 1996
6 Lalla, et al. 2007
7 Campus, et al. 2005
8 Jones, et al. 2007
9 Lim, et al. 2007
physicians, nurses, diabetes educators and other practitioners involved in diabetes management can be daunting. This is especially so if non-dental HCPs are unaware of the significance of periodontal disease in diabetes management.

The following case study presents a 48 year man, named Mike. At the end of the brief case description, learners will be challenged to consider how to care for patients like Mike, and how to overcome the barriers associated with implementing interprofessional collaboration in the long term management of patients with diabetes and periodontal disease. Please note: the table at the end of the case study may help identify perceived barriers to progressive intervention of diabetic patients at risk for periodontal disease.

**Case Scenario**

On your schedule today is Mike, a new patient who has been referred by his physician to the office. The referral of Mike to the dentist was based on Mike’s poorly controlled diabetes, and a soft tissue abscess (periodontal) around the mandibular left first molar. After asking Mike several questions to screen him for periodontal disease, the physician initiated the referral to the dentist.

Mike has worked in the metal shop of a local pipe factory for over 20 years and was recently laid off. The company that owns the factory has offered to employees who have lost their jobs, 12 months of health benefits. Mike has a sedentary lifestyle. His only surgery was for a tonsillectomy and adenoidectomy in childhood. At age 36, he was diagnosed with type 2 diabetes.

Mike’s history is negative for myocardial infarction, stroke or other macrovascular complications. However, he has a familial history of hypertension, obesity, and complications of diabetes, including myocardial infarction, retinopathy, and foot amputation in first degree relatives. Mike is 6 feet tall (183 Cm). At his last physician’s visit he weighed 216 pounds (98 Kg), with a BMI of 29.3, waist circumference measurement of 43 inches (110 Cm), and blood pressure of 138/82 mm Hg. He has a history of gradual weight gain of 30 pounds (14 Kg) over last 10 years; his HbA1c has gradually increased from 7.8% to 9.5% over the last 5 years. History of hypoglycemic episodes was negative. Mike’s adherence to medication regimens is good; however, adherence to his physician’s past advice regarding lifestyle modifications has been poor. He has a 25 pack-year smoking history and quit smoking 3 years ago. Mike has no known drug or environmental allergies.

The results of Mike’s most recent laboratory tests indicated the following:

- Fasting Blood Glucose (FBG): 162 mg/dL (9.0 mmol/L)
- HbA1c: 9.5%
- Total Cholesterol: 174 mg/dL (4.5 mmol/L)
- HDL Cholesterol: 39 mg/dL (1.0 mmol/L)
- LDL Cholesterol: 86 mg/dL (2.2 mmol/L)
- Triglycerides: 319 mg/dL (3.6 mmol/L)

Mike takes the following medications:

- 50 milligrams of Metformin (BID)
- 10 milligrams of Amitriptyline (HS)
- 20 milligrams of Simvastatin (HS)
- 5 milligrams of Ramipril (OD)
- 81 milligrams of Acetylsalicylic Acid (OD)

You took a full mouth radiograph, and performed a periodontal evaluation. You are concerned with the findings, and feel a little intimidated about how to accurately respond to the physician’s proactive approach to this referral. Recently, you have been to a number of continuing education courses on treating patients with diabetes, but you and your fellow clinicians have not instituted clinical protocols for patients with diabetes, nor have you done anything different about educating them. Until now, the clinicians in the practice have not been sufficiently motivated to change. With this new patient, Mike, you realize that the practice must overcome the inertia of its current clinical routines. How and where do you start? Mike’s clinical records follow below.
Periodontal Chart

Chart #: 13
Name: Casey Hein, RDH, MBA
Examiner: Casey Hein, RDH, MBA
Date: 10-24-02

Diagnosis
- Healthy
- Gingivitis
- Periodontitis
  - Slight
  - Moderate
  - Severe
  - Other

Pocket Depth Change
- Deeper
  - >1 mm and <2 mm
  - >2 mm
  - Improvement
  - >1 mm and <2 mm
  - >2 mm

Depth Bar Indicators
- Depth > 10 mm
- Depth > 5.0 mm
- Depth > 4.0 mm
- Recession
- Recession > 10 mm

Legend
- Minimal Attached Gingiva
- No Attached Gingiva
- Bleeding
- Suppuration
- Bleeding and Suppuration
- Plaque
- Function
- Mobility
- Implant
- Crown

Summary
13 has 26 teeth, 91 of 968 sites or 54% of the pocket depths are greater than 4.0 mm

Bleeding: 141 sites (53%) bleeding
Suppuration: 0 sites (0%) suppuration
Recession: 3 teeth had some recession with 0 remaining recession equal to or greater than 2.0 mm

Plaque Sites

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Discussion Questions:

1. Given the records provided in this case study, what is the periodontal diagnosis?

2. What aspects of Mike’s profile place him at high risk?

3. You know that something different than routine care is very important for Mike. Given your concern, what next steps will you take with this patient?

4. What are some of the key messages that are so important in educating Mike about periodontal-systemic risk?

5. What do you communicate to the referring physician? How would you initiate this communication? What clinical findings and other aspects of Mike’s case and dental treatment would be important to discuss?

6. What clinical information and treatment outcomes should be shared between the physician’s office and the dentist’s office to monitor the health status of patients with diabetes, like Mike?

7. What are the barriers (see table below) to progressively intervening in cases like Mike, and other patients with diabetes?

8. How can the barriers associated with the long term management of patients with diabetes be addressed and overcome?
Perceived Barriers to Interprofessional Collaboration in the Long Term Management of Patients with Diabetes and Periodontal Disease

| Fear of upsetting or offending patient | ☐ No ☐ Yes |
| Fear of appearing judgmental of patient | ☐ No ☐ Yes |
| Lack of knowledge, education & training; lack of trained personnel | ☐ No ☐ Yes |
| Lack of patient acceptance of advice from an oral healthcare provider | ☐ No ☐ Yes |
| Patients may believe oral healthcare providers lack credibility in this area | ☐ No ☐ Yes |
| Concern intervention would be perceived as practicing outside the scope of dental/dental hygiene practice | ☐ No ☐ Yes |
| Frustration with potential patient noncompliance | ☐ No ☐ Yes |
| Unclear of what outcomes should be tracked, or how to monitor | ☐ No ☐ Yes |
| Not enough time in daily schedule | ☐ No ☐ Yes |
| Little to no reimbursement for service | ☐ No ☐ Yes |
| Lack of appropriate referral options | ☐ No ☐ Yes |
| Lack of patient educational materials | ☐ No ☐ Yes |
| No clear cost-benefit to practice | ☐ No ☐ Yes |
| Lack of interest in topic | ☐ No ☐ Yes |
| Language barrier | ☐ No ☐ Yes |
| Competing/more compelling considerations in patient care | ☐ No ☐ Yes |
| No coherent effort by schools, professional authorities (i.e., ADA, AMA) to educate and train students or practitioners about this model of care | ☐ No ☐ Yes |
| Lack of endorsement from professional associations or authorities | ☐ No ☐ Yes |
| Unclear how to collaborate/communicate with other disciplines | ☐ No ☐ Yes |
| Not sufficiently motivated to change; too hard to overcome inertia of current practice/routines | ☐ No ☐ Yes |
| Lack of evidence, clear correlation between periodontal-systemic links is lacking | ☐ No ☐ Yes |
| Don’t believe that applying evidence will result in better outcomes | ☐ No ☐ Yes |
| No clear guidelines | ☐ No ☐ Yes |
| Do not know how to discuss these issues with patients, or how to start the conversation | ☐ No ☐ Yes |
| Lack of resources | ☐ No ☐ Yes |
| Cultural biases | ☐ No ☐ Yes |
| Fear of upsetting physician community and loosing potential source of referrals | ☐ No ☐ Yes |
| Not sure diabetes will impact dental treatment decisions (treatment plans) | ☐ No ☐ Yes |
| Fear of contradicting advice that physicians may have given to patients | ☐ No ☐ Yes |
| Legal issues associated with failure to follow-up with patients and their physicians | ☐ No ☐ Yes |
| Other | ☐ No ☐ Yes |
| Other | ☐ No ☐ Yes |
| Other | ☐ No ☐ Yes |