Rounds 8B-5,

Alexa Zacharias, Emily Zall, Sabrina Swartz, Lluvia Cardenas

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Rounds Team

- Group Leader: Dr. Toburen
- Specialty Leader: Dr. Best
- Project Team Leader: Alexa Zacharias
- Project Team Participants: Emily Zall, Sabrina Swartz, Lluvia Cardenas

Patient:

- Pt was first seen at CDC-North in 01/2020
- 61 y.o. caucasian male
- CC: “The pain the clindamycin resolved made me come in"

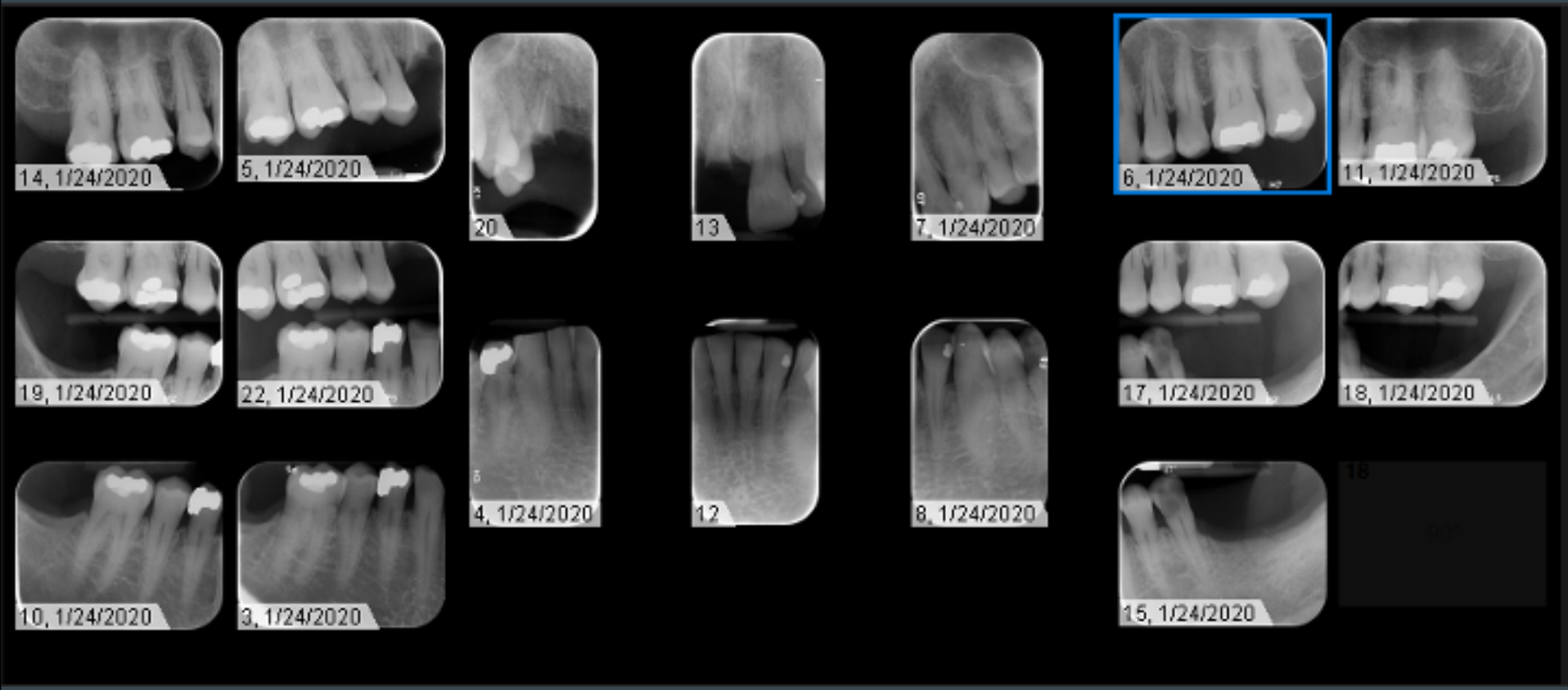
Medical History

- Pt hadn't seen PCP in 4 years. Pt states he takes no medications.
- Conditions: L and R cataracts taken out 5 years ago, heart attack 5 years ago, stroke 1991. CABG, mitral valve prolapse, has been told needs premed, Type II diabetes, stroke, cervical radiculopathy C3-C6 reinforced with titanium in 4/2016
- Allergies: Bees
- Medications: Amoxicillin, Atorvastatin, Gabapentin, Lantus Solostar, EpiPen
- Medical Consults with PCP sent out 1/24/20 and 8/12/20
- Blood glucose readings: 246 on 1/24/20, 307 and 302 on 8/10/20

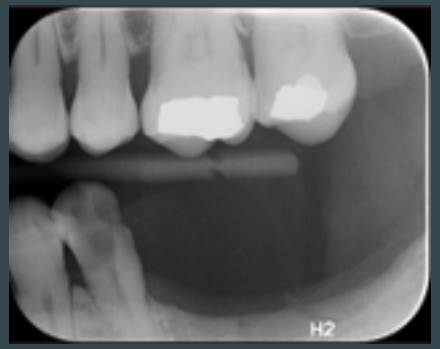
Dental History

- Broken bridge #6-8
- Amalgam tattoo on alveolar ridge #22 1x1mm
- Right mandibular tori
- It has been more than 2 years since last exam, cleaning, radiographs
- Pt has hx of bridges and extractions, RCT, serious injury to head and neck, neck pains, grinds and bruxes.

Radiographs: FMX

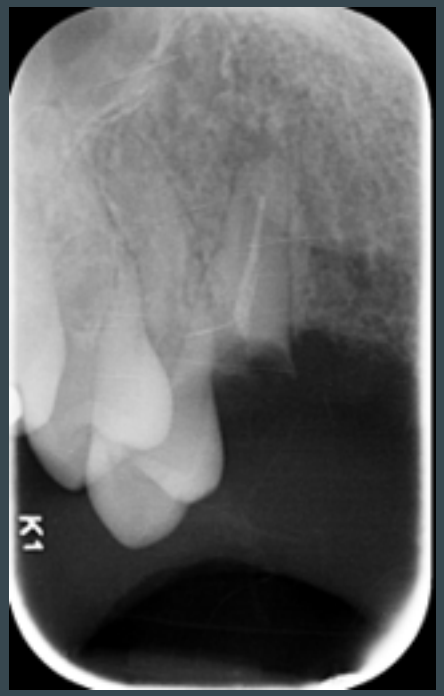


Radiographs findings



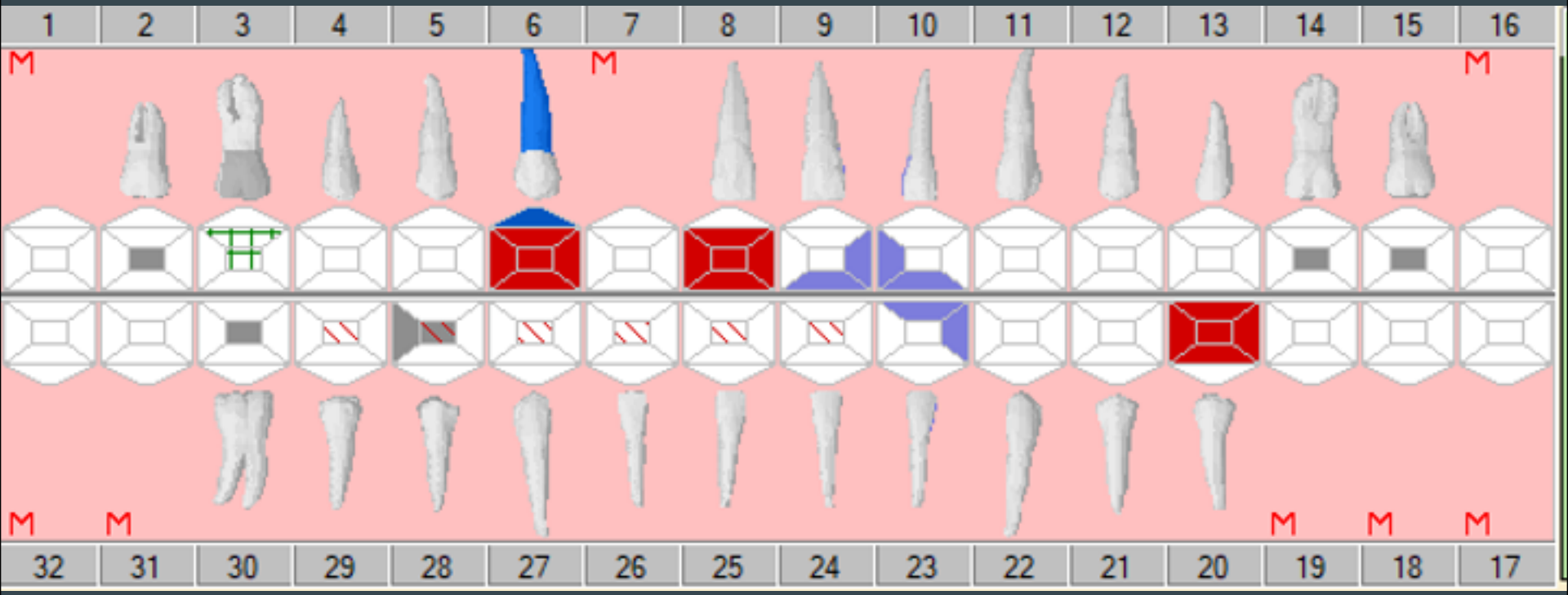
- generalized horizontal bone loss
- missing teeth: #1, 7, 16, 17, 18, 19, 31 & 32
- #3 fractured buccal cups
- fractured crown #6
- gross decay #20
- amalgam restorations
- Generalized mandibular wear

Radiographs findings:



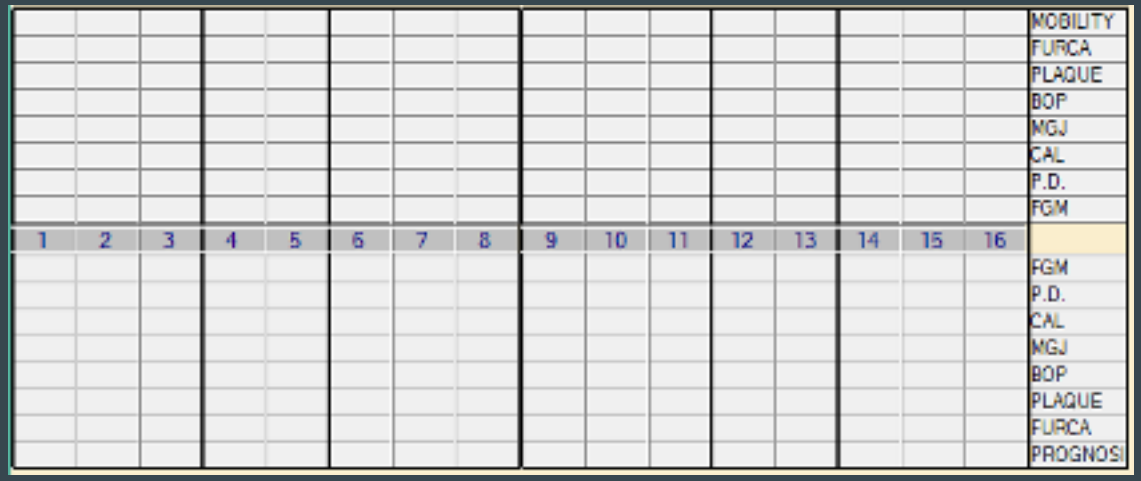
- Previous RCT #6 and 8
- Fractured crown #6 & 8
- Retained root tips
- Gross decay #20

Clinical Findings: Odontogram



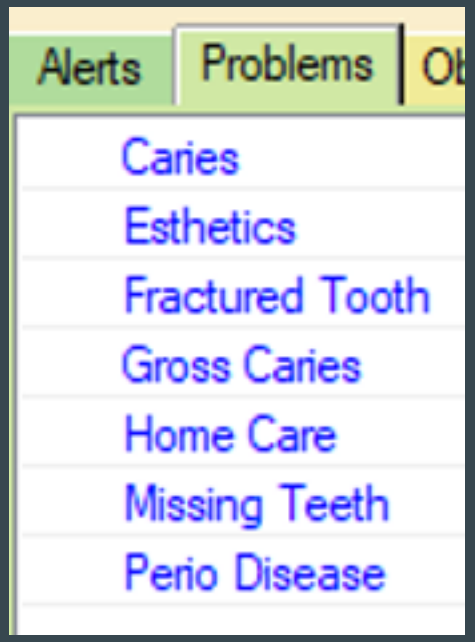
Periodontal Charting

- No periodontal charting done
- Pt states he needs to take antibiotic prior to dental treatment



Problem List

- caries
- esthetics
- fractured teeth
- gross caries
- home care
- missing teeth
- perio disease
- wear/bruxism
- sensitivity



Appropriate Clinical Photographs

citation

D1 Basic Science "What is Diabetes?"

Chronic health condition that affects how the body metabolizes glucose

Type I:

Cause: Autoimmune reaction that destroys beta cells

- Lack of insulin
- Hyperglycemia

Risk Factors:

- Genetics

Type II:

Cause: Insulin resistance

- Cells do not respond normally to insulin
- Hyperglycemia

Risk Factors:

- Diet/ Lifestyle
- Age
- Weight
- Genetics

Centers for Disease Control and Prevention.2020. What is Diabetes? [Internet]. [cited 19 Sep 2020]. Available from: https://www.cdc.gov/diabetes/basics/diabetes.html

Kharroubi AT, Darwish HM. 2015. Diabetes mellitus: The epidemic of the century. *World Journal of Diabetes* [Internet]. [cited 19 Sep 2020]; 6(6):850-867. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4478580/

D1 Basic Science "What is Diabetes?"

Type I:

- Only 5-10% of Americans with diabetes
- Childrens, teens, young adults

Treatment:

- Insulin medication
- Regular monitoring

Type II:

- 90-95% of Americans with diabetes
- Most common > 45 years old

Treatment:

- Diet and lifestyle changes
  - Increase insulin sensitivity
- Insulin medication
- Regular monitoring

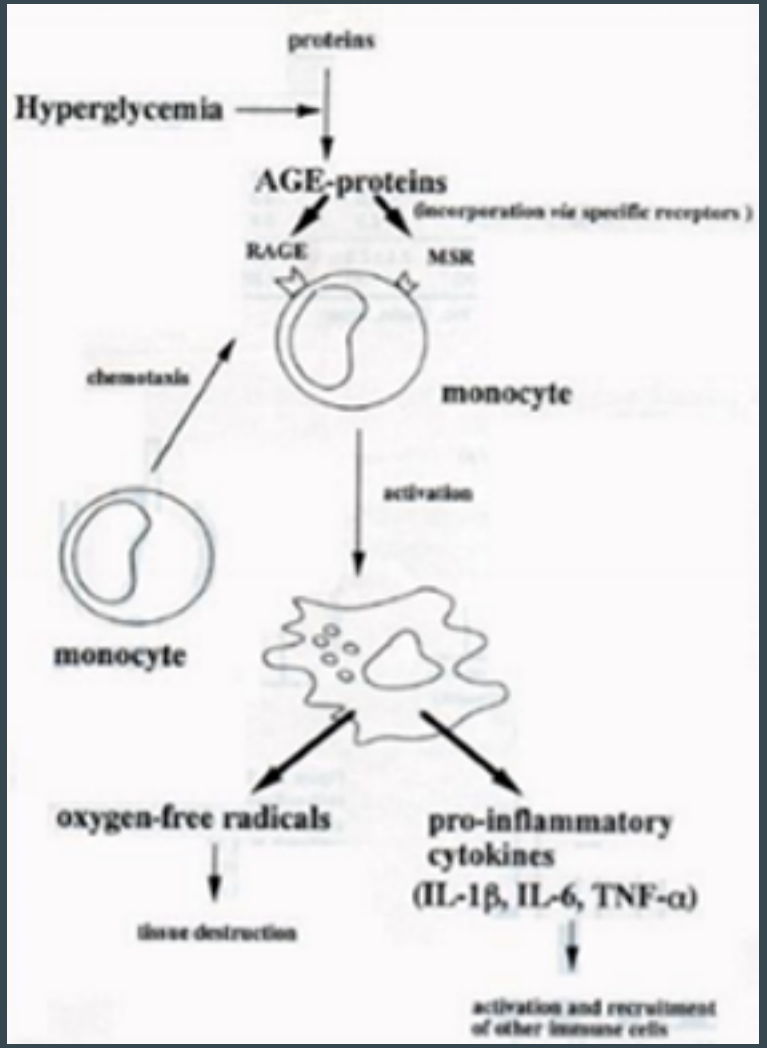
Centers for Disease Control and Prevention.2020. What is Diabetes? [Internet]. [cited 19 Sep 2020]. Available from: https://www.cdc.gov/diabetes/basics/diabetes.html

Kharroubi AT, Darwish HM. 2015. Diabetes mellitus: The epidemic of the century. *World Journal of Diabetes* [Internet]. [cited 19 Sep 2020]; 6(6):850-867. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4478580/

D2 Pathology “What oral manifestations are seen in patients with diabetes?”

- Dysregulation of the immuno-inflammatory response
- Pro-inflammatory cytokines released from Macrophage
- AGE-RAGE activation
  - Advanced Glycation End-product
- RANKL/OPG complex = osteoclasts

- Red complex - periodontitis



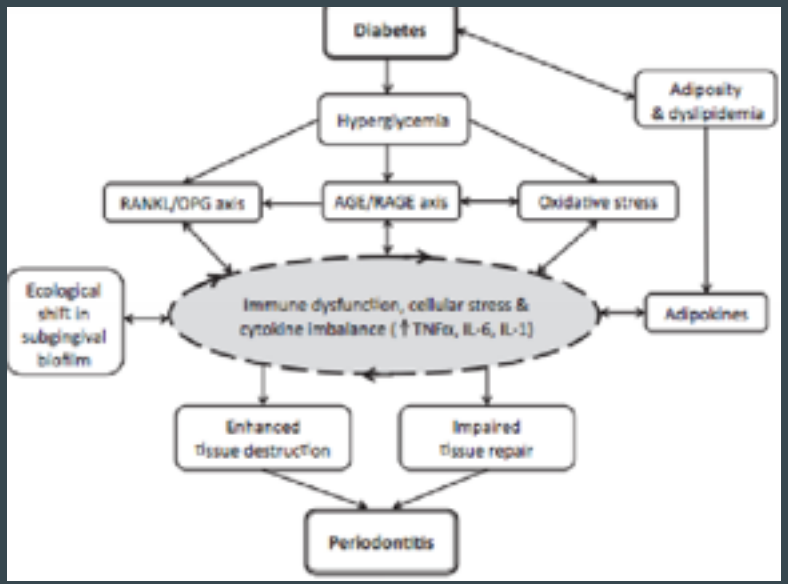
D2 Pathology "What oral manifestations are seen in patients with diabetes?"

Susceptibility

- Xerostomia
- Candidiasis
- Lichen Planus
- Periodontitis
- Caries

Prolonged Healing Time

- Activation of osteoclast precursors via IL-1B
- AGE-RAGE protein complex on macrophage



D3 PICO

- Clinical Question:

Do patients with well-controlled diabetes or uncontrolled diabetes have less dental complications?

PICO Format

P: patients with type II diabetes

I: Controlled diabetes

C: Uncontrolled diabetes

O: less complications

PICO Formatted Question

In patients with diabetes mellitus, will patients with controlled diabetes have less complications than patients with uncontrolled diabetes?

Clinical Bottom Line

Patients with controlled diabetes have less complications and better overall oral health

Search Background

- **Date(s) of Search:** 9/8/2020, 9/12/2020, 9/20/2020
- **Database(s) Used: Pubmed**
- **Search Strategy/Keywords:** dental caries, diabetes mellitus, dental complications

Search Background

- MESH terms used: dental caries, diabetes mellitus, dental complications, treatment outcomes.

Article 1 Citation:

- Citation: de Lima, A., Amorim Dos Santos, J., Stefani, C. M., Almeida de Lima, A., & Damé-Teixeira, N. (2020). Diabetes mellitus and poor glycemic control increase the occurrence of coronal and root caries: a systematic review and meta-analysis. *Clinical oral investigations*, 10.1007/s00784-020-03531-x. Advance online publication. https://doi.org/10.1007/s00784-020-03531-x

- Study Design: Systematic Review and Meta-analysis

- Study Need / Purpose:

Article 1 Synopsis

- Method - Retrieved data from 4047 articles to included in the meta-analysis across 6 databases. This article focused on the occurrence of coronal and root caries in patients with diabetes mellitus.
- Results - Individuals with type 2 DM were three times more likely to have root caries in comparison with non-DM individuals. Individuals with uncontrolled glycemic levels within the population with DM had higher prevalence of caries than individuals with controlled DM
- Conclusions -Diabetes mellitus may increase the occurrence of coronal and root caries in adults. Poor glycemic control turned diabetic individuals more likely to have caries.

Article 1 Selection

- This article was chosen because of its level of evidence as a systematic review and meta-analysis. It also specifically addressed all parts of our PICO question.
- Applicability to your patient: This would be hard evidence to show to our patient in hope that it would encourage him to get his diabetes under control.

Article 2 Citation, Introduction

- Citation: Sandberg, G. E., Sundberg, H. E., Fjellstrom, C. A., & Wikblad, K. F. (2000). Type 2 diabetes and oral health: a comparison between diabetic and non-diabetic subjects. *Diabetes research and clinical practice*, *50*(1), 27–34. https://doi.org/10.1016/s0168-8227(00)00159-5

- Study Design: Controlled cross-sectional study

Article 2 Synopsis

- Method - 102 randomly sampled diabetic patients and 102 age- and gender-matched non-diabetic subjects from the same geographical area, treated at the same Public Dental Service clinics. Oral conditions were measured at clinical and X-ray examinations.
- Results - Sites with advanced periodontitis were more frequent in the diabetic group as were initial caries lesions. Diabetic subjects showed a greater need of periodontal treatment, caries prevention and prosthetic corrections. patients with longer duration of diabetes had more manifest caries lesions as had those on insulin treatment when compared with patients on oral/diet or combined treatment.
- Conclusions - That individuals with type 2 diabetes in some oral conditions exhibited poorer health. Close collaboration between the patient, the primary health care and oral health professionals could be a way of improving the diabetic patient's general and oral health.

Article 2 Selection

- Selected this article because it addressed all sections of our PICO question.
- Applicability to your patient: Would be able to show him that the longer he goes without taking control of his diabetes, the more complications he will have with both his oral and overall health.

Article 3 Citation, Introduction

- Citation: Vernillo AT. Dental considerations for the treatment of patients with diabetes mellitus. J Am Dent Assoc. 2003 Oct;134 Spec No:24S-33S. doi: 10.14219/jada.archive.2003.0366. PMID: 18196670.

- Study Design: Systematic Review of Case Control Studies

Article 3 Synopsis

- Method - This article discusses new concepts in metabolic control for diabetes and the relationship of oral complications to diabetes mellitus. In consultation with the patient's physician, the dentist may need to modify the treatment plan where systemic complications are present.
- Results - Working with the physician, nutritionist and dental hygienist, the dentist can maintain the patient's oral health and possibly improve the patient's metabolic control of diabetes. In consultation with the patient's physician, the dentist can discuss the indications and contraindications of medications for the treatment of oral complications in patients with systemic complications resulting from diabetes. Using a glucometer may avert emergencies related to diabetes.
- Conclusions - The dental team can improve the metabolic control of a patient's diabetes by maintaining optimal oral health.

Article 3 Selection

- Selected this article because it addresses the P and the O of our PICO question. It shows the importance a dentist can play in overall health and that it is beneficial to work with a patient's physician if necessary.
- Applicability to your patient: Shows our patient that we care for him and want to help him but he also has to help himself.

Levels of Evidence

- [x] **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)
- [ ] **1b** – Individual RCT
- [ ] **2a** – Systematic Review of Cohort Studies
- [ ] **2b** – Individual Cohort Study
- [x] **3** – Cross-sectional Studies, Ecologic Studies, "Outcomes" Research
- [x] **4a** – Systematic Review of Case Control Studies
- [ ] **4b** – Individual Case Control Study
- [ ] **5** – Case Series, Case Reports
- [ ] **6** – Expert Opinion without explicit critical appraisal, Narrative Review
- [ ] **7** – Animal Research
- [ ] **8** – In Vitro Research

Strength of Recommendation Taxonomy (SORT)

- [x] **A** – Consistent, good quality patient oriented evidence
- [ ] **B** – Inconsistent or limited quality patient oriented evidence
- [ ] **C** – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Double click table to activate check-boxes

Conclusions

- D3: how does the evidence apply to this patient?
  - this evidence is strong and shows the importance of having well-controlled diabetes. Hopefully our patient will be convinced to take better care of himself after seeing these articles.
- D4: how will you advise the patient?
  - It is important that the pt get his type II diabetes under control before being seen in a dental setting in order to prevent any health emergency while in the chair. In order to get the pt's diabetes under control collaborative care needs to be taken by the patient, the dentist and the PCP. The pt should be monitoring his blood glucose at home as well as consistently watching what he consumes and being in contact with the recommended diabetic educator.

Discussion Questions?