“Sugar Gums”
Diabetes and Gum Disease

Dr Lyn Mayne
Senior Dentist RFDSSE Section
AIM

To reduce the HbA1c level in diabetic patients in Menindee, who have an existing HbA1c >7, following dental evaluation, treatment and education, within a 6 month period.
Team Members

- Dentists from RFDS
- GPs from RFDS
- Practice Nurse from RFDS
- Oral Health Therapist from FWLHN, Broken Hill
- Dental Assistants from FWLHN, Broken Hill
- Aboriginal Health Workers from FWLHN, Menindee
- Health Service Manager from FWLHN, Menindee
Periodontal Disease

- Periodontal disease is a chronic inflammatory disease, which results in the loss of the supporting structures of the teeth, through the formation of pathological pockets around the diseased teeth. Periodontal disease is responsible for a substantial proportion of tooth loss in adults.¹

---

¹ Harold Löe, Diabetes Care 16: 329-334, 1993
Identification of the Problem

- Review of medical history of diabetic patients in Menindee, identified
  - Significant number identified as aboriginal
  - Significant number had HbA1c >7
  - Significant number had not had oral health treatment or education

So why is this an issue?
Diabetes and Periodontal Disease

People with diabetes are two times more likely to develop periodontitis compared with those that do not have diabetes.²

Effective treatment of periodontal infection and reduction of periodontal inflammation is associated with a reduction in the level of glycated hemoglobin.³

Periodontitis is recognised as the sixth complication of diabetes.¹

Aboriginal people are 3 – 4 times more likely to have diabetes. ⁴

Aboriginal people are 1.3 times more likely to have periodontal disease.⁵

Diabetes is on the increase and is one of the most common chronic diseases amongst Aboriginal people.

Poorly controlled chronic disease patients, are often the cause of emergency call outs.
Quality Improvement Methodology was used to determine areas which required attention. These included
Client comes into prison
Diagnosed with diabetes
Cardiologist
Endocrinologist
Renal Specialist
Podiatrist
Chronic disease
GP
Referral to dentist
dentist
Follow up with Practice Nurse/case manager
Patient makes own appointment
Diabetic patient Referred to dentist
NO
Yes
Data HbA1C >7
Patient List
Dental exam including periodontal
Dental exam
including periodontal
Re-Referred Chronic disease
GP/ Case/Practice manager
Blood test HbA1c
Oral health education and follow up treatment
Outside desired range
Routine Dental follow up
Within desired Range
High Level Flow
Detailed Level Flow

NSW Health Far West Local Health District
Royal Flying Doctor Service
Ishikawa Diagram

Clinicians

Scheduling

Time

Importance of oral health

Attendance

Compliance

Patients

Cost

Instruments

Increased time required (steri)

Clinic

Availability

Staff

Resources

Rostering

Communication

Organisation

Costs
1. Referral process
2. Attendance and compliance
3. Importance of oral health – engaging the patient
Interventions

Posters to create awareness of the problem

Educate GP and Health Workers to refer diabetic patients
Clinical Evaluation

- Full Medical History
- Oral Examination
  - soft tissues, including:
    - Basic Periodontal Examination (BPE)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No pockets &gt; 3.5mm, calculus</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>No pockets &gt; 3.5mm, no calculus, bleeding</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>No pockets &gt; 3.5mm, calculus</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Probing depth 3.5 – 5.5mm</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Probing depth &gt;5.5mm</td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>Furcation</td>
<td></td>
</tr>
</tbody>
</table>

BPE Grid

- hard tissues, including:
  - Caries
  - existing restorations
  - broken teeth
  - dentures present or required
- Initial scaling (cleaning)
Patient Education Pack

- Tooth brush
- Toothpaste for sensitive teeth
- Inter dental Brushes
- Diabetes and Dental Care pamphlet
- Home Dental Care Instructions
## Patient Results

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Sex</th>
<th>D.O.B</th>
<th>Initial HbA1c</th>
<th>Date</th>
<th>Final</th>
<th>Date</th>
<th>dental</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EB</td>
<td>F</td>
<td>13/06/1985</td>
<td>9.4</td>
<td>Aug-13</td>
<td>9.8</td>
<td>Mar-14</td>
<td>incomplete</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>PD</td>
<td>F</td>
<td>15/09/1960</td>
<td>7.4</td>
<td>Feb-13</td>
<td>7.3</td>
<td>May-14</td>
<td>incomplete</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>NF</td>
<td>F</td>
<td>14/03/1959</td>
<td>8.1</td>
<td>Oct-11</td>
<td>8.2</td>
<td>Feb-14</td>
<td>incomplete</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>MH</td>
<td>M</td>
<td>29/12/1941</td>
<td>7.8</td>
<td>Aug-13</td>
<td>7.4</td>
<td>Feb-14</td>
<td>complete</td>
<td>1 dentures</td>
</tr>
<tr>
<td>5</td>
<td>DJ</td>
<td>M</td>
<td>12/04/1955</td>
<td>7.5</td>
<td>Dec-13</td>
<td>7.4</td>
<td>May-14</td>
<td>complete</td>
<td>3 dentures</td>
</tr>
<tr>
<td>6</td>
<td>CJ</td>
<td>F</td>
<td>10/10/1951</td>
<td>8.7</td>
<td>Dec-13</td>
<td>11.1</td>
<td>Jan-14</td>
<td>complete</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>EK</td>
<td>F</td>
<td>23/10/1948</td>
<td>7.4</td>
<td>Nov-13</td>
<td>6.4</td>
<td>May-14</td>
<td>complete</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>LK</td>
<td>F</td>
<td>11/05/1960</td>
<td>8.5</td>
<td>Dec-14</td>
<td>9</td>
<td>Feb-14</td>
<td>complete</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>DK</td>
<td>F</td>
<td>14/11/1958</td>
<td>10.5</td>
<td>Sep-13</td>
<td>7.6</td>
<td>May-14</td>
<td>incomplete</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>LM</td>
<td>F</td>
<td>3/09/1943</td>
<td>7.8</td>
<td>Feb-13</td>
<td>7.6</td>
<td>Mar-14</td>
<td>complete</td>
<td>1 dentures</td>
</tr>
<tr>
<td>11</td>
<td>DM</td>
<td>F</td>
<td>12/03/1949</td>
<td>9.3</td>
<td>Aug-13</td>
<td>7.7</td>
<td>May-14</td>
<td>complete</td>
<td>1 dentures</td>
</tr>
<tr>
<td>12</td>
<td>KP</td>
<td>M</td>
<td>2/06/1945</td>
<td>9.7</td>
<td>Sep-13</td>
<td>9.3</td>
<td>Apr-14</td>
<td>complete</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>VQ</td>
<td>M</td>
<td>20/10/1972</td>
<td>8.7</td>
<td>Dec-14</td>
<td>8.5</td>
<td>Jan-14</td>
<td>complete</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>KS</td>
<td>M</td>
<td>6/05/1959</td>
<td>7.4</td>
<td>Oct-13</td>
<td>7.1</td>
<td>May-14</td>
<td>incomplete</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>BS</td>
<td>F</td>
<td>31/01/1945</td>
<td>7.3</td>
<td>Aug-13</td>
<td>7</td>
<td>Mar-14</td>
<td>complete</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>DS</td>
<td>F</td>
<td>30/05/1963</td>
<td>8.7</td>
<td>Sep-13</td>
<td>10.8</td>
<td>Feb-14</td>
<td>complete</td>
<td>2 dentures</td>
</tr>
<tr>
<td>17</td>
<td>RT</td>
<td>M</td>
<td>26/02/1945</td>
<td>7.9</td>
<td>May-13</td>
<td>8.6</td>
<td>Apr-14</td>
<td>complete</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>RW</td>
<td>M</td>
<td>15/07/1951</td>
<td>9.1</td>
<td>Sep-13</td>
<td>7.4</td>
<td>Apr-14</td>
<td>complete</td>
<td>1</td>
</tr>
</tbody>
</table>
Before and After Oral Health Intervention

HbA1c
Pre and Post Treatment

Patient Number

Pre Treatment
Post Treatment
HbA1c: Pre- 12 month

Pre Treatment
12 month

NSW Government
Health Far West Local Health District
Royal Flying Doctor Service
the farthest corner, the finest care
Data Analysis/ Results

- 12 patients had a decrease in HbA1c of 0.1 to 2.9 = 66.66%
- 4 patients had a decrease of 0.5 or more = 22.22%
- 4 of the 5 patients with dentures had a decrease
- 1 patient informed us that he keeps his high because it makes him feel better (had a decrease from 9.7 to 9.3)
- Equal number of completed treatment and incomplete treatment
Better Patient Outcomes

Improved periodontal health:
  • increases chances of keeping dentition
    • Improved ability to chew food, better diet
    • Decreases incidence of reflux
    • Improves patient self esteem
    • Decreases need for dentures

• Improves HbA1c
  • improves stability of diabetes
  • Decreases acute exacerbations of disease

• Promote Healthy Living
  • Educate patients in importance of oral health
  • Promote self care
  • Targets high risk groups, elderly, chronic diseases and aboriginals
Teamwork and Partnerships

Multidisciplinary approach to treatment of diabetic patients within oral health team within FWLHN, including nurses, aboriginal health workers and administrative staff across organisation of FWLHN, RFDS and Maari Ma
Sustainability

• Referral of diabetic patients for oral health evaluation, education and treatment by:
  • Aboriginal health worker
  • GP chronic disease care plan
  • Diabetes educator

• Utilise hygienist skills of oral health therapist for cleaning and education
  • Leaves dentist for more specialised treatment requirements
  • Maintains oral health therapists hygienist skills

• Follow up HbA1c by GP and Aboriginal Health Worker
  • Reinforces importance HbA1c < 7
  • Decreases emergency care need for chronic disease patients

• Further oral health treatment and education as required
  • Maintains patients dentition, decreases dental wait list
Conclusion

A collaborative approach to patient care, within the oral health team, across disciplines and between organisations, can have a positive outcome on patient care.

The importance of oral health care for the patient, by maintaining dentition, improving self esteem and maintaining stability of their diabetes is demonstrated.

The importance for the organisation is seen in decreased acute exacerbations requiring “call out” or increased medical appointments, decreased dental wait lists and better utilisation of staff.