Objectives

- Understand the impact and use of shared decision-making in diabetic patients
- Describe the diabetes endemic and the co-morbidities associated if left untreated
- Describe implementation of a shared decision-making model in your practice

Introduction

- Diabetes is a challenging disease to manage successfully.
- Diabetes requires multi-dimensional adherence regimens however, research shows that patients are lacking in diet, exercise, or lifestyle changes
- Non-adherence rates of persons with diabetes are roughly 50% as a general rule.
Background and Significance

- 29.1 million Americans affected
- 7th leading cause of death in the US
- $245 billion spent on this disease alone

Implications

- 43.2% of people with diabetes have a HgA1c above 7.0%
- If changes are not made and the diabetic epidemic continues to rise, death, co-morbidities, and cost will be astronomical
- There is a lack of patient involvement in the decision making process

Purpose

- The purpose of this evidence-based practice improvement project was to design, implement and evaluate individualized, targeted, therapeutic lifestyle management utilizing shared-decision making in poorly controlled persons with diabetes in a primary care setting.
PICOT Question

- This led to the development of the following PICOT question: “Will persons with diabetes with a HbA1c greater than 7.0% (P) who undergo individualized, targeted, therapeutic lifestyle management utilizing shared-decision making (I) rather than standard of care teaching (C) decrease their HbA1c (O) three months after training (T)”?

Project Setting

- Family Practice of Marysville
  - Off-site, hospital based family practice in Perry County
  - Rural
  - Employs 2 physicians and 2 nurse practitioners.
- The practice served 232 persons with diabetes in the previous 6 months
- 126 of the patients seen in the office in the past 6 months have a HbA1c >7%.

EBP Model and Framework

- The Iowa Model of Evidence Based Practice was utilized for this project.
- The “trigger” leading to the questioning of current healthcare practices is HbA1c levels that continue to be above goal regardless of medication management.
- Based on research findings healthcare can be improved with the utilization of shared decision making in regard to therapeutic lifestyle management.
Problem-focused trigger
Increased HbA1c levels
Increased co-morbidities

Knowledge-focused triggers
APN knowledge of practice benefits
Best practice standards

Priority?
Yes
No
Consider other ideas

Form a team: Project leader, office staff, person with diabetes

Assemble relevant research and related literature
Critique and synthesize research for use in practice
Sufficient Research

Base practice on evidence
Community practice
Case reports
Randomized control trials

Conduct Research

Pilot the change in practice
1. Select outcomes
2. Collect baseline data
3. Design EBP guideline/protocol
4. Implement EBP
5. Evaluate process and outcomes
6. Modify practice guidelines

Yes
Adopt Practice

Yes
Institute practice change

Monitor/analyze process and outcome data
Disseminate the results
Submit manuscript

Evaluate barriers

EBP Model: Applied to Family Practice Marysville

Identify need for practice change
Meet with key stakeholders
Complete IRB Process

Assessing
Identify qualifying subjects
Obtain consent
Collect baseline lab measures
Provide education
Monitoring

Collect post lab measures
Collect outcome measures
Evaluate impact

Evaluation

Critical Appraisal of the Evidence

- Searches of MEDLINE, CINAHL, PubMed, and BMJ search engine for Evidence Based-Nursing
  - 1996 to 2014
  - Search terms included diabetes, provider, shared-decision making, HbA1c, diet, lifestyle, and individualized diet instruction.
- A total of 32 articles were identified and reviewed.
  - Ten articles were included for the final review.
### Evidence Table

<table>
<thead>
<tr>
<th>Last Name, First Name</th>
<th>Year of Publication</th>
<th>Design</th>
<th>Sample Size</th>
<th>Setting</th>
<th>Major Variables</th>
<th>Data Analysis</th>
<th>Findings</th>
<th>Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, et al.</td>
<td>2010</td>
<td>Descriptive Study</td>
<td>488 Patients with diabetes</td>
<td>IV: self-management (III)</td>
<td>Success in goal setting and maintenance of HbA1c levels</td>
<td>SAS version 8.2 statistical software and STATA, version 10</td>
<td>HbA1c levels with average decrease of 0.9% per year; P&lt;0.0001</td>
<td>Busy, real-world setting, subjects able to participate in diabetes self-management as well as set and attain goals and improve glycemic control</td>
</tr>
<tr>
<td>Corser, et al.</td>
<td>2007</td>
<td>Feasibility Study</td>
<td>55 Patients with diabetes</td>
<td>IV: SDM intervention (IV)</td>
<td>Success of SDM lowering HbA1c levels</td>
<td>Standard descriptive statistics/ procedures</td>
<td>Post-intervention perceived knowledge of diabetes and treatments, P&lt;0.001</td>
<td>15 month study at a large clinic; feasible for typical office visit</td>
</tr>
</tbody>
</table>

### Synthesis Table: Comparison of Outcomes

<table>
<thead>
<tr>
<th>Study Level of Evidence</th>
<th>Lowered Glycosylated Hemoglobin</th>
<th>Behavioral Goals Met</th>
<th>Interventions Across Studies</th>
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</thead>
<tbody>
<tr>
<td>Anderson et al. (2010)</td>
<td>X</td>
<td></td>
<td>Shared Decision Making</td>
</tr>
<tr>
<td>Corser et al. (2007)</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Glasgow et al. (2008)</td>
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<tr>
<td>Feng et al. (2009)</td>
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<tr>
<td>Ramey et al. (2010)</td>
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<tr>
<td>Sturgis et al. (2011)</td>
<td>X</td>
<td></td>
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<tr>
<td>Sprague et al. (2012)</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Wolever et al. (2013)</td>
<td>X</td>
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<td></td>
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</tbody>
</table>

### Synthesis Table: Comparison of Interventions Across Studies

<table>
<thead>
<tr>
<th>Study Level of Evidence</th>
<th>Shared Decision Making</th>
<th>Mutual Goal Setting</th>
<th>Computer Aid</th>
<th>Integrative Health Coaching</th>
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</thead>
<tbody>
<tr>
<td>Anderson et al. (2010)</td>
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Strength of Evidence

- The main trend found in evaluation of the research is the use of some form of shared decision making in guiding the successful treatment of diabetes.
- Several studies were reviewed and found that the areas we are lacking in the most are self-management support and patient centered care.
- Understanding of the patient and their specific needs to enable collaborative goal setting tailored to the patient was key.

Expected Outcomes

- Based on the synthesis of the evidence, expected outcomes included:
  - Lower HbA1c utilizing SDM method
- Additional expectation included:
  - Patient satisfaction with SDM style to treatment

Shared Decision Making Model

[Diagram of the Shared Decision Making Model]

Charles, 1997
Shared Decision-Making in Type 2 Diabetes

Methods and Implementation

- **Plan:**
  - Gained permission from the practice to conduct the project: July 2016
  - IRB approval: August 2016
  - Collection of baseline data: Spring 2016
  - Evidence-based practice change implementation: Fall 2016
  - Collection of pre and post intervention data: Fall 2016
  - Analysis and interpretation of data: Spring 2017
  - Measurement of outcomes: Spring 2017

Methods and Implementation

- **Use of existing HgbA1c result from medical record**
  - Patient chart screened by CRNP
- **Routine patient OV for diabetes**
  - Consent obtained
  - Individualized, shared decision making session completed at regularly scheduled office visit
  - Documentation in EPIC and on patient instructions
  - Follow up HgbA1c in 3 months
Decision Supports Utilized

- The Plate Method
- Whole grains versus refined carbohydrates
- Lean proteins
- Fruit and Vegetable Intake
- Water
- Exercise

Demographic Data

- 16 eligible patients enrolled
- 13 patients completed; 81.2%
  - 2 patients excluded for baseline HbA1c <7.0%
  - 1 patient lost to follow up
- 6 male, 9 female
- Age range 49-87 years old
- 10/13 patients had a decrease in HbA1c
- Greatest decrease was 3.5 points

Outcomes

- Non-parametric tests utilized
- Alternative to the *t* test
- Wilcoxon Signed Ranks Test
  - Looks at the magnitude of difference

<table>
<thead>
<tr>
<th>Post_HbA1c - Pre_HbA1c</th>
<th>Negative Ranks</th>
<th>Positive Ranks</th>
<th>Ties</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Mean Rank</td>
<td>Sum of Ranks</td>
<td></td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>8.20</td>
<td>82.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.00</td>
<td>9.00</td>
<td></td>
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</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
</tbody>
</table>

*Post_HbA1c < Pre_HbA1c*

*Post_HbA1c > Pre_HbA1c*

*Post_HbA1c = Pre_HbA1c*
Outcomes

- Wilcoxon Ranks Test

<table>
<thead>
<tr>
<th>Post_HGBA1C - Pre_HGBA1C</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-2.556</td>
<td>.011</td>
</tr>
</tbody>
</table>

a. Based on positive ranks.

Case Study #1

- BLP is a 49 y/o female who presents for a routine follow up.
- PMH: Type 2 Diabetes, Hypothyroidism, HTN, Hyperlipidemia, DJD, GERD, Depression
- Meds: 17 meds; Humalog 75-25, Invokana
- HbA1c: 12.6 (9/15/16)

BLP

- Diet:
  - Breakfast: 2 pieces of toast, 2 eggs. 1-2 times a week add sausage or bacon
  - Lunch: mushroom soup with crackers or waffle sandwich
  - Dinner: Mac and cheese, hot dogs, green beans (prior night)
- Exercise:
  - None; knee issues
- Drinks:
  - 4-6 bottles water/day; 2-3 glasses 1% milk/day, ½ bottle of diet tea at bedtime
- Non-Smoker
Based on the previous information, what are some things you can recommend to this patient to help better control their diabetes?

Did it work?

- 12/28/16: HbA1c: 9.1%
- Acceptability Questionnaire extremely helpful and extremely acceptable
- 4/2/17: 9.2%

Case Study #2

- EJS is an 87 y/o male who presents for a routine follow up.
- PMH: Type II Diabetes, HTN, Hyperlipidemia, Kidney Disease, Neuropathy, Hypothyroidism, CAD
- Meds: 12 meds, Lantus, glimepiride for diabetes
- HbA1c on 11/9/16 was 8.0%
EJS

☐ Diet:
  ☑ Wife is in charge. He eats what she puts in front of him and she is a diabetic as well

☐ Exercise:
  ☑ Walks grocery store
  ☑ Drinks:
    ☑ 1 bottle water per week
    ☑ Non-Smoker

EJS

☐ Based on the previous information, what are some things you can recommend to this patient to help better control their diabetes?

Did it work?

☐ HbA1c on 2/9/17 was 8.7%
☐ He states he drank 1 bottle of water a day; but he did miss some days
☐ Scored a 6 on acceptability and helpfulness scale
Impact Analysis

Acceptability Questionnaire

Directions: Circle the number that best matches your response to the statement.

The health behavior change treatment (shared decision making) used in this project was helpful to me?

Not at all helpful Extremely helpful
0 1 2 3 4 5 6 7

The health behavior change treatment (shared decision making) used in this project was acceptable to me.

Not at all acceptable Extremely acceptable
0 1 2 3 4 5 6 7

To make the health behavior change treatment (shared decision making) more helpful or acceptable to patients, I suggest the following: (write in your thoughts)

Waker, 2012, p. 148

Participant Satisfaction with SDM Treatment
Participant Satisfaction with SDM Treatment

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
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<tr>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Patient Completion

- Complete: 81.2%
- Declined: 6.3%
- Incomplete/Refused: 12.5%

Cost Analysis

- Level 4 Office Visit:
  - Diabetes: $61.03 per visit
  - Monitor diabetes status
  - Make necessary adjustments
  - SDM to increase patient buy-in to control diabetes

  - 232 patients seen over 6 month period
  - 126 of those had HbA1c >7% and need 4 visits/year: 30,759.12
  - 106 patients had HbA1c <7% and need 2 visits/year: $12,938.36

- Inpatient Hospitalization for Diabetes Complication
  - None Cost: $21,730
Challenges

- Time
- Provider Participation
- Patient Adherence
- EMR System

Clinical Recommendations/Sustainability

- Next step is to implement the project over a longer time frame utilizing all providers in the practice
- Project results are being shared with physicians and nurse practitioners at meetings in April 2017
- Maintaining the sustainability of the project in the current office as well as expanding SDM in other disease processes is a goal of this author

Conclusion

- Diabetes remains the 7th leading cause of death in the US
- The institution of SDM in patients with diabetes did effectively decrease HbA1c levels. However, the decrease was modest and SDM needs to become a routine standard of care completed at every office visit.
- The healthcare community must continue to investigate how to best utilize SDM, in order to ensure patient involvement in their health.