Decreasing Incidence of Diabetes Type II

Team 4 - 10/2015
Aim

In patients with a BMI $\geq 25$ and/or a diagnosis of HTN, we will increase screening for diabetes mellitus type II using HbA1c to 50%.
What are we doing?

Working with Wichita Internal Medicine Midtown Clinic as well as the resident clinic to appropriately screen for pre-diabetes by recognizing the risk factors of hypertension and/or BMI ≥ 25.

Then what?

After diagnosis of pre-diabetes, eligible patients are referred to the Diabetes Prevention Program (DPP) at the Greater Wichita YMCA.

What is the Diabetes Prevention Program at the YMCA?

The DPP uses group support to encourage eating healthier and exercising for a total of 150 minutes a week.
Why is this important?

Over 36% of United States population has pre-diabetes¹

Without lifestyle changes... 15% to 30% of people with prediabetes will develop type 2 diabetes within five years²

15 to 31 million undiagnosed/diagnosed pre-diabetics become diabetic

A systematic review article comparing lifestyle modifications to prevent diabetes in prediabetics indicated that (PMID 26167912):

- More direct interactional and intensive physical activity provided by diabetes prevention based programs resulted in more weight loss and lower incidence of diabetes.

In the Diabetes Prevention Program, a randomized controlled trial of patients with prediabetes, the following interventions reduced the risk of developing diabetes (PMID 11832527):

- Lifestyle modification: 58% RRR, NNT 13.9
- Metformin: 31% RRR, NNT 6.9
- Lifestyle compared to metformin: 39%

Lifestyle prevention decreased incidence of diabetes by 27% vs a 18% reduction using metformin in 15 year follow-up (PMID 26377054)
Baseline Flow Chart

Non Diabetic Patient Presents to Clinic

Dr. Decides to Screen

Criteria: BMI ≥ 25, HTN, no HgbA1C <1yr ago

Yes

Hgb A1C 5.7-6.4

Yes

BMI >25

Yes

Referral to YMCA for DPP

No

Stop

Stop

Standard education lifestyle modification counseling
Stakeholder Analysis

Nursing Concerns:

- One POC HbA1c machine creating workflow bottleneck
- Independent interventions being implemented at one time
- Do not want to increase rooming time (7 min currently).

Resident concerns:

- Limited time for health concerns with patients may lengthen the visit

YMCA concerns:

- Limited staff currently trained
- No bilingual staff trained

Other:

- $429 out of pocket without medicaid
- Reimbursement for the clinic
- Patient compliance
Chart Review

We reviewed 134 charts based on diagnosis of obesity and/or HTN.

Charts reviewed for screening within 1 year with:

- HbA1c
- Fasting blood glucose
- Random blood glucose

Exclusion of following patients:

- Diagnosis of DM2 >1 year
- Diagnosis of prediabetes >1 year
- Labs for diagnosis rather than screening purposes
Screening for Diabetes in At-Risk Patients

National Benchmark for DM Screening in Hypertensive Patients Only

Source: Medicare Quality Resource Use Reports 2013
Intervention Flow Chart

Non Diabetic Patient Presents for continuity appt

- Nurse: Patient meets criteria?
  - Yes: Nurse writes: "Screen for DM" in CC and/or Sticky Note
  - No:
    - Stop

Criteria:
- BMI ≥ 25 OR
- HTN
- And no diabetes screening in past year

Physician orders end of visit HbA1c via LabCorp

Patient leaves clinic with educational pamphlet describing DPP, diabetes, and prediabetes

Dr. receives HbA1c results & decides action

- < 5.7: Patient receives results through patient portal or mail; repeat screening annually if patient still meets criteria
- 5.7 - 6.4: Automated message informs patient and offers follow-up; staff refers patient to YMCA
- > 6.4: Staff calls with results and schedules follow-up for new diagnosis of diabetes
Intervention: Nursing Communicates Screening Eligibility to Provider in Chief Complaint

In the image, a window titled "Chief Complaints Keywords" is open, with a list of complaints under the "Find: diab" category. The complaints listed include:

- diabetes
- diabetes education follow-up
- diabetes education initial
- diabetes education per primary care physician
- diabetes mellitus
- diabetes mellitus type 1
- diabetes mellitus type 2
- Diabetes screen eligible
- diabetes with complications

The selected complaint is "Diabetes screen eligible."
Intervention: Order Set
We discussed approach to prediabetes using the Five A’s approach:
- Assess: we discussed which behavioral health risk(s) to change
- Advise: personalized behavior change advice, including health harms and benefits;
- Assign: we agreed on treatment plan

Urged patient to contact Diabetes Prevention Program Intake Coordinator 316-219-9622 ext 5596 or intake.coordinator@ymcwichita.org with more information at http://www.ymcwichita.org/diabetes-prevention.
Why am I receiving this sheet?

Today your provider decided to test you for diabetes by doing a blood test called a Hemoglobin A1c, or HbA1c. This test shows the average glucose (sugar) in your blood over the last three months. They ordered this test because you have one or more diabetes risk factors.

You HAVE NOT been diagnosed with pre-diabetes or diabetes at this time.

What happens next?

Your provider will get your results sometime in the next two weeks.

- If your HbA1c is normal, the clinic will send you a letter and/or put the result on the patient portal.
- If your HbA1c is high, the clinic will contact you.

What is pre-diabetes?

Pre-diabetes means that you have a blood glucose level that is higher than normal but is less than a person with diabetes. People with pre-diabetes are at high risk of getting diabetes soon.

What do I do if I have pre-diabetes?

If your HbA1c is 5.7-6.4, the clinic will contact you to let you know.

If you are 18 years old and have a BMI of ≥25, you are eligible for the Diabetes Prevention Program at the Greater Wichita YMCA. See the attached pamphlet for more information. The clinic will refer you directly to this program if you are eligible and found to have pre-diabetes, and the YMCA will contact you.

You do not need to schedule a follow-up visit with your provider, but you are welcome to. The next time you see your provider, they will talk to you about delaying or preventing diabetes by losing weight and increasing physical activity.
MEASURABLE PROGRESS – UNLIMITED SUPPORT
Diabetes Prevention Program
GREATER WICHITA YMCA

WHAT IS PREDIABETES?
Prediabetes occurs when blood sugar levels are higher than normal but not high enough for a type 2 diabetes diagnosis. Risk for developing type 2 diabetes may be reduced or eliminated by weight loss, healthier eating and increased physical activity.

If you’re at risk for type 2 diabetes, you can make small, measurable changes that can reduce your risk and help you live a happier, healthier life.

WHAT IS THE YMCA DIABETES PREVENTION PROGRAM?
The YMCA’s Diabetes Prevention Program is a behavior change program designed to help adults who are at high risk for developing type 2 diabetes reduce their chances of developing the disease. The program is 12 months, starting with 16 weekly sessions, then 9 additional sessions at a gradual lower frequency.

As a participant, you’ll enjoy:
- A safe space where you can feel comfortable sharing and learning
- Making new friends. You will support each other as you all trade old habits for healthier new ones
- Working as a group. You don’t have to figure this out alone
- The new energy and confidence that comes with losing weight and reducing your risk for diabetes
- 3-month Family Membership at the YMCA to support physical activity goals

To reduce your risk for diabetes, your goal in the YMCA’s Diabetes Prevention Program is to reduce your body weight by 7% and increase your physical activity by at least 150 minutes per week within the first half of the program.

“I am thrilled that I am getting guidance, support and a positive attitude to make changes to better myself” – Carol (Program Participant)

DO YOU QUALIFY?
To participate in the program, you must be:
- 16 years or older
- Overweight (BMI>25), and
- Diagnosed with prediabetes using a blood test or a previous diagnosis of gestational diabetes
- If you do not have a blood test result, you must have a qualifying risk score (see below)

Individuals that have already been diagnosed with either type 1 or type 2 diabetes do not qualify for the program.

WHAT IS YOUR RISK SCORE?
For each “yes” answer, add the number of points listed:

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you a woman who has given birth to a baby weighing more than 9 pounds?</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Do you have a parent with diabetes?</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Do you have a brother or sister with diabetes?</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Do you weigh as much or more than the recommended weight for your height?</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Are you younger than 65 years and get little or no physical activity in a typical day?</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Are you between 65 and 69 years of age?</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Are you 70 years of age or older?</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

If you scored a 9 or higher, you may qualify for the program. This does not mean you have diabetes.

YMCA MEMBERSHIP NOT REQUIRED!
The YMCA is the leader in helping communities in the United States achieve healthier lives. Financial assistance is available to those who qualify. Please contact the YMCA for more information.

The YMCA’s Diabetes Prevention Program uses the CDC-approved curriculum and is part of the CDC-University of Indiana National Diabetes Prevention Program. The National Institutes of Health research has shown this program, like the YMCA Diabetes Prevention Program reduces the number of new cases of type 2 diabetes by 58%. The YMCA does not guarantee any specific outcomes for program participants in regards to diabetes prevention.

FOR MORE INFORMATION ABOUT THE YMCA’S DIABETES PREVENTION PROGRAM CONTACT:
Intake Coordinator
316-219-9622 ext. 5596
intake.coordinator@ymcawichita.org
GREATER WICHITA YMCA,
402 N Market, Wichita KS 67202
www.ymcawichita.org/diabetes
Reimbursement for Counseling/Time and HbA1C

Lab:

Z13.1: Screening for diabetes

83036: HbA1c

Counseling/Time:

Code **G0446** for Intensive Behavioral Therapy (IBT) for **Cardiovascular Disease**.

"Adults with hyperlipidemia, hypertension, advancing age, and other known risk factors for cardiovascular and diet-related chronic disease: Intensive behavioral counseling to promote a healthy diet"
# Financial Analysis

## REVENUE per encounter

<table>
<thead>
<tr>
<th>Professional time (EM code)</th>
<th>Unit</th>
<th>Reimbursement</th>
<th>sub</th>
<th>totals</th>
<th>REVENUE per cohort</th>
<th>sub</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>99215 Established outpt visit</td>
<td>1</td>
<td>$192.98</td>
<td>0</td>
<td>$0.00</td>
<td>0</td>
<td>0</td>
<td>$0.00</td>
</tr>
<tr>
<td>99214 Established outpt visit</td>
<td>93</td>
<td>$98.74</td>
<td>0</td>
<td>$0.00</td>
<td>93</td>
<td>9,182.82</td>
<td>93</td>
</tr>
<tr>
<td>99213 Established outpt visit</td>
<td>7</td>
<td>$66.66</td>
<td>0</td>
<td>$0.00</td>
<td>7</td>
<td>466.48</td>
<td>7</td>
</tr>
<tr>
<td>99212 Established outpt visit</td>
<td>43</td>
<td>$39.85</td>
<td>0</td>
<td>$0.00</td>
<td>43</td>
<td>1,731.55</td>
<td>1,731.55</td>
</tr>
<tr>
<td>99211 Nurse visit</td>
<td>0</td>
<td>$18.32</td>
<td>0</td>
<td>$0.00</td>
<td>0</td>
<td>0</td>
<td>$0.00</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Unit</th>
<th>Reimbursement</th>
<th>sub</th>
<th>totals</th>
<th>REVENUE per cohort</th>
<th>sub</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visceral screen</td>
<td>8641</td>
<td>$3.00</td>
<td>0</td>
<td>$0.00</td>
<td>100</td>
<td>300.00</td>
<td>100</td>
</tr>
<tr>
<td>Behavioral Int</td>
<td>40446</td>
<td>$26.23</td>
<td>0</td>
<td>$0.00</td>
<td>43</td>
<td>1,127.89</td>
<td>43</td>
</tr>
</tbody>
</table>

## Laboratory and pathology

<table>
<thead>
<tr>
<th>Laboratory and pathology</th>
<th>Unit</th>
<th>Reimbursement</th>
<th>sub</th>
<th>totals</th>
<th>REVENUE per cohort</th>
<th>sub</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM Screen</td>
<td>Z13.1</td>
<td>$13.21</td>
<td>28</td>
<td>$0.00</td>
<td>100</td>
<td>1,321.00</td>
<td>100</td>
</tr>
<tr>
<td>HbA1c</td>
<td>83036</td>
<td>$13.21</td>
<td>0</td>
<td>$0.00</td>
<td>100</td>
<td>1,321.00</td>
<td>100</td>
</tr>
</tbody>
</table>

## Sum

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>REVENUE per cohort</th>
<th>sub</th>
<th>totals</th>
<th>REVENUE per cohort</th>
<th>sub</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Private payer mix characteristic

- **A: Proportion of encounters with private insurance**
  - 63%

- **B: Increase in private reimbursement over Medicare**
  - 25%

## EXPENSES per Encounter

<table>
<thead>
<tr>
<th>Staff Time - any difference Pre vs Post</th>
<th>Unit cost</th>
<th>REVENUE per Cohort</th>
<th>sub</th>
<th>totals</th>
<th>REVENUE per Cohort</th>
<th>sub</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SALARY INC. is 3.9% ↑ with 3% increase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Position</strong></td>
<td><strong>Salary</strong></td>
<td><strong>With fringe</strong></td>
<td><strong>$/minute</strong></td>
<td><strong>Minutes</strong></td>
<td><strong>totals</strong></td>
<td><strong>sub</strong></td>
<td><strong>totals</strong></td>
</tr>
<tr>
<td>MA 1</td>
<td>$30,000</td>
<td>$39,000</td>
<td>$0.3</td>
<td>7</td>
<td>223.04</td>
<td>100</td>
<td>223.04</td>
</tr>
<tr>
<td>MA 2 Phone</td>
<td>$30,000</td>
<td>$39,000</td>
<td>$0.3</td>
<td>10</td>
<td>319.19</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>RN</td>
<td>$60,000</td>
<td>$78,000</td>
<td>$0.6</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>MD or DO 1</td>
<td>$150,000</td>
<td>$195,000</td>
<td>$1.6</td>
<td>30</td>
<td>4,779.41</td>
<td>100</td>
<td>4,779.41</td>
</tr>
<tr>
<td>MD or DO F/U</td>
<td>$150,000</td>
<td>$195,000</td>
<td>$1.6</td>
<td>30</td>
<td>4,779.41</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

## Supplies cost

<table>
<thead>
<tr>
<th>Supplies cost</th>
<th>ASSUMED WASTE is 5.0%</th>
<th><strong>Cost/box</strong></th>
<th><strong># in box</strong></th>
<th><strong>Cost/item</strong></th>
<th><strong>After waste</strong></th>
<th><strong>REVENUE per Cohort</strong></th>
<th>sub</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education handout</td>
<td>$60.00</td>
<td>$100.00</td>
<td>$0.06</td>
<td>$0.06</td>
<td>$0.06</td>
<td>100</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>Supplies for venip</td>
<td>$207.18</td>
<td>48</td>
<td>$4.32</td>
<td>$4.54</td>
<td>$4.54</td>
<td>100</td>
<td>454.34</td>
<td></td>
</tr>
</tbody>
</table>

## Contracts to outside service providers

<table>
<thead>
<tr>
<th>Contracts to outside service providers</th>
<th><strong>CPT code</strong></th>
<th><strong>Fee per service</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab</td>
<td>HgbA1C</td>
<td>$4.50</td>
</tr>
</tbody>
</table>

## Profit

<table>
<thead>
<tr>
<th>Profit</th>
<th>(REVENUE - EXPENSES)</th>
<th>$6,166.61</th>
<th>/100 encounters</th>
</tr>
</thead>
</table>
Financial Analysis - Bottom Line

**Pre-Intervention**
Revenue: $11,169.06 / 100 encounters
Cost: $5,002.45 / 100 encounters
Balance: $6,166.61 / 100 encounters

**Post-Intervention**
Revenue: $16,334.34 / 100 encounters
Cost: $8,104.95 / 100 encounters
Balance: $8,229.39 / 100 encounters

Change in profit: $2,062.78 /100 encounters
Next Steps

❖ Resident team to communicate protocol and implement screening November 2015

❖ Potential areas of refinement:
  ➢ Identification of at-risk patients
    ■ Pre-visit planning
    ■ Create practice-wide registry of patients and automatic EMR notification
  ➢ Patient education at screening visit
  ➢ Follow-up communication methods
END: slides beyond this may be extra?
Stakeholder Analysis

- Nursing rooming time 7min currently
  - Implementing more than one new process
  - One POC HbA1c machine creating workflow bottleneck
  - if increased residents will be unable to make it to scheduled learning events

- Adding screening tool
  - residents have limited time, adding another tool to use during visit may impede workflow

- YMCA
  - limited staff currently trained: only offer classes at one location and at specific times
  - no bilingual staff trained

- Price
  - $429 out of pocket without medicaid
  - income based pricing and scholarships available

- Coding for reimbursement
- Patient compliance, multiple forms to complete upon visit arrival, and lack of medical knowledge
- Timing of HbA1C screening and patient education - Work flow concerns of nursing -> blood draw after appt rather than POC before
Treatment and Management

Intensive weight loss and lifestyle intervention, if sustained, can substantially improve glucose tolerance and prevent progression from IGT to type 2 diabetes. In the Diabetes Prevention Program (DPP)[2] study, there was found to be a 16% reduction in diabetes risk for every kilogram of weight loss. Reducing weight by 7% through a low-fat diet[2] and performing 150 minutes of exercise a week is the goal. A 15-year follow-up study suggests that long-term lifestyle modification is superior to metformin, with a 27% reduced incidence with lifestyle intervention vs. 18% reduced diabetes incidence with metformin intervention (1**). Metformin[3] can be considered in patients for whom lifestyle therapy has failed or is not sustainable and who are at high-risk for developing type 2 diabetes. [13] The ADA guidelines recommend modest weight loss (5-10% body weight, moderate-intensity exercise (30 minutes daily), and smoking cessation.

Proposed data collection instrument

- Diagnosis of diabetes?
  - Yes
  - No

- BMI > 25?
  - Yes
  - No

- HTN diagnosis?
  - Yes
  - No

- Did they get an A1c in past year?
  - Yes
  - No

  *must provide value*

- HgA1c

- Date of HgA1c

- If HgA1c 5.7-6.4, did patient receive pre-diabetes diagnosis?
  - Yes
  - No

  - Refused
  - Not indicated
  - Contra-indicated
  - Not documented
  - Other

- If not performed, why?

- Other reason why quality measure not performed
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting blood glucose in past year?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>FBG done as screening for diabetes (POC or chem panel) if documentation of intent to screen (i.e. not incidental finding in chem panel).</td>
<td></td>
</tr>
<tr>
<td>Date of FBG</td>
<td></td>
</tr>
<tr>
<td>If FBG 100-125, did patient receive pre-diabetes diagnosis?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>If FBG not performed, why?</td>
<td>Refused, Not indicated, Contra-indicated, Not documented, Other</td>
</tr>
<tr>
<td>Other reason why FBG not performed</td>
<td></td>
</tr>
<tr>
<td>If new diagnosis of pre-diabetes and BMI &gt; 25, was patient referred to DPP?</td>
<td>Yes, No</td>
</tr>
</tbody>
</table>
Intensive Behavioral Therapy (IBT) for Obesity

IBT for obesity consists of the following:

1. Screening for obesity in adults using measurement of BMI calculated by dividing weight in kilograms by the square of height in meters (expressed kg/m²);

2. Dietary (nutritional) assessment; and,

3. Intensive behavioral counseling and behavioral therapy to promote sustained weight loss through high intensity interventions on diet and exercise.

Intensive behavioral intervention for obesity should be consistent with the 5-A framework:

1. Assess: Ask about/assess behavioral health risk(s) and factors affecting choice of behavior change goals/methods.

2. Advise: Give clear, specific, and personalized behavior change advice, including information about personal health harms and benefits.

3. Agree: Collaboratively select appropriate treatment goals and methods based on the patient’s interest in and willingness to change the behavior.

4. Assist: Using behavior change techniques (self-help and/or counseling), aid the patient in achieving agreed-upon goals by acquiring the skills, confidence, and social/environmental supports for behavior change, supplemented with adjunctive medical treatments when appropriate.

5. Arrange: Schedule follow-up contacts (in person or by telephone) to provide ongoing assistance/support and to adjust the treatment plan as needed, including referral to more intensive or specialized treatment.
Intensive Behavioral Therapy (IBT) for Cardiovascular Disease

- The behavioral counseling intervention for aspirin use and healthy diet should be consistent with the Five As approach that has been adopted by the USPSTF to describe such services:
  - **Assess**: Ask about/assess behavioral health risk(s) and factors affecting choice of behavior change goals/methods.
  - **Advise**: Give clear, specific, and personalized behavior change advice, including information about personal health harms and benefits.
  - **Agree**: Collaboratively select appropriate treatment goals and methods based on the patient’s interest in and willingness to change the behavior.
  - **Assist**: Using behavior change techniques (self-help and/or counseling), aid the patient in achieving agreed-upon goals by acquiring the skills, confidence, and social/environmental supports for behavior change, supplemented with adjunctive medical treatments when appropriate.
  - **Arrange**: Schedule follow-up contacts (in person or by telephone) to provide ongoing assistance/support and to adjust the treatment plan as needed, including referral to more intensive or specialized treatment.
A systematic review of lifestyle modifications to prevent diabetes in patients with prediabetes (26167912):

- Programs based on Diabetes Prevention Program study or the Finnish Diabetes Prevention Study, which were more intensive and had more direct interaction than many other programs, resulted in more weight loss and lower incidence of diabetes.

In the Diabetes Prevention Program, a randomized controlled trial of patients with prediabetes, compared to placebo, the following interventions reduced incidence of diabetes with the following relative risk reductions (11832527):

- **Lifestyle modification**: 58%, NNT 13.9
- **Metformin**: 31%, NNT 6.9
- **Lifestyle compared to metformin**: 39%

“Lifestyle prevention decreased incidence of diabetes by 27% vs a 18% reduction using metformin in 15 year follow-up

- Lancet Diabetes Endocrinol. 2015 Sep 11. pii: S2213-8587(15)00291-0. doi: 10.1016/S2213-8587(15)00291-0. PMID: 26377054
"Screening for osteoporosis in women aged 65 years and older and in younger women whose fracture risk is equal to or greater than that of a 65-year old white women who has no additional risk factors"

- Ann Intern Med 2011. PMID 21844561

"FRAX® did not perform better in fracture risk prediction compared with the simpler tools or even age alone"

- AUCs 0.703 to 0.722 (p = 0.86)
- Bone. 2013 PMID: 23669650

- Try to include a quantitative estimate of benefit
- Will also post edit to WikiDoc
Why is this important?

*Values for the 3 Wichita Clinics come from an ECW analysis of screening mammograms documented in “Diagnostic Images”*
Why is this important?

- 75 yo woman has t-score of -3.1

- 2 days later, faxed report is received
  - Placed in documents folder of the patient
  - Not recorded in problem list or health maintenance

- 21 months later has a hip fracture

- 2 months after hip fracture, osteoporosis placed in problem list

Had 3 appointments between DEXA result and fracture
DIAGNOSTIC JOURNEY
Six Sigma
- D: define
- M: measure
- A: analyze
- I: improve
- C: control

Sometimes only a single baseline measurement is available

Made by http://qitools.github.io
Baseline: Fishbone or Ishikawa diagram (cause and effect diagram)

- Lack of standard guidance

- Made by http://qitools.github.io

- May highlight and focus on selected elements for final presentation
Stakeholder analysis

• Stakeholder’s impression of barriers
  – Doctor.: Clarity of evidence-based guidelines for f/u
  – Nurse:
    • Hassle to input dx of tobaccoism in EHR=multiple clicks
    • Reluctance to persistently ask about smoking cessation
    • Lack of knowledge regarding billing for counseling

• Stakeholder’s impression of benefits from improvement
  – Doctor: Better cessation rates/counseling=more $$
  – Nurse: More likely to ask and document if aware of $$

• Stakeholder’s impression of solutions
  – Doctor: All interventions seem reasonable and appropriate.

• May highlight and focus on selected elements for final presentation
Baseline flow chart

Night before visit

Endocrine resident interprets report and updates problem list

Who: resident
With: criteria on intranet
Where: EHR
When: Fridays
What else: hospital consults

Output UD chart reminder

Staff has standing order for UDS q 6 mo, run UDS

Resident:
* Resolve the dx
  No opioids
* Inactive the diagnosis

No

Visit occurs?

Yes

Visit closed

Output k-tracs: msg to Rochelle/Deb

Rochelle/Deb:
K-tracs to box at nursing station

Resident:
documents in dx test section

Made by LucidCharts.com
PNG file downloaded from Lucid
Chart review

- We manually reviewed 50 charts for
  - Presence of asthma in promoted Problem lists
    - Criterion: ICD9
    - Criterion: Excluded free text
  - Parsable documentation in Health Maintenance of
    - PFTs/spiro with pre/post testing or methacholine challenge
      - Criterion: Excluded free-text entries
  - Scanned documents
    - PFTs/spiro
    - Presence of hyper-reactivity by pre/post testing or methacholine challenge

Six Sigma
- D: define
- M: measure
- A: analyze
- I: improve
- C: control
Six Sigma
- D: define
- M: measure
- A: analyze
- I: improve
- C: control

Pareto chart
Chart: frequencies of causes of non-conformity

- Made by http://qitools.github.io
- Sometimes sorted bar-chart is better
Six Sigma
• D: define
• M: measure
• A: analyze
• I: improve
• C: control

TREATMENT JOURNEY
Interventions

• March 2011
  – All anticoag patients cared for by residents
    • Single provider receives all results
  – Cypress patients
    • Nurses verify doses when pt arrives for lab draw

• May 15, 2011
  – All anticoag patients cared for by residents
    • Registry for identified late patients

• June 8, 2011
  – Cypress patients
Flow chart: revised

Blood is drawn POC for INR by lab or home health or other

Result is sent to Cypress Clinic

Nurse enters results into EHR

Nurse forwards results to PA

PA contacts the patient

Patient reports warfarin use and factors such as diet, medications, etc

Clinician & patient make decisions: Use Warfarin by Wichita nomogram

Warfarin dose adjusted

INR f/u scheduled

Result entered into EHR

EHR queried weekly for pts without INR > 30d

Patient contacted

> 30 d
Lit search: Implementation Evidence

- Mailed intervention and self-scheduling improves osteoporosis screening compliance
  - Control group: 5%
  - Mailed letters: 17%
  - J Bone Miner Res. 2013. PMID: 22836812
- Electronic Standing Orders Highlight Care Gaps and Allow Nonphysicians to Address Them
  - DEXA rose from 45% to 52%
- [http://innovations.ahrq.gov/content](http://innovations.ahrq.gov/content)
- Try to quantify benefit
Intervention 1: Improved Documentation

- 4 main categories
  - Concise
  - RN-approved
- Star: automatic drop-down to A/P
- ICD-9 code and G-billing code for appropriate counseling
  - Bill code every time, but will not be billed after max allowable
Intervention #2: Patient Information

Information to be sent by PCP Resident
## Results: projected monthly income

<table>
<thead>
<tr>
<th></th>
<th>Unit price</th>
<th>Before intervention @ 100 Pts/month</th>
<th>After intervention @ 100 Pts/month</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>264.90</td>
<td>829.20</td>
</tr>
<tr>
<td>INR</td>
<td>8.83</td>
<td>264.90</td>
<td>264.90</td>
</tr>
<tr>
<td>Encounter billing</td>
<td>18.81</td>
<td>0.00</td>
<td>564.30</td>
</tr>
<tr>
<td><strong>Expense</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.00</td>
<td>212.19</td>
</tr>
<tr>
<td>Staff time (who, how much)</td>
<td>$0.3/minute</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Supplies for machine</td>
<td>207.18 per box which provides 48 tests ($4.32 per test)</td>
<td>0.00</td>
<td>129.49</td>
</tr>
<tr>
<td>Machine</td>
<td>496.20</td>
<td>0.00</td>
<td>82.70*</td>
</tr>
<tr>
<td><strong>Net income per month</strong></td>
<td></td>
<td></td>
<td>617.01</td>
</tr>
</tbody>
</table>
Six Sigma
• D: define
• M: measure
• A: analyze
• I: improve
• C: control

Unusual to have this slide

Made by QI Tools at OpenCPU
Summary

• Initial results suggest an improvement occurred

• Revenue positive
Recommendations for future teams

• Can G-code be used for quarterly billing for anticoagulation?
Improving Safe Prescribing of Opiate Analgesics

Justin Fernandez, M.D., Aisha Aman, M.D., Emily Duethman, D.O.; Habiba Hassouna, M.D.; Kaitlin Ditch, M.D.; Maya Estephan, M.D.; Said Chaaban, M.D.; Robert Badgett, M.D.

INTRODUCTION
Opiates were the most commonly abused prescription drug in 2012. Observational studies have associated prescription of opioids with accidental falls and fractures, automobile accidents and overall mortality. Further, the Cochrane Collaboration notes there is no conclusive evidence that opiates improve quality of life or function if used for chronic benign pain. The purpose of this quality improvement study was to reduce aberrant use of opioids by patients in our teaching clinic.

METHODS
We used principles of Six Sigma and implemented a DMAIC [define, measure, analyze, improve and control] cycle. For data analysis, we used multiple linear regression to separate secular from intervention effects.

Diagnostic Journey:
Study patients were those who had "Long Term Opiate Use" in their problem list and those who had an opiate in their medications list. Sixty-six electronic patient charts were reviewed to determine if there was a documented urine drug screen (UDS) and report from the Kansas Tracking and Reporting of Controlled Substances (K-TRACS) within the prior six months and opiate contract within 12 months.

Treatment Journey:
After reviewing baseline data and available capabilities in our clinic and electronic health record, we chose to focus on improving documentation of UDS and K-TRACS. For our first intervention cycle, nursing staff were provided a nightly list of those patients scheduled the next day without a current UDS or K-TRACS. Reminders to complete them were automatically placed in the nurses station basket.

For our second intervention cycle, posters and graphics showing how to document UDS and K-TRACS results were posted on the data wall at the clinic. Also, UDS and K-TRACS reminders were now placed in the patients’ data folders instead of the nurses station basket.

After the first interventions, both UDS and K-TRACS documentation increased to 40% (p-values of 0.016 for UDS and 0.001 for K-TRACS). Data is being collected following the second cycle.

CONCLUSIONS
These data showed a significant increase in documentation of the UDS and K-TRACS tools following a simple intervention. While we cannot conclude that better documentation will lead to less adverse side effects of opiate users, documentation can help determine which patients have a higher risk of aberrant use of these agents.