Identifying Women with Coronary Artery Disease using non-cardiac CT Imaging
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1. Department of Internal Medicine 2. Sidney Kimmel Medical College 3. Department of Breast Imaging 4. Department of Quality Improvement 5. Department of Cardiology

Background
Cardiovascular disease (CVD) remains the number one cause of death and yet the mortality rate for young women has plateaued compared to men which is declining.

At Jefferson IM primary care only 3.4% of women 40-60 carry the diagnosis of coronary artery disease (CAD) while the national prevalence is 6.4%.

We still have inadequate CAD primary prevention strategies especially for women despite use of atherosclerotic cardiovascular disease (ASCVD) risk calculator.

The current screening guidelines do not adequately capture women who have already developed CAD and should be on lipid lowering therapy, given 44% of women with coronaries addressed on CT read have CAD detected.

Aims
Identify the percentage of female patients with prior CT scans done for non-cardiac reasons who should have the diagnosis of CAD.

Collaborate with primary care, cardiology and breast imaging to determine how best to integrate this incidental finding into clinical practice.

Determine current barriers that may prevent providers from taking action on patients with new CAD.

Intervention
Severe CAD demonstrated on noncontrast chest CT. Calcifications seen in right coronary artery (green), left anterior descending (blue) and circumflex (yellow).

Jefferson Quality Improvement department generated a list of women without diagnosis of CAD and not currently using statin who had CT chest done over the last 3 years for non-cardiac reasons.

Results
Though we identified 44% of women who have CAD on CT, the overall total number is small since CT chest are not commonly ordered in an outpatient setting.

The diagnosis of CAD was rarely (<1%) in the “impression” of the image read making it difficult to identify in a busy primary care practice.

It is valuable and imperative to have shared decision making with primary care providers and patient incidental finding of CAD.

Future Direction
- Interdisciplinary CVD prevention team
- Primary care clinic educational meetings
- EPIC software assistance
- CAD results located in the “impression” of CT read

<table>
<thead>
<tr>
<th>Total # of women with CAD or Aortic Atherosclerosis found on CT imaging</th>
<th>ASCVD risk and CAD (on CT) in women not on statin therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No CAD nor Aortic Atherosclerosis</td>
<td>Low</td>
</tr>
<tr>
<td>Mild CAD</td>
<td>Border-line</td>
</tr>
<tr>
<td>Moderate CAD</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Severe CAD</td>
<td>High</td>
</tr>
<tr>
<td>Aortic Atherosclerosis without CAD</td>
<td>No lipid panel</td>
</tr>
<tr>
<td>63</td>
<td>38</td>
</tr>
<tr>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>20</td>
<td>70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>n=152</th>
<th>n=38</th>
<th>n=71</th>
<th>n=20</th>
<th>n=97</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAD</td>
<td>14%</td>
<td>18%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>No CAD</td>
<td>59%</td>
<td>42%</td>
<td>37%</td>
<td>15%</td>
</tr>
<tr>
<td>unknown</td>
<td>27%</td>
<td>39%</td>
<td>48%</td>
<td>70%</td>
</tr>
</tbody>
</table>
Background

- Cardiovascular disease (CVD) remains the number one cause of death and yet the mortality rate for young women has plateaued compared to men which is declining.
- We still have inadequate coronary artery disease (CAD) primary prevention strategies especially for women despite use of atherosclerotic cardiovascular disease (ASCVD) risk calculator.
- Unfortunately, this current screening guidelines do not adequately capture women who have already developed CAD and should be on lipid lowering therapy.
- At Jefferson primary care only 3.4% of women carry the diagnosis of CAD while the national prevalence is 6.4%

Aims

- Identify the percentage of female patients with prior CT scans done for non-cardiac reasons who should have the diagnosis of CAD
- Create an interdisciplinary process for identifying women at risk for cardiac event not currently captured with ASCVD screening

Aims For Improvement

- Jefferson Quality Improvement department generated list of women without diagnosis of CAD and not currently using statin who had CT chest done over the last 3 years.
- Using REDcap our team compiled retrospective data of demographics, past medical history and results of CT chest

Future Direction

- Interdisciplinary CVD prevention team
- Primary care clinic educational meetings
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Cardiovascular disease remains #1 cause of death in Women

<table>
<thead>
<tr>
<th>Population</th>
<th>Intervention</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>97%</td>
<td>358</td>
<td>44%</td>
</tr>
<tr>
<td>Women in IM primary care do not carry diagnosis of CAD</td>
<td>CT scan reads reviewed to evaluate for CAD</td>
<td>Women with coronaries addressed on CT read have CAD</td>
</tr>
</tbody>
</table>

IM = Internal Medicine; CAD = Coronary artery disease; BAC = Breast arterial calcification

Results

- Total # of women with CAD or Aortic Atherosclerosis found on CT imaging
- No CAD or Aortic Atherosclerosis: 63
- Mild CAD: 96
- Moderate CAD: 30
- Severe CAD: 5
- Aortic Atherosclerosis without CAD: 20
ASCVD risk and CAD (on CT) in women not on statin therapy

- Low: n=132
- Borderline Intermediate: n=38
- High: n=20
- No lipid panel: n=97

Legend:
- unknown
- no CAD
- CAD

100%
Problem Definition

Include a description of the problem, supporting literature reviews, baseline performance data, and/or previous pilot data here.

Include your cause analysis in this area, explaining why this issue might be a problem at Jefferson.

Intervention

Describe your improvement strategy here. What did you do, and how did you go about implementing change?

Next Steps and Lessons Learned

Did you meet your aim for improvement?

If not, why not? What will you do or what would you recommend the next team to in order to improve on your efforts?

If yes, what will your next goal for improvement be and how will you reach it?

What did your team learn about the improvement process?

Aims For Improvement

Please use the SMART format for presenting your aims. WHAT is going to get better, by HOW MUCH, and by WHEN? See this link for a reference http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementSettingAims.aspx

Measurement and Results

What did you measure, and how did performance change as a result of your project?

Use structure, process, outcome, and perhaps balancing measures. See this video for more information: https://youtu.be/uow7mzrFif4