QI on addressing BMI in the outpatient setting.

EIRMC FAMILY MEDICINE RESIDENCY

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Quality Improvement Questions & Goals

• Does educating doctors on the importance of BMI increase the rate at which patients will engage more with weight loss if approached by their PCP at every appointment.
  • Treat BMI like another vital sign such as blood pressure or heart rate, intervene when abnormal, not just when patient asks.
QI - Background

• Higher BMI is known to have an increased all-cause mortality.8 This is why reducing BMI back into the normal range can have a strong health benefit.
• For BMI range (25 to 50 kg/m²), each 5 kg/m² increase in BMI was associated with a significant increase in mortality from coronary heart disease (CHD), stroke, diabetes mellitus, chronic kidney disease, and cancer (liver, kidney, breast, endometrial, prostate, and colon).
• For BMI between 30 and 35 kg/m², median survival was reduced by two to four years; for 40 to 45 kg/m², it was reduced by 8 to 10 years (similar to the effects of smoking).
• Years of life lost are highest for people who develop obesity at a younger age and live with obesity longer.
QI - Disclaimer about using BMI

• There are drawbacks to using BMI on an individual base
  • It does not take into account body composition (muscle vs fat vs bone)
  • Muscle being far denser than fat can skew a BMI to be high for those that are excessively muscular, even if they have very little body fat. This means that someone who is excessively muscular and has very little body fat can have a BMI of 30, while someone who has zero muscle but is very much overweight (having excessive fat) can also have a BMI of 30.

• BMI in a population context
  • On a population view, a high average BMI correlates with an overweight population, but as explained above on an individual basis this may not be true.
QI - Alternative tests to using BMI

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• BMI in a population context
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Q1 - So why use BMI?

- Though BMI isn't very accurate on an individual basis it is:
  - Free
  - Automatically generated from height and weight which is collected at each appointment, thus requiring no extra work
  - Is better than weight alone, since it takes into account how tall someone is
  - Can give patients a physical number to evaluate their progress
- For us, in follow-up studies on a bigger scale using one of the prior more accurate methods would be better, but for the initial study BMI was an appropriate alternative for identifying and catching patients that need intervention based on being overweight in relation to their height.
QI - Prediction

- Since we are testing to see if patients will engage more with weight loss if approached by their PCP at every visit (based on their BMI). We predict that quality metric satisfaction rate for BMI will increase.
  - Metric: Percentage of patients 18 and older who had BMI documented during visit (or within 12 months prior) and for those with abnormal BMI have a documented follow up.
QI - Methods

- 4 residents chosen by volunteering, these residents get educated to:
  1. To address BMIs of (underweight, overweight, obese) at all appointments regardless the chief complaint of scheduled appointment.
  2. Add BMI diagnosis to problem list (normal, overweight, obese, morbidly obese)
  3. Prepare follow up plan with each patient outside of "normal" range.
- Measured outcome was fulfillment of EMR’s “BMI screening and follow up” Quality metric.
QI - Methods

- The studied outcome was the percentage of visits where the quality metric within Athena (the EMR used) for "BMI screening and follow up" was fulfilled or satisfied.
- Both Treatment arm (residents educated and instructed; n=4) and control group (residents not educated; n=6) fulfillment of quality metric was measured for three months.
- These numbers were then compared to the prior quarters (3 month period) in which the residents had not been educated, to measure the change in percent of visits meeting the quality metric.
QI - Methods

- MAs enter height & weight during check-in; this is already standard protocol.
- To fulfill EMR’s "BMI screening and follow up” quality metric required adding BMI as a separate problem in the Assessment & Plan section and:
  - By ordering a weight management medication in BMI A/P
  - By ordering a weight management procedure in BMI A/P
  - By ordering a patient education information in BMI A/P
  - By ordering a referral to a specialist for weight assessment in BMI A/P
- Or-
  - Will also document if patient does not want to follow-up.
- And-
  - Use appropriate billing/diagnosis code
### QI - Metric Recording Criteria

#### Inclusion Criteria
- BMI of 25 or greater
- At least 18 year old

#### Exclusion Criteria
- Telehealth Visit
- Hospice care, palliative care patients
- Pregnancy
- Urgent/emergent chief complaints
- Patient refusal
QI - Data Collected

- Total patients
- Patients excluded
- Patients/episodes satisfied (a.k.a meet requirements stated prior)
- Patient/episodes not satisfied (a.k.a. doesn't meet requirements)
- Satisfaction Percentage.
QI - Trial duration

- 3 months (quarterly)
- Compare to the 3mo (quarter) prior to initiating the study
# QI – Results

Table 1. Changes in percentage for each provider

<table>
<thead>
<tr>
<th>QI Group</th>
<th>Standard Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Physician 1</td>
<td>13.33%</td>
</tr>
<tr>
<td>Control 1</td>
<td>-5.34%</td>
</tr>
<tr>
<td>Test Physician 2</td>
<td>-3.95%</td>
</tr>
<tr>
<td>Control 2</td>
<td>14.22%</td>
</tr>
<tr>
<td>Test Physician 3</td>
<td>24.70%</td>
</tr>
<tr>
<td>Control 3</td>
<td>-0.46%</td>
</tr>
<tr>
<td>Test Physician 4</td>
<td>-13.49%</td>
</tr>
<tr>
<td>Control 4</td>
<td>-6.49%</td>
</tr>
<tr>
<td></td>
<td>Control 5 -9.46%</td>
</tr>
<tr>
<td></td>
<td>Control 6 5.47%</td>
</tr>
</tbody>
</table>
QI - Results Figure 1

Fulfillment of Metric

Percent Change

Test Physician 1  Test Physician 2  Test Physician 3  Test Physician 4  Test Average  Control 1  Control 2  Control 3  Control 4  Control 5  Control 6  Control Average

13.33  -3.95  24.70  5.15  14.22  -5.34  -0.46  -6.49  -9.46  5.47  -0.34

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QI - Results

- Average difference in percentage satisfaction per resident provider
  - Q1 group increased by 5.15% on average
  - Standard group Decreased –0.34% on average
- Compared based on patient numbers
  - 5.65% more patients had this metric satisfied that saw QI group provider
  - 1.79% more patients had the metric satisfied that saw a standard group provider
QI - Discussion

- With the increasing epidemic of obesity on the rise there will be increasing associated co-morbidities. Primary care providers are in a position to address these things.
- There is an improvement in addressing weight (BMI) when it is brought up outside of the patients chief complaint.
QI - Limitations

- Limitations
  - Small "n" due to residency only having 2 classes at the time.
  - Short duration, just 3 months
- Biases
  - The selection process was based on volunteers and thus those physicians were more likely to be more invested in changing how they practiced.
  - The authors were the “treatment arm” and had predictions
QI - Conclusion

- Educating providers on the importance and ways to approach addressing BMI at visits (even when not the chief complaints) had statistically notable improvement overall.
QI - Conclusion


• Shaikh J. Which is the most accurate test to measure body fat? Medicine Net. 2021 Jun; https://www.medicinenet.com/most_accurate_test_to_measure_body_fat/article.htm

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