

# Updates in Medicine:

## Role of Optimization of Obesity Prior to Elective Orthopedic Surgeries

Amy Ingersoll, PA-C, MMS, FOMA  
Obesity Medicine

- Disclosures
  - Speaker, Novo Nordisk

# Objectives

Understanding what are modifiable risk factors and their role in clinical practice.

Reviewing guidelines and clinical pearls on optimization of patients with obesity prior to surgery

Review of nutritional optimization of patients.

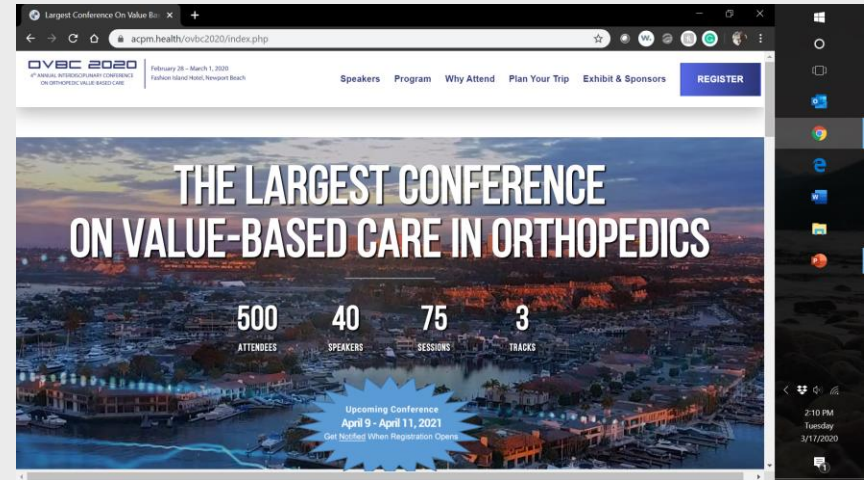
Implementation Into Practice

Case Study Review

# Why are we seeing this shift??

# Value Based Care

- Bundle Payment Models such as:
  - Comprehensive Care for Total Joint Model (CJR)
  - BPCI-Classic
  - BPCI-Advanced
- Increasing the value of care by improving quality and decreasing cost has been the focus of several projects. Preventing complications may be an effective way to increase value.<sup>1</sup>
- Patient risk stratification is a modifiable variable that will allow for improved patient selection. This in turn may reduce adverse events, thereby lessening the economic burden of complications, increased length of stay, and hospital readmission.<sup>1</sup>



# What are current modifiable risk factors?

# AAOS PreOperative Risk Factors

- Anemia
- Nutrition
- Obesity
- Sleep Apnea
- Smoking & Nicotine Use

# A Closer Look at Obesity Preoperative Risk Factor



# AAOS Pre Operative Optimization Recommendations

Obesity is associated with increased risks and potential complications associated with surgery.

Accepted threshold for elective safe surgery is: **(BMI) <40.**

- **Risks:**
  - Poor patient outcomes
  - Major complications after surgery, include infection, poor wound healing, difficulty breathing, deep vein thrombosis, pulmonary embolism and higher readmission rates (especially within 30-90 days of surgery).
- **HCP Tools/Recommendations**
  - **Establish a BMI target in your practice** that can be used to help patients meet their goal.
  - Set patient-specific goals between HCP and patient.
  - Recommend nutritional counseling and encouraging appropriate activities in elective surgical setting (see nutritional assessment)
  - Propose verbal or written contracts between patient and HCP for achieving BMI goals.

# Reduction In Complications

Pre-operative management of severe obesity is an important component of surgical optimization. <sup>1</sup>

Improved surgical and functional outcomes noted in patients affected by severe obesity who participate in non-surgical treatment of reduction in BMI. <sup>2</sup>

No absolute BMI cutoff isolates patients at high risk.

**A cutoff of BMI 40 may be reasonable**

BMI >40 has been shown to increase major complication risk by 32% compared with the general patient population. <sup>3</sup>

There is a balance between optimizing modifiable risk factors, such as reduction in BMI, with limiting patients the access to the pain relief and functional improvements that can be obtained with total joint arthroplasty.

# Potential Role of Surgical PA

- Surgical PA:
  - Early referral and intervention for patients with OA and elevated BMI.
  - Early education to patients on recommend optimization for elective TJA
  - Education referring providers on recommended optimization of modifiable risk factors.
  - Treat or Refer!

# Potential Role of Clinical PA

- Clinical PA:
  - Early intervention
  - Work in conjunction with surgical HCPs on optimizing individuals for upcoming elective surgeries to remove roadblock from future intervention.
  - Be knowledgeable on obesity management.
  - Treat or Refer.

- Goal:
  - Individuals will be optimized early on in care so that when elective surgery is needed, there will be no road-block to care.
    - Improved patient outcomes.
    - Improved quality of care.
    - Reduced Complications.

What does optimization of obesity look like for this patient population?



Focus on  $\frac{3}{4}$  pillars of management initially including:

- Nutrition
- Behavioral Change
- Medication



## Physical Activity Clinical Pearls

- 1- Utilize PT to help create HEP.
- 2- Redefine physical activity
- 3- Anything is better than nothing

WHY: Preservation of muscle mass during active reduction in BMI.



When to discontinue and re-start anti-obesity medications pre and post operatively.

<b>Medication</b>	<b>Pre-Operative Management – When to stop prior to surgery.</b>
Saxenda	Day of surgery.
Contrave	10 days prior
Qsymia	14 days prior (this can vary)
Phentermine/Diethylpropion/ Phendimetrazine	14 days prior (this can vary)

<b>Medication</b>	<b>Post-Operative Management – When to re-start after surgery.</b>
Saxenda	Day after surgery.
Contrave	7-10 days after last narcotic
Qsymia	Day after surgery
Phentermine/Diethylpropion/ Phendimetrazine	Day after surgery

# Obesogenic Medications

# Obesogenic medications and alternatives

## Obesogenic Medications

- Gabapentin
- Lyrica

## Evidence Based Alternative

- Topiramate
  - Start at 25 mg QHS and titrate up to 100mg as tolerated
  - Caution if hx of: glaucoma, kidney stones (calcium phosphate)
  - Pregnancy category X,
  - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5718870/>

# Beyond BMI

[obesitymedicine.org](https://obesitymedicine.org)





# BEYOND BMI: Impact of Excess Adiposity

## Excess Adipose Disease

Increase in adiposity results in abnormal and pathologic physical forces

These forces can cause:

- Immobility
- Stress on Weight Bearing Joints
- Tissue Compression and Friction
- And much, much more...

## Adiposopathy (Sick Adipose Disease)<sup>1</sup>

Metabolic distress with:

- Elevated BP
- Dyslipidemia
- Elevated insulin levels
- Elevated blood sugar
- Increased oxidative stress
- And much, much more....

# Nutritional Optimization

# Nutritional Optimization:

## Laboratory Parameter/Threshold for Malnutrition:

Albumin	<3.5 g/dL
Prealbumin	<18 mg/dL
Total Protein	<6.0 g/dL
Total Lymphocyte Count	<1,500 Cells/mm <sup>3</sup>
Iron	<45 microg/dL
Serum Transferrin	<200 mg/dL
25-OH Vitamin D	<30 mg/dL
Calcium	<9 mg/dL
Zinc	<0.66 mcg/mL

- Malnourished patients should start receiving supplementation of identified deficiencies at least 14 days prior to surgery, particularly Vitamin D and protein supplementation.
- Collaborative efforts are encouraged, including a **nutritional screening checklist**.

# Implementing Into Practice

# How to Implement Into Practice : Insight from BPCI Public Toolkit

## Effective Clinical Management

- Use of evidence-informed care protocols
- Manage pre-existing conditions
- Standardize patient care by deploying protocol and care pathways

## Patient Identification and Risk Stratification

- Develop protocol to a standardize processes for pre-, intra-, and post-operative phases
- Optimize strategy for effective clinical management of care.
- Use technology to identify/monitor patients
  - Build template/protocol into EHR to issue an alert if parameters outside guidelines for optimizing risk factors
    - Ie smoking, BMI, HgA1c

## How to Implement into Practice



**Determine obesity medicine specialist in the area for referral sources who practices evidence-based medicine.**

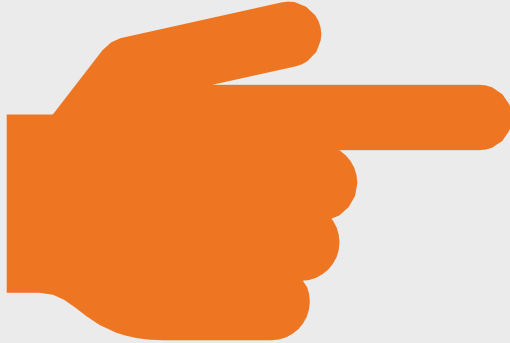


**Determine bariatric surgeon referral for patients with Severe Obesity who have failed non-surgical intervention.**



**Potential of addition of clinical provider to help with optimizing modifiable risk factors for patients pending surgery outside of optimal parameters.**

## Where to find an Obesity Medicine Clinician



- Confirm does not utilize HcG
- Physicians: ABOM Certified
- PAs/NPs- Advance Certificate of Obesity Management
  - [ABOM Providers](#)
  - [Obesity Medicine Association](#)
  - [Obesity Care Providers](#)
  - Local Obesity Organizations

# CASE STUDIES



# Case study



46 year old Female



PMH sig for: Class III Obesity, pre-diabetes, Bipolar, OA, Depression/Bipolar, Hepatitis C, current tobacco use



Current Meds: Lamictal 150mg, Celexa 30mg, Ativan 1mg PRN, Atorvastatin 20mg, Metformin HCL 500mg



BMI: 41.50

# CASE STUDY

Consult 11/8/18

BMI Optimized 1/24/19

Surgery Date: 5/30/19

 Time line:

 Addition of AOM and lifestyle BMI dropped from 41.5 to 36.90

 AOM assisted with tobacco cessation in conjunction w/BMI reduction

 Hep C was treated for cure by hepatologist prior to surgery

 PreDms went into remission.

 Mood improved and stable.

 Had successful THA w/o complications.

# CASE STUDY

43 year old male

PMH: OA, hx of MI, CAD 3 vessel disease, hx of stroke w/residual left sided weakness, Dual Chamber Pacemaker, Class III Obesity

Initial Vitals: BMI 45.22, weight of 332.25 lbs

Obesogenic Medications: Gabapentin, Cymbalta (weight variable)

# Case Study

## Timeline

- Consult: 11/8/18
- BMI Optimized: 2/18/19
- Surgery Date: 4/28/19

Initial obesity medicine w/u found undiagnosed T2DMs (HgA1C 6.8%) and OSA.

Started on GLP1 (liraglutide 1.8mg) and metformin

Referred out for sleep consults and was started CPAP

BMI improved from 45.22 to 32.45

# Case Study

Diabetes went into remission (HgA1c dropped from 6.8% to 5.7%)

Successful TKA w/o complications.

Obesogenic medications: recommend that patient discuss with neurologist potential to wean off weight positive medications for neuropathy including Cymbalta and gabapentin

Pt had spinal surgery w/o complications and symptoms improved, specialist weaned patient off of gabapentin and Cymbalta w/o complications.

# TREAT OR REFER

# References

- References.
- Bays HE, Seger, J, Primack C, Long J, Shah NN, Clark TW, McCarthy W. Obesity Algorithm, presented by the Obesity Medicine Association. 2017-2018. [www.obesityalgorithm.org](http://www.obesityalgorithm.org). Accessed 1/14/19.
- Yu, S., Garvin, K., Healy, W., Pellegrini, V., Iorio, R., Preventing Hospital Readmissions and Limiting the Complications Associated With Total Joint Arthroplasty. JAAOS - Journal of the American Academy of Orthopaedic Surgeons 23(11):e60-e71.
- Toman, J., Iorio, R. & Healy, W.L. Clin Orthop Relat Res (2012) 470: 108. <https://doi.org/10.1007/s11999-011-2124-3>
- Bundled Payments for Care Improvement (BPCI) Initiative. Public Toolkit. <https://innovation.cms.gov/files/x/bpci-toolkit.pdf>. Accessed 1/21/2019.
- Christensen, T., Wagner, E., Harmsen, W., Schleck, C., Berry, D., Effect of Physical Parameters on Outcomes of Total Knee Arthroplasty. J Bone Joint Surg Am. 2018;100:1829-37. <http://dx.doi.org/10.2106/JBJS.18.00248>
- Ashton H. Goldman, Stephen Kates. Pay-for-performance in orthopedics: how we got here and where we are going. Curr Rev Musculoskelet Med. 2017 Jun; 10(2): 212–217. Published online 2017 Apr 7. doi: 10.1007/s12178-017-9404-9. PMID: PMC5435635
- Giori, N. J., Amanatullah, D. F., Gupta, S., Bowe, T., & Harris, A. (2018). Risk Reduction Compared with Access to Care: Quantifying the Trade-Off of Enforcing a Body Mass Index Eligibility Criterion for Joint Replacement. *The Journal of bone and joint surgery. American volume*, 100(7), 539-545.

- Thank you!

–Amy Ingersoll, PA-C, MMS, FOMA  
»amy.beth.ingersoll@gmail.com