# WHEN TO SAY NO TO SURGERY

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## Disclosures

- Consultant:
  - Biomet and Cerament
- Research Support:
  - Microbion, CD Diagnostics, and Acelity
- Fellowship Support: Biocomposites
- Royalties (spouse): University of Florida

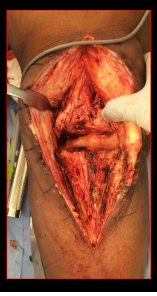
- I will not discuss off-label uses of products/devices.

## HOW TO OPTIMIZE YOUR OUTCOMES

- MODIFIABLE FACTORS
- NONMODIFIABLE FACTORS


## NONMODIFIABLE FACTORS

- USE OF A MEGAIMPLANT/FOREIGN BODY
- TISSUE BED



## MODIFIABLE FACTORS

- THE HOST
- THE OPERATIVE ENVIRONMENT-SURGEON
- THE IMPLANT SELECTION-SURGEON

THE BIGGEST FACTOR OVER WHICH YOU HAVE THE LEAST CONTROL…

# THE HOST

## Host Status

A:no compromise
B:compromised
C:nonsurgical candidate


Cierny et al, Cont Orthop 1985;10:5

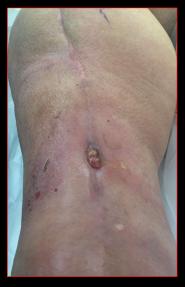
## A HOST

## The B host ( Systemic)

Diabetes Mellitus
Steroid use
Smoker
Malnutrition
Immune compromise
Advanced Age
Renal failure/Dialysis

## The B host (local)

- Chronic Venous Insufficiency
- Radiation fibrosis
- Scarring
- Neuropathy



## The B host Combo ( S/L)

# The C host

Treatment worse than the disease

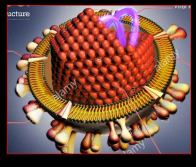
Severely medically debilitated


## DEALBREAKERS

- JEHOVAHS WITNESS
- HEART VALVE
- CIRRHOSIS
- DIALYSIS


## Hepatitis C

- Increased Infection
- Increased aseptic revisions
- Increased medical complications
- Increased blood transfusions



Cancienne JM et al, JAAOS 2017 Dec;25(12)e275-281

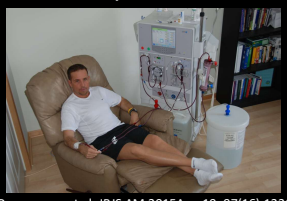
## Hepatitis C

- 8044 pts w Hep C
- 30% inc risk of any complication
- 15% inc risk of  medical complication
- 78% inc risk of a surgical complication
- 14% longer mean hospital stay

Issa et al, JBJS AM 2015 Dec 2;97(23):1952-7

## DIALYSIS PATIENTS

- 2934 dialysis patients
  - Inpatient mortality rates 10-20x higher
  - Overall complication rates 2x greater
- Recommendation was –delay until after transplant



Ponnusamy et al, JBJS AM 2015Aug 19 ;97(16):1326-32

## MORE DEALBREAKERS

- Noncompliant
- Mentally challenged
- Incarcerated
- Drug and EtOH

## Drug and EtOH abuse

- Difficulty with pain control
- Increased length of hospital stay
- Increased joint infections
- Increased medical complications

Harris et al, JBJS AM 2011;93;321-327
Ramczykowski et al, Arch Orthop Trauma Surg, 2018

## EtOH PREOP Evaluation

- Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) : alcohol-misuse screening instrument
- 29% increase in complications with every additional point above 1

Harris et al, JBJS AM 2011;93;321-327

## Proper Candidate Selection

- Evaluate all patients at least twice before operating

## Know your patient

Patient resources

- Coping ability
- Caregiver
- Proximity to hospital
- Social Support

## Optimizing the B host

## Relatively Modifiable Factors

- Diabetic control
- Nutrition
- Steroid/immunosuppressive TX
- Smoking
- Blood flow
- Obesity
- Chronic narcotic use

## DIABETES

- Get Hemaglobin A1c < than 7%
- Glucose levels < 200mg/L
- Uncontrolled DM 2x increase in PJI


- 
  - Marchant et al, JBJS AM 2009

## NUTRITION

- Risk of wound complication 7X higher with albumin levels <5g/dl
- 5X higher with lymphocyte count <1500cells/mm3

- Green et al, J Arthroplasty 1991

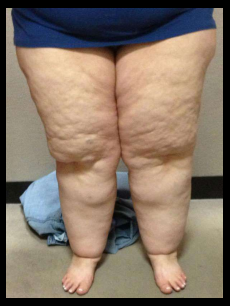
## OBESITY

- BMI >40 : 4-5X more likely to have a periprosthetic infection


- Dowsey and Choong, CORR, 2009

## OBESITY

- Malnourished
- Longer OR time/Difficult approach
- Increased blood loss/transfusions
- Decreased vascularity of fatty tissue



Iorio R and Osmani F JAAOS 2017 Feb 25 S13-16

## Immunosuppressive Drugs

- Stop 1-2 weeks preop
- Restart 1-2 weeks post op

– Howe et al, JAAOS,2006

## Smoking

## SMOKERS

- 8062/78,191
  - 1.8% wound complications vs 1.1% Nonsmokers
    - p <0.001
  - Current and former smokers had increased total complication risk ( 6.9%, 5.9%, 5.4%non )
    - P<0.001
  - Risk increased with increasing pack-year history

Duchman et al, JBJS AM 2015 Jul 1;97(13):1049-58

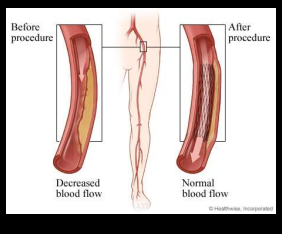
## Smoking Cessation

- 6-8 weeks prior to surgery reduces complications

Thomsen T et al, Br J Surg 2009;96(5):451-61

## BLOOD FLOW

- VASCULAR CONSULT IF PULSE IS NOT EQUAL TO UNAFFECTED SIDE



## Opioid Use

- Preop opioid use was associated with postop opioid consumption : 46mg vs 366mg mean MSO4 equivalents
- Preop opioid use independently predicted complications within 90 days

Sing DC et al, J Arthroplasty, 2016 Sep;31 (9 Suppl) 170-74

## Opioid Use

- Greater risk for complications and prolonged recoveries
- KSS: 79 vs 92
- 5 arthroscopic releases/8 revisions vs none

Sing DC et al, J Arthro 2016 Sep;31(9 suppl) 170-174
Zywiel MD et al, JBJS AM 2011 Nov 2;93( 21):1988-93

## Controversial

- Methotrexate
- Preoperative Mupirocin

  - Kalmeijer et al, Clin Inf Dis 2002
  - Perhala et al, Arthritis Rhem 1991
  - Iorio R and Osmani F, JAAOS 2017 Feb

## RISK COMBOS

- Tobacco use + BMI>30
- BMI>30 + DM
- Tobacco use + S aureus colinization
- Tobacco use + Revision surgery
- Tobacco use + S aureus + BMI>30
- Tobacco use + DM
- Tobacco use + S aureus + revision surgery

Iorio R, Osmani F JAAOS 2017 Feb 25 S13-16
Crowe B et al J Arthro 2015 ;30:2275-2278

## READMISSION RISK

- 6-15% at 90 days based upon co-morbidities
- Increased initial hospital stay>7 days w co morbidities
- 95% readmitted patients had at least one modifiable risk factor
- 50% inc LOS pts had 2 or more modifiable risk factors


Siracuse and Chaimberlain, CMMS DATA 2014
Clair AJ et al, J Arthro 2015 Jun 3

## NYU protocol

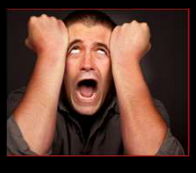
- Optimizing patients preoperatively (POSH Model)
- Decreases overall readmission rates
- Unclear whether optimization improves the overall outcomes


Bronson, WH et al JBJS AM 2014;96: 1143-1150

DECIDE HOW LONG YOU ARE WILLING TO WAIT


# REMEMBER

- Once you operate on the patient—you assume the burden of the complications: revision surgery, infection and readmission rates.
- CMS is holding the surgeon accountable



# Collaboration

- The patient needs to assume ownership and responsibility

- Joint replacement surgery is NEVER an emergency --it's a health care luxury

## Ethics of Patient Risk Modification Prior To Elective TJR

- "Given the emerging fiscal and societal pressure on the American health-care system, delay with the goal of risk mitigation for high risk TJR seems not only moral but also morally obligatory"

Bronson et al, JBJS AM 2014 ;96(13): e113,1-4.

## Conclusion

- If you are not willing to wait and optimize the high risk patient preop and subsequently manage the complications they get postop then…

# THANK YOU!


## OPERATING ENVIRONMENT

- Antibiotic cement for reimplant
- Limit blood transfusions ( use of TXA)
- Change suction tips
- New blade after incision
- Glove change after 90 min/and cement use
- Decrease operative time
- Limit OR traffic

Parvisi and Gehrke, Consensus Mtg, 2013

## ESRD/DIALYSIS

| | | |
|---|---|---|
| Deegan 2015 | 3.5 x mortality | |
| UK 2010 | 60,000 patients<br>Dialysis 4x<br>Transplant 4.5x | Regression analysis<br>50 % risk |
| McCleery 2010 | Renal disease is independent risk factor | Increased infection<br>Increased revision |
| Torg 2002 | Dialysis patients huge # co-morbid | All had complications |
| Rothman Institute 2016 | 30,000 joints<br>359 CRF<br>50 dialysis – 36% complications | Odd ratio<br>Infection 7.5x<br>Death 10.5x |