Introduction
Millions of people suffer from end-stage osteoarthritis and need total joint replacement surgery. Orthopedic surgeons assess certain risk factors when determining whether a patient is a good candidate for surgery. I will be looking at the most common risk factors associated with total knee replacement surgery and answering the question, what are the best preventative measures to reduce the chances of any complications after total knee replacement surgery?

Background Information: What is Osteoarthritis?
-Osteoarthritis occurs when the protective cartilage in between two joints wears down over time, resulting in bone-on-bone end-stage arthritis.
-Osteoarthritis most commonly affects the hands, knees, hips and spine.
-Symptoms of osteoarthritis:
  - Joint stiffness
  - Joint tenderness
  - Loss of flexibility
  - Grating sensation
  - Bone spurs
  - Swelling

Background Information: What is Total Knee Replacement Surgery?
-During a total knee replacement, damaged bone and cartilage are cut away from the thighbone, shinbone and kneecap and replaced with an artificial joint made of metal alloys, high-grade plastics and polymers.

Research Studies: Patient-Related Risk Factors of Total Knee Replacement
-Obesity and high body mass index
  - Malinzak et. al concluded that patients with a BMI greater than forty, were at an increased risk for developing infection after surgery.
  - Wallace et. al concluded that increasing BMI from 25 kg/m^2 to 35 kg/m^2 was associated with significant increased risk of deep vein thrombosis or pulmonary embolism (DVT/PE). The results from this study also showed a higher risk for wound infection in patients with a BMI 30 kg/m^2 and above.

-Smoking
  - Linjie et. al concluded that patients who were smokers were at an increased odds of developing infection, compared to patients who were non-smokers.

-Steroid use
  - Linjie et. al concluded that patients who were steroid users had increased odds of developing infection twenty-nine times more than patients who did not use steroids.

-Diabetes
  - Linjie et. al concluded that patients with diabetes were 21.5 times more likely to develop an infection compared to those without diabetes.

Conclusion
Educating physicians and patients about the risk factors associated with surgery can potentially decrease the chances of any complications after surgery. If patients can reduce the risk of any complications occurring, this will lead to a better healing process post-surgery, giving them a more positive outlook on life.

Analysis
-Two most important risk factors for physicians and patients to watch for are obesity/BMI and diabetes
-Patients should be put on a weight loss program sponsored by the hospital
-Weight loss program will give patients a strict diet and exercise regimen to follow before being considered a candidate for surgery
-Glucose levels of patients with diabetes need to be closely monitored by physicians
-Incision site of diabetic patients needs to be closely monitored post-surgery for any infections that may develop.

Figure 2: This figure depicts a step-by-step procedure of a total knee replacement.

Figure 3: Data table showing the association between diabetes and infection in total knee replacement patients.

Bibliography