# Frailty Index is a Significant Predictor of Complications and Mortality Following Adult Deformity Surgery (ADS)

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## Introduction

Modified frailty index (mFI) is a measure of health status in ageing individuals and is an important factor that can be used to predict morbidity and mortality. In adult deformity surgery (ADS), a higher mFI score could be associated with increased rates of complications and mortality.

## Methods

This was a retrospective analysis of prospectively collected data from the NSQIP database of patients > 18 years old undergoing ADS between 2005 and 2012. A previously described mFI was calculated based on number of positive factors out of 11 (see table 1). Complications and mortality were analyzed using univariate and multivariate logistic regression analysis with significance defined as $p < 0.05$. Odds ratio (OR) was calculated with a 95% confidence interval.

## Results

4,793 patients were identified and the mean mFI was 0.07 (0-0.545). Increasing mFI score was associated with increased complications, mortality and morbidity ($p<0.05$). As the mFI score increased from 0.27 (3/11) - = 0.36 (4/11), mortality increased from 1.88% to 3.13% ($p<0.0001$, OR 5.849, 0.87-39, 95%CI), cardiac complications 5.16% to 7.81% ($p<0.0001$, OR 14.0, 3.10-63.2,95%CI), sepsis 0.94% to 6.25% ($p<0.0001$, OR 4.59,1.20-17.57,95%CI), UTI 3.29% to 7.81% ($p<0.0001$, OR 3.34, 1.12 -9.65,95%CI), wound complications 4.23% to 9.38% ($p<0.0001$, OR 4.42, 1.57-12.5,95%CI) and pulmonary complications 0.47% to 1.56% ($p<0.0001$, OR 7.02, 2.61-18.874, 95%CI).

## Conclusions

Patients with higher mFI scores (= 4/11 variables) are at significantly increased risk of major complications, sepsis and death following ADS. These findings highlight the importance of careful patient selection and sound preoperative work-up.

## Learning Objectives

By the conclusion of the session, participants should be able to analyze the mFI as a predictor for complications within 30 days following ADS.

**Proportion of Complications with Increasing Modified Frailty Index**

| | Modified Frailty Index, % | | | | | |
|---|---|---|---|---|---|---|
| | 0 | 0.09 | 0.18 | 0.27 | >=0.36 | P Value |
| N = 4,793 | 2095 | 1684 | 737 | 213 | 64 | |
| Any Postoperative Complication | 18.33% | 26.19% | 30.66% | 35.68% | 35.94% | <0.0001 |
| Mortality | 0.14% | 0.30% | 0.68% | 1.88% | 3.13% | <0.0001 |
| Morbidity | 6.11% | 8.73% | 10.58% | 14.55% | 26.56% | <0.0001 |
| Return to OR | 1.00% | 1.60% | 1.63% | 2.82% | 10.94% | 0.0228 |
| Pulmonary Complication | 0.10% | 0.42% | 0.41% | 0.47% | 1.56% | <0.0001 |
| Renal Complication | 0.10% | 0.24% | 0.54% | 0.47% | 1.56% | 0.0188 |
| CNS Complication | 0.81% | 1.84% | 2.17% | 2.82% | 3.13% | 0.0059 |
| PE/DVT | 0.62% | 1.84% | 2.17% | 3.29% | 4.69% | 0.003 |
| Sepsis/Septic Shock | 0.24% | 0.42% | 0.54% | 0.94% | 6.25% | <0.0001 |
| Cardiac Complications | 1.15% | 1.78% | 2.58% | 5.16% | 7.81% | <0.0001 |
| Urinary Tract Infection | 1.48% | 2.08% | 3.26% | 3.29% | 7.81% | <0.0001 |
| Wound Complication | 2.82% | 3.33% | 3.39% | 4.23% | 9.38% | <0.0001 |