

The threshold for weight at surgery for identifying preterm babies at risk for surgical mortality: How small is too small?

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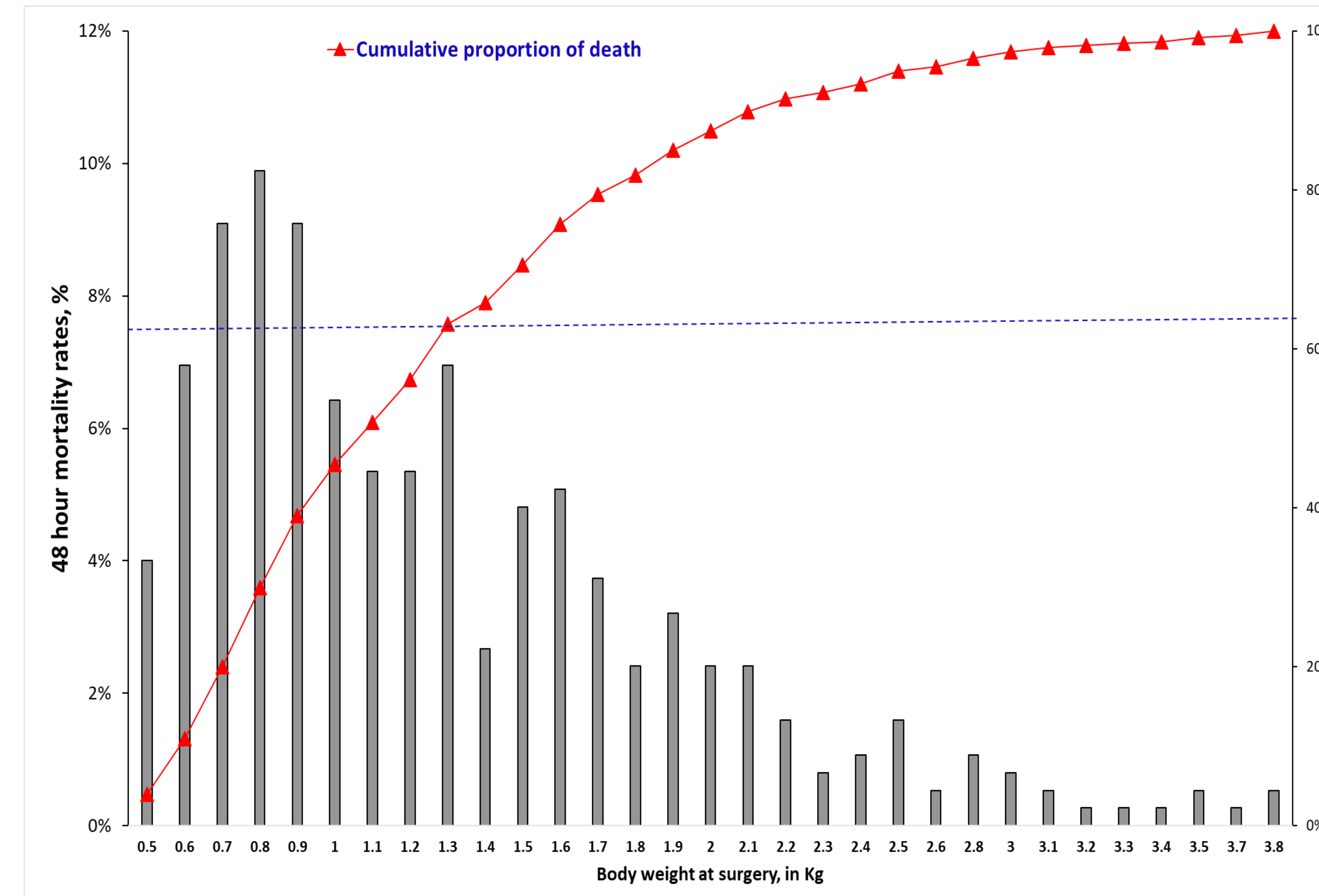
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Introduction

- ❑ Premature infants frequently require surgical intervention secondary to complications of early gestational age.
- ❑ These premature infants are at an increased risk of surgical morbidity, creating an ethical conundrum of identifying patients likely to result in early mortality.
- ❑ Although weight at surgery is a key determinant of postoperative neonatal mortality, whether a threshold below which early postoperative mortality markedly increases has not been established.
- ❑ Objective: To determine whether a statistically supportable threshold exists between body weight at surgery and postoperative mortality among preterm infants undergoing non-cardiac surgery.

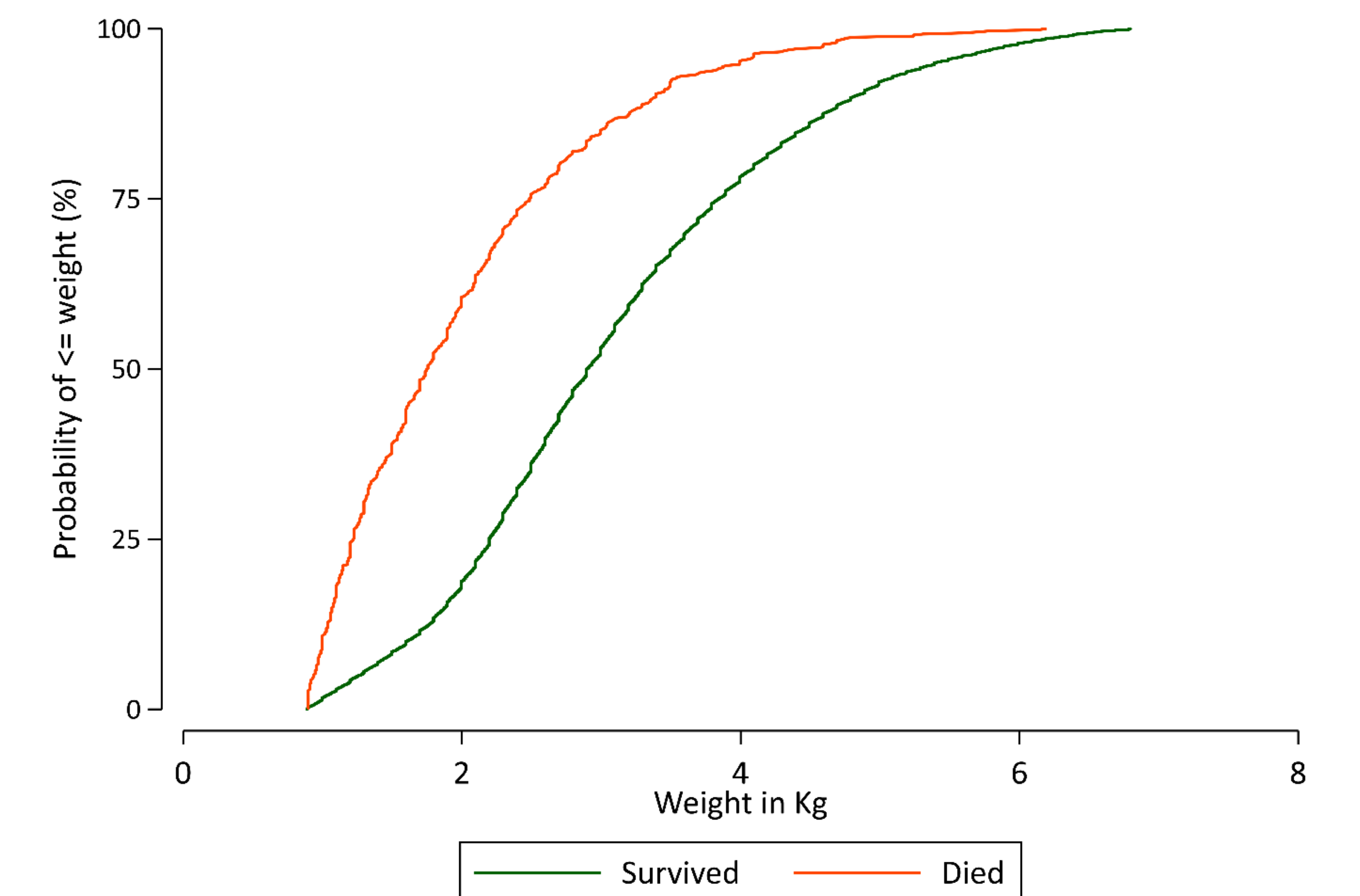
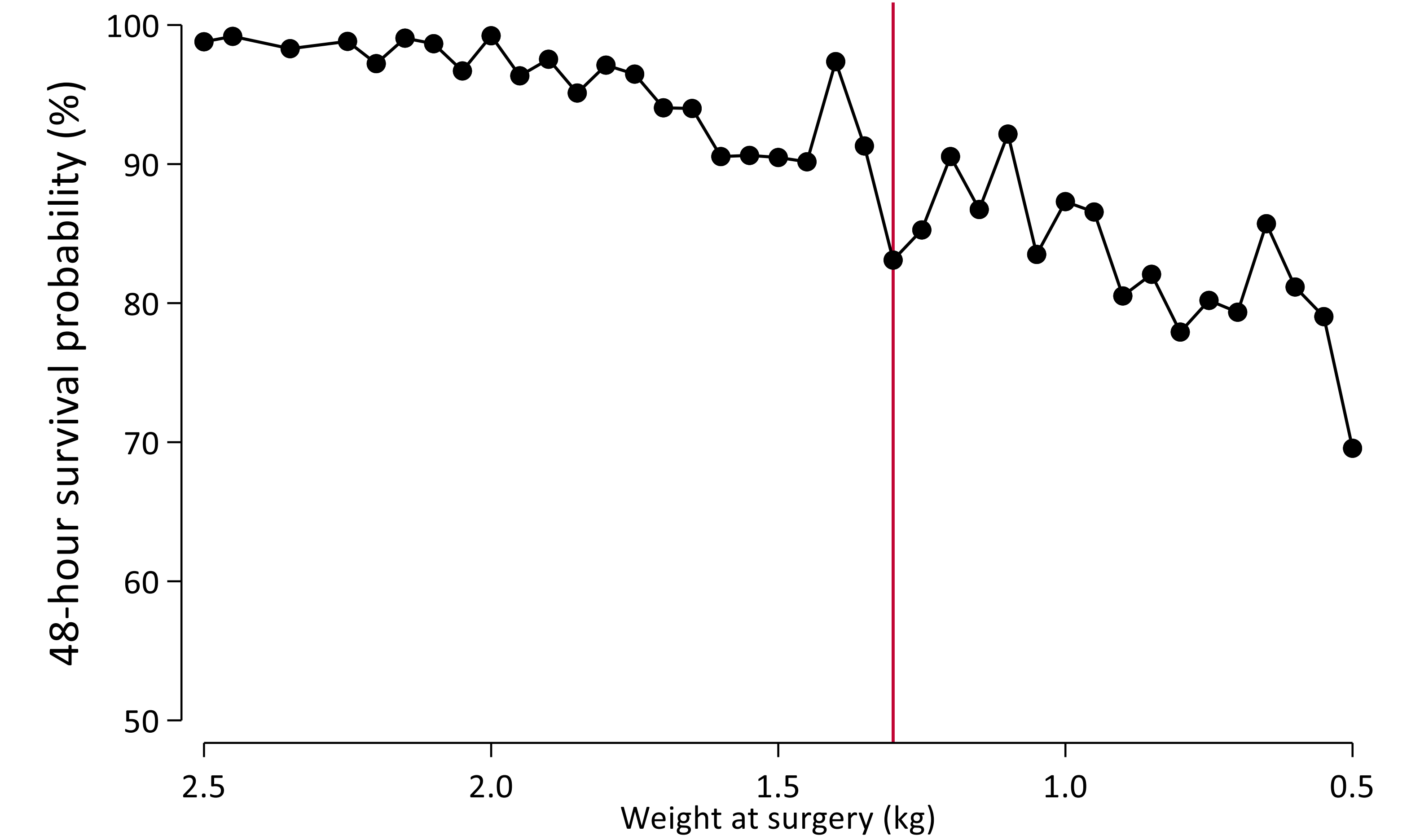
Methods

- ❑ We identified 7,315 premature babies (gestational age < 37 weeks) who underwent non-cardiac surgery between 2012 and 2020 at hospitals reporting to the NSQIP.
- ❑ Consistent with prior reports, our primary outcome was mortality within 48 hours of surgery.
- ❑ Without assuming the existence of a cut point, we performed a threshold analysis identifying a breakpoint at which the slope of the association between weight at surgery and 48-hour mortality changed significantly.



Results

- ❑ The median (interquartile range) weight at surgery was 2.1(1.5-2.6) kg. The median age at surgery was 4(1-12) days (median gestational age=34 weeks).
- ❑ We identified a threshold value of 1.3kg(Std Err:0.2kg), where statistical evidence of significant change in the slope of the association between weight and 48-hour mortality was found (P=0.017).
- ❑ Infants weighing below this threshold (<1.3kg) at surgery accounted for 62.5% of 48-hour mortality cases in the cohort (P<0.001).
- ❑ These infants had higher ASA classification compared to their counterparts weighing ≥1.3kg (ASA class ≥ 3: 98.3% vs. 85.3%; P<0.005).



CONCLUSION

- ❑ We identified a threshold for weight at surgery below which early mortality risk conferred by decreasing weight markedly increases.