**INTRODUCTION**

Fetal fraction (FF) is one of the many factors that influence the performance of noninvasive prenatal screening (NIPS). The most common cause of low FF is high BMI: patients with high BMI constitute >25% of US pregnancies.

**STUDY DESIGN**

51,737 consecutive patients who provided their height and weight and received WGS-based NIPS were stratified into standard BMI classes. FF closely follows a beta distribution, allowing parameterization across classes. For each BMI group, the aggregate analytical sensitivity was calculated by summing—over the range of FF values—the product of (1) the sensitivity for a given FF and depth based on a model of WGS NIPS and (2) the BMI-specific probability of observing a patient at that FF. The analysis did not involve a “no-call” threshold on FF.

**RESULTS**

As BMI increases, NIPS sensitivity drops due to downward shifts in the FF distribution: non-obese analytical sensitivity for T21 is 99.8%, whereas for class III it is 95.4%. Nevertheless, even those patients with class III BMI have expected T21 sensitivity in excess of that obtainable via standard maternal serum screening (92.9%).

**CONCLUSION**

We demonstrate that NIPS alone is a superior option for high-BMI patients when using methods that maintain high sensitivity at low FF such as whole-genome sequencing, allowing providers to offer the same high level of care to all of their patients, regardless of body habitus.