

Pregnancy Outcome Information after Receiving an “Aneuploidy Suspected” Screen Result via Non-Invasive Prenatal Screening

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I. Introduction

Non-invasive prenatal screening (NIPS) first entered the field in 2011. Integrated Genetics began offering its own laboratory developed informaSeq® assay in 2014. InformaSeq has three reporting categories: aneuploidy detected, aneuploidy suspected, and aneuploidy not detected. The “aneuploidy suspected” category, by far, is the most infrequent reporting category; hence, providers tend to have questions regarding the clinical impact of a “suspected” screen result. This study presents Integrated Genetics’ experience with the clinical outcomes of these results.

III. Results

During the selected time interval, a total of 270,637 samples were reported. Of those, 197 (<0.1%) samples resulted “aneuploidy suspected” and were included in the database. Seventy-five patients who received “aneuploidy suspected” screen results underwent diagnostic testing via chorionic villus sampling, amniocentesis, or both. For the remaining 122 samples, follow up diagnostic testing information was unavailable; however, six patients in this category reported experiencing a fetal demise. Of interest, 59 of the 75 patients with an “aneuploidy suspected” screen result that sought diagnostic testing received normal fetal results via karyotype or microarray.

Figure 1. informaSeq screen results reported by result category

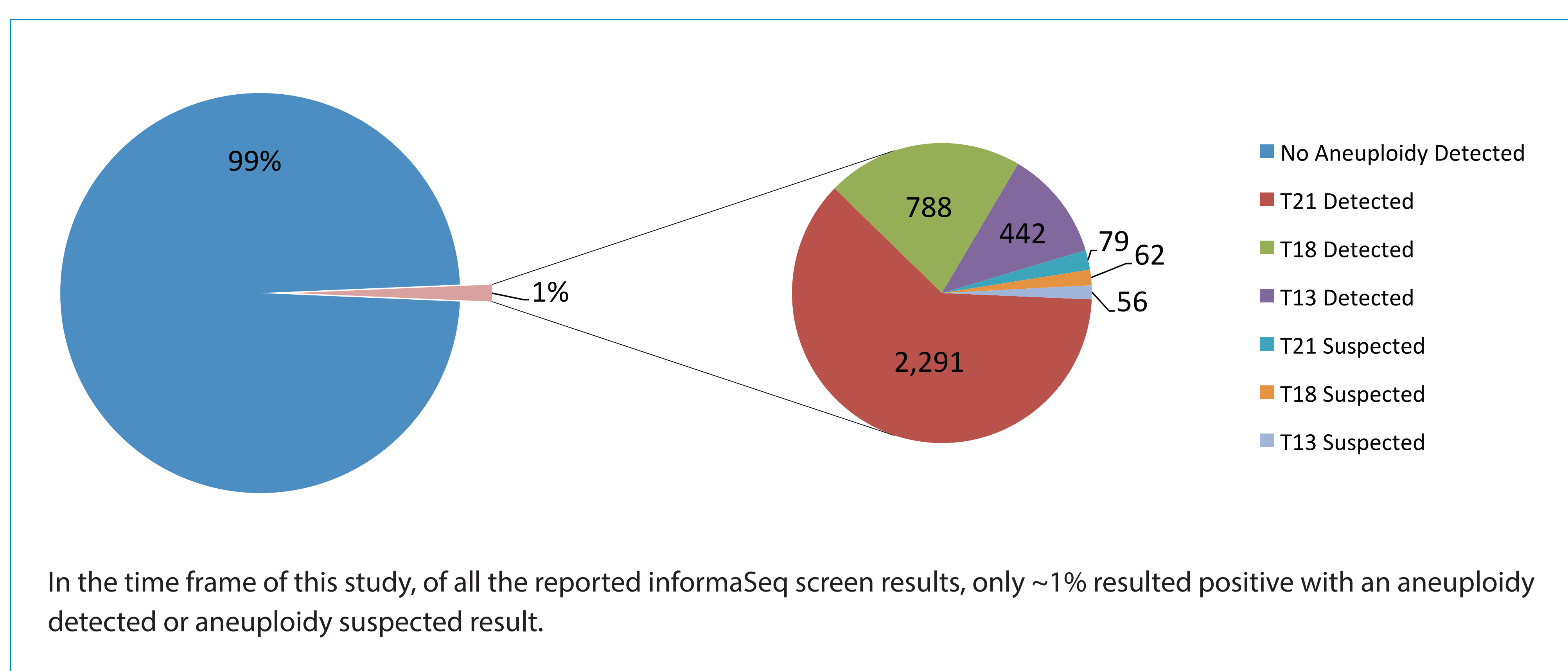
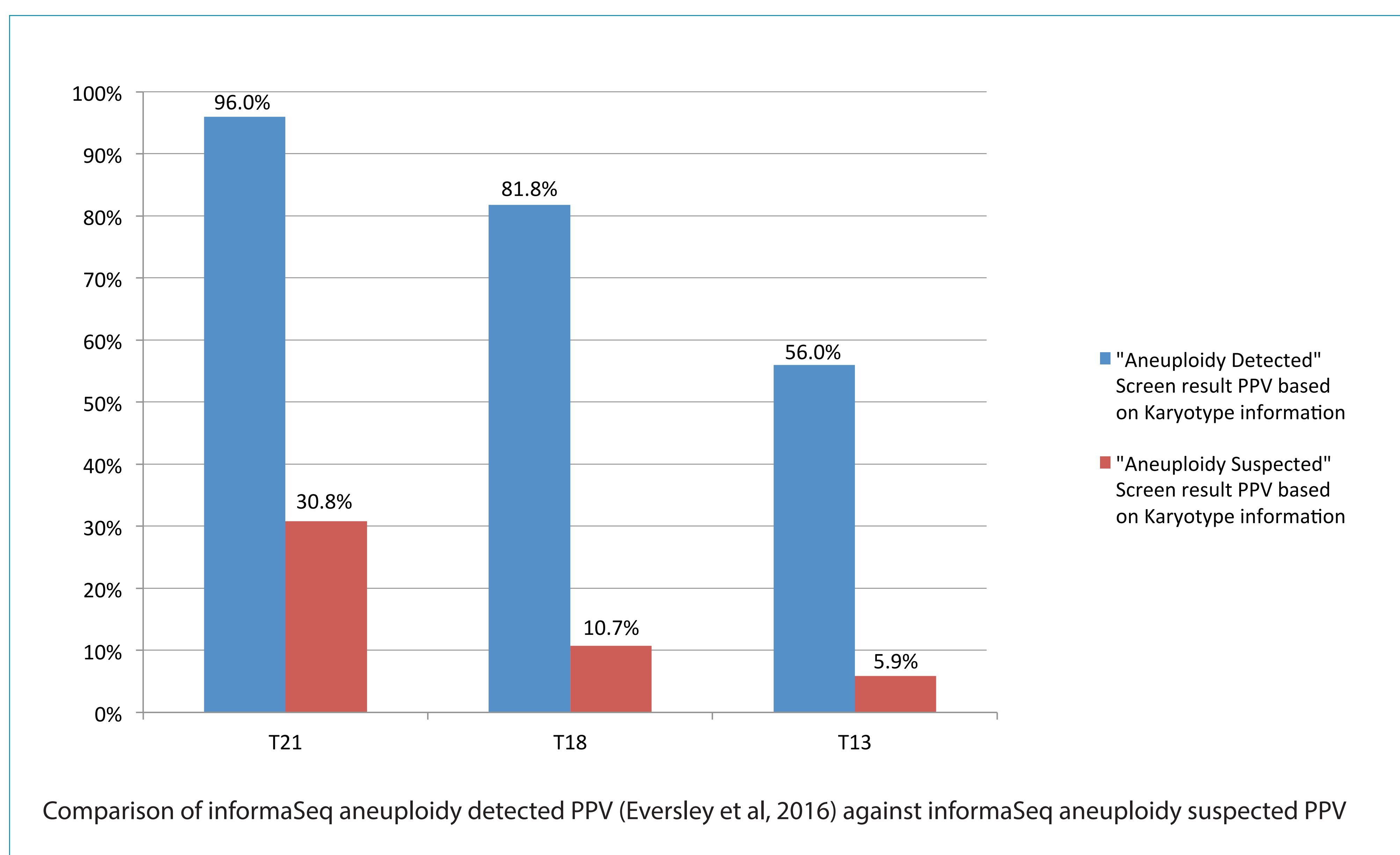


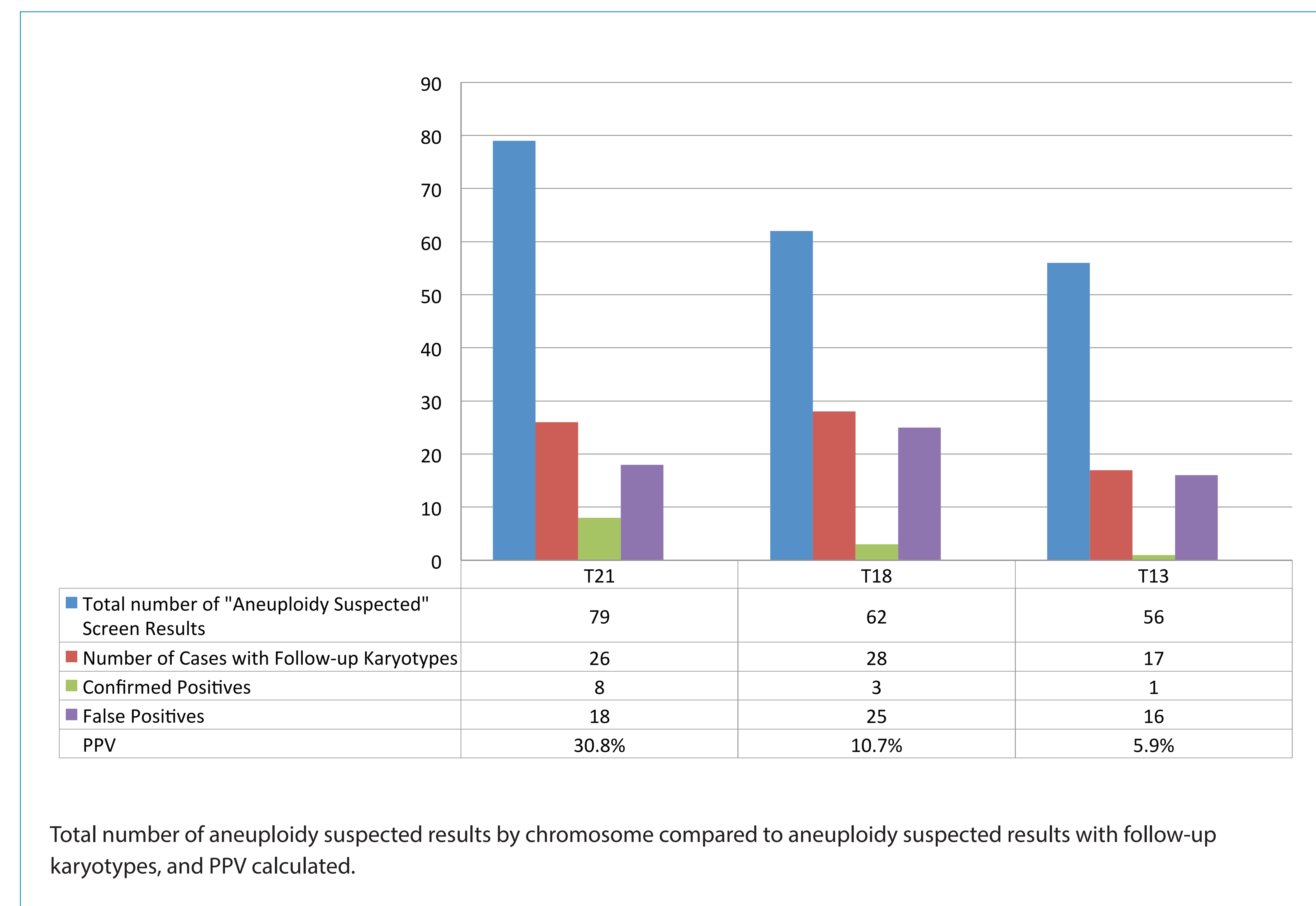
Figure 3. Aneuploidy detected and aneuploidy suspected PPV comparison



II. Methods

A database of positive results was maintained by the genetic counselors, and clinical outcome data was collected six weeks post-test or post-delivery when necessary. For the purpose of this study, follow-up data for “aneuploidy suspected” results reported between 09/07/2014 and 03/31/2017 was analyzed.

Figure 2. Aneuploidy suspected screen results by chromosome



IV. Discussion

“Aneuploidy suspected” screen results can pose a unique challenge when counseling patients regarding their risks. It is important to emphasize that while non-invasive prenatal screening approaches very high sensitivity and specificity, it still remains a screening test due to the limitations of using cell free DNA. Possible explanations for discrepant results include mosaicism (either tissue specific or confined to the placenta), demised co-twin, or a chromosome anomaly not validated on this test. Current follow up recommendations for “aneuploidy suspected” results are the same as “aneuploidy detected” results which includes the option of diagnostic testing. When discussing results with patients, clinicians should take into consideration the fact that the PPV is lower for aneuploidy suspected results as compared to aneuploidy detected. Future studies may look into defining recommendations for follow-up after receiving an aneuploidy suspected screen result beyond fetal diagnostic testing. Regardless, referral to a genetic counselor after such a positive result can help in patient understanding and decision making.

V. References

Eversley C, Williams E, Burch M, et al. Clinical performance of informaSeq non-invasive prenatal screening. Poster presented at: *ACMG Annual Clinical Genetics Meeting*; 2016 March 8-12; Tampa, FL.