

LETROZOLE ALONE OR WITH METFORMIN FOR OVULATION INDUCTION IN PATIENTS WITH PCOS

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Background

Polycystic ovarian syndrome (PCOS) has a prevalence of 10-13% and is characterized by insulin resistance, with many patients experiencing infertility secondary to anovulation. When comparing ovulation induction (OI) agents in PCOS, there is an established superiority of letrozole over clomid, with improved ovulation and increased live birth rates. Clomid has been evaluated alone or in combination with metformin for OI. However, the impact of metformin on fertility outcomes has not been studied when combined with letrozole. Given the large number of PCOS patients seeking fertility care, it is important to have evidence for pharmacologic regimens that maximize fertility outcomes.



Figure 1: Patients Included

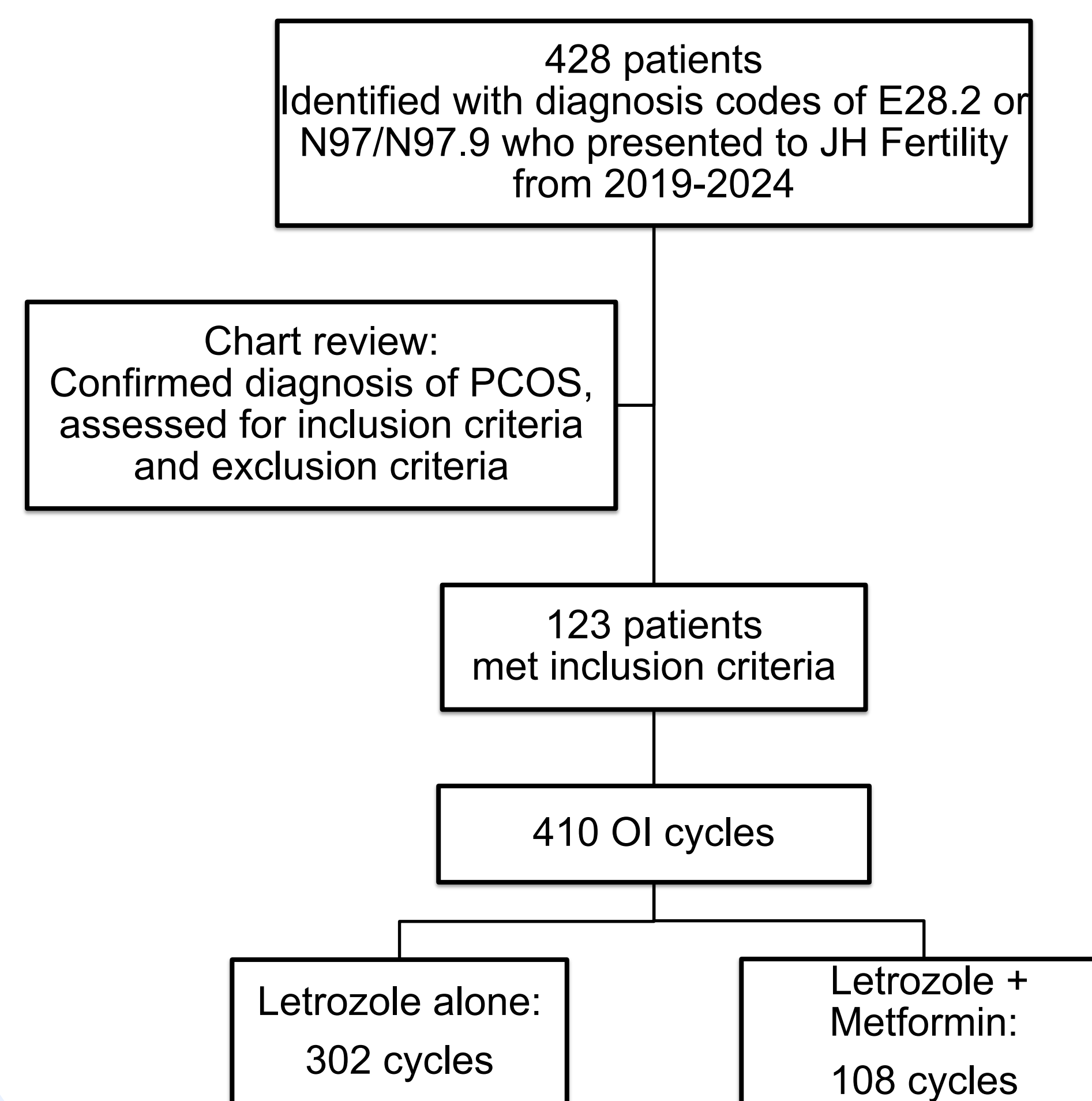


Figure 3: Number of Cycles to Achieve First Clinical Pregnancy

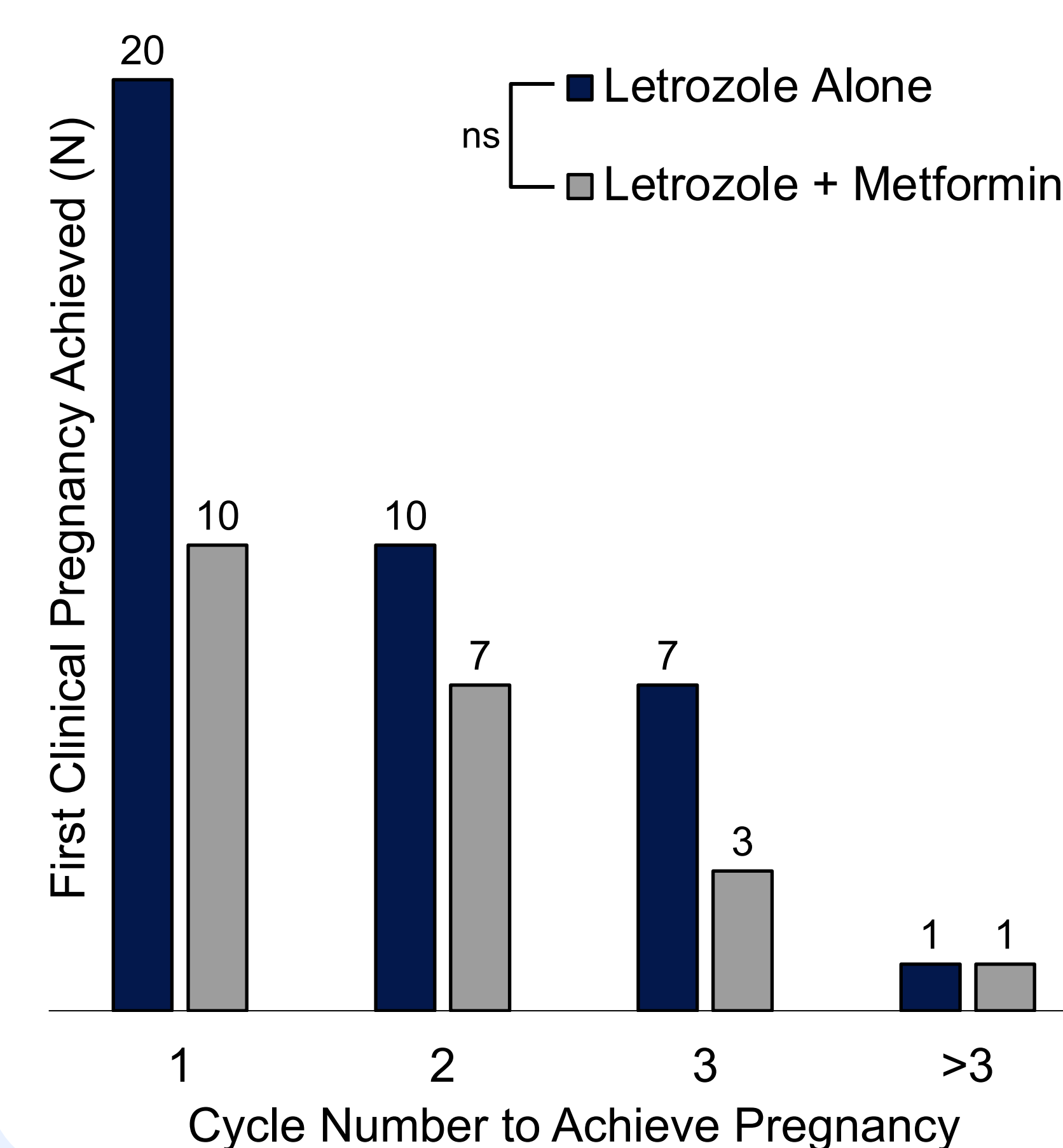
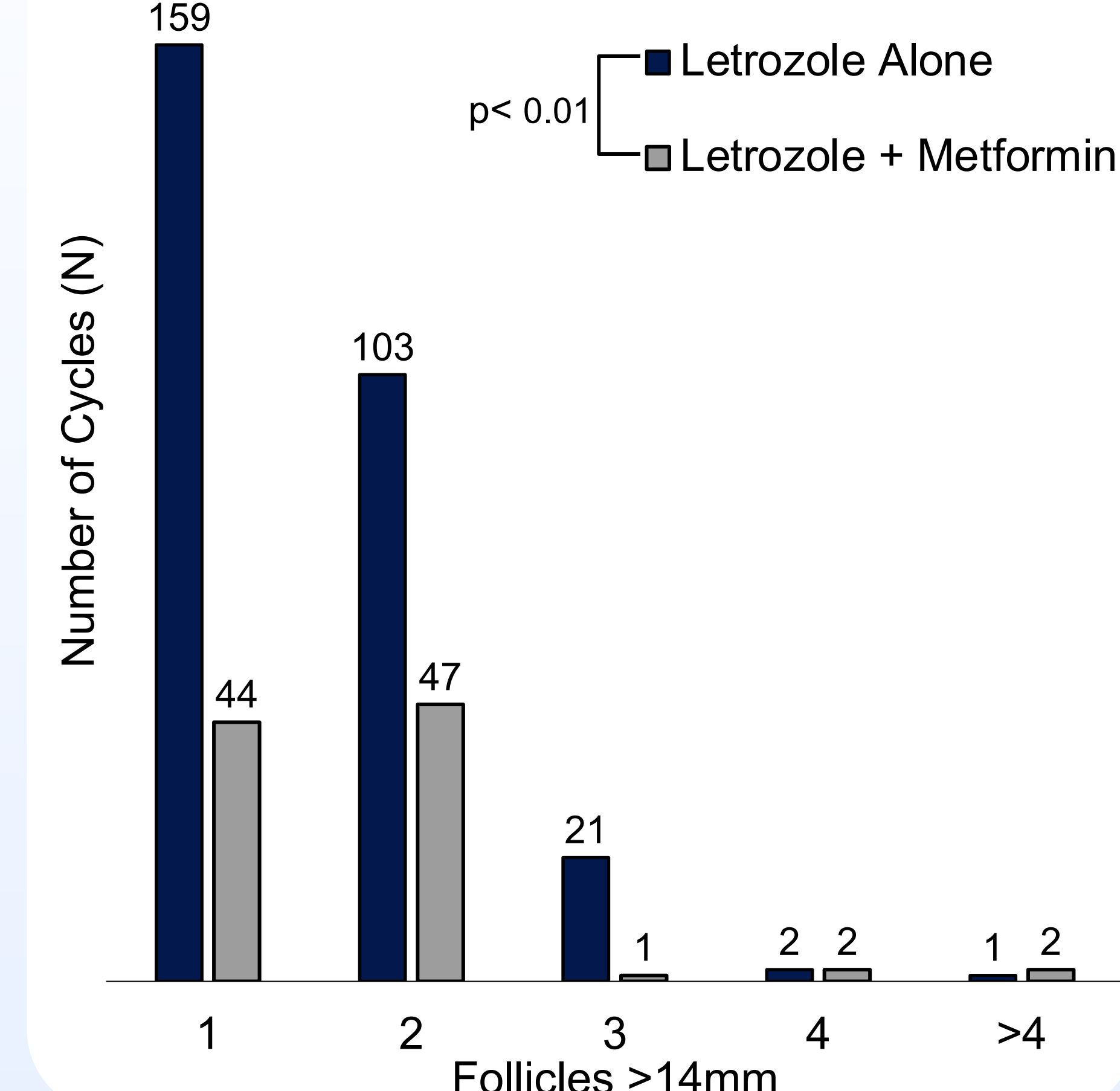


Figure 4: Number of Follicles >14mm per cycle



Objective

To determine if use of letrozole combined with metformin for OI in patients with PCOS is associated with improved fertility outcomes compared to use of letrozole alone.

Methods

- IRB-approved retrospective cohort chart review
- Inclusion criteria:
 - Established REI care between 2019-2024
 - Underwent ovulation induction with letrozole
 - Either timed intercourse (TIC) or intrauterine insemination (IUI)
 - Had at least one functioning ovary
 - Confirmed patency of at least one fallopian tube
 - PCOS diagnosis based upon Rotterdam criteria
- Exclusion criteria:
 - Endometriosis
 - Diabetes Mellitus
 - Uterine cavity abnormalities
 - Anti-mullerian hormone <1ng/mL
 - Use of metformin >1 year prior to presentation
- Categorical variables were compared and analyzed with the Fisher's exact test and Chi-squared test.

Figure 2: Pregnancy Outcomes

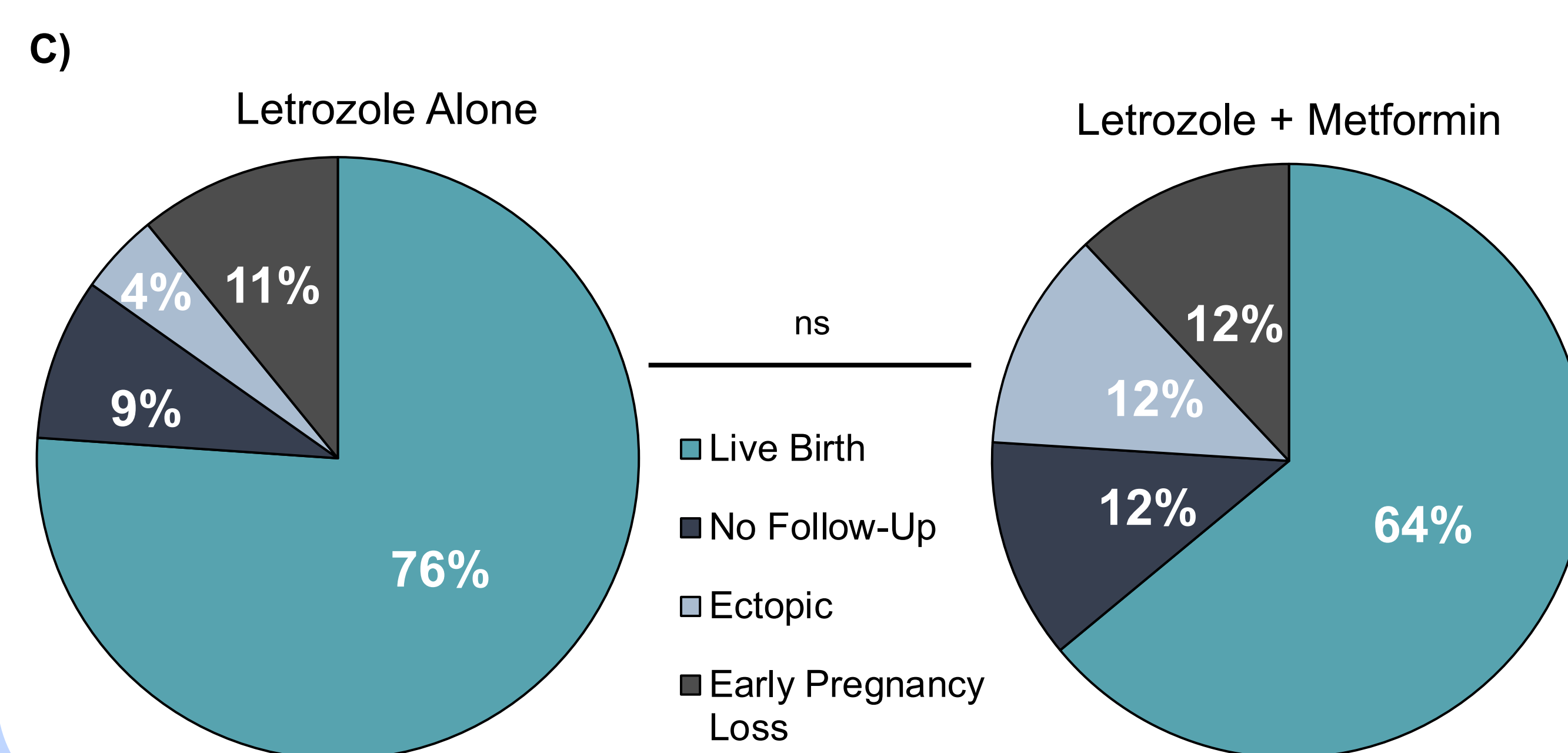
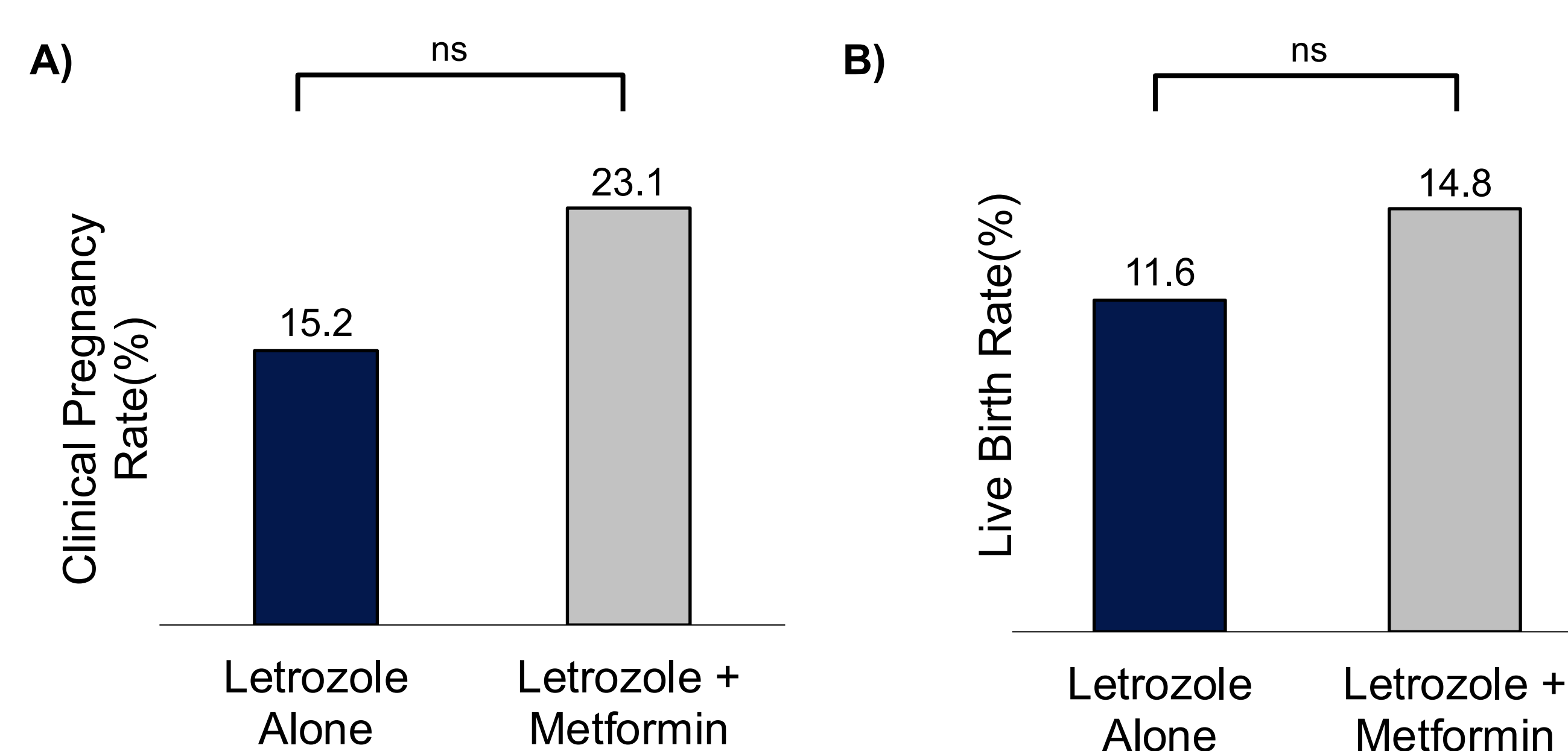
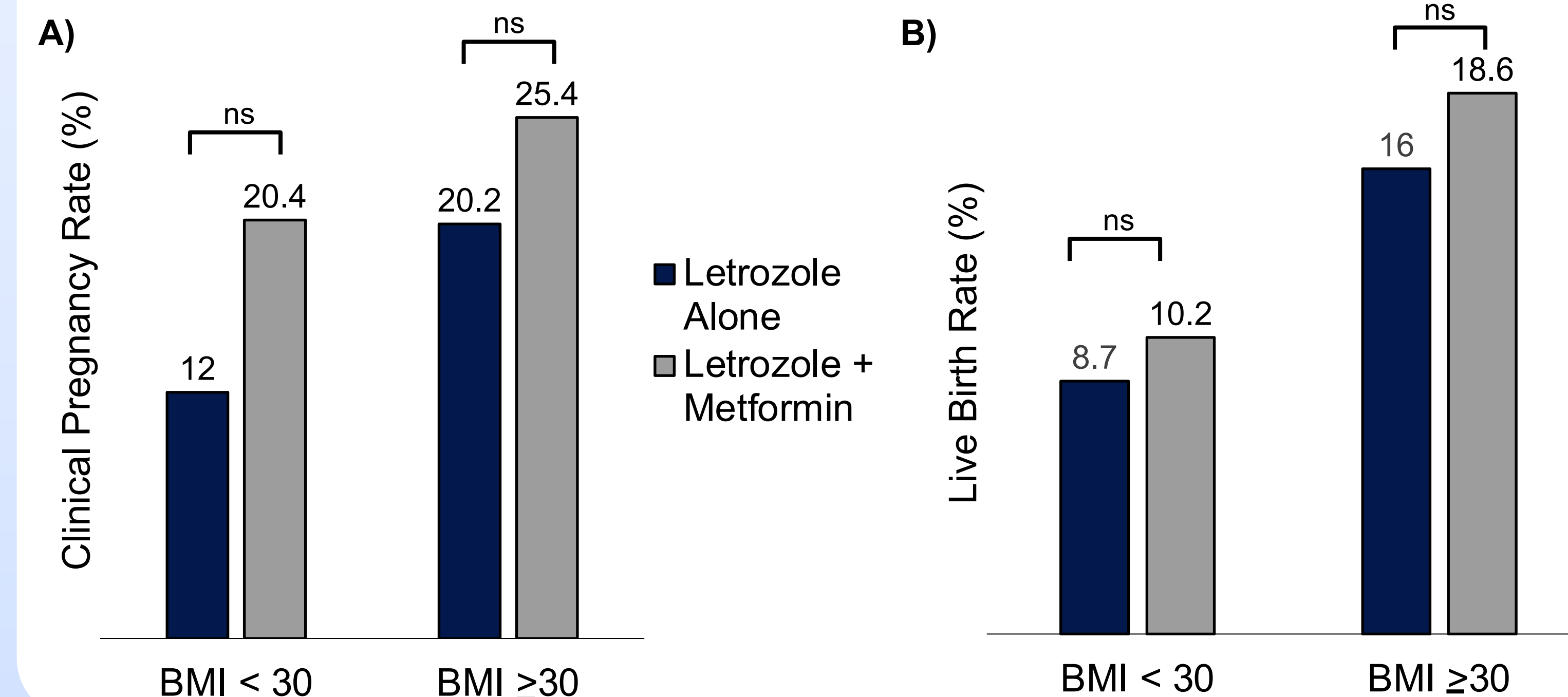


Figure 5: Pregnancy Rates by Body Mass Index (BMI)



Conclusions

- Metformin use with letrozole is associated with a trend to increase both clinical pregnancy and live birth rates in PCOS patients undergoing OI, compared to letrozole alone.
- Metformin addition to OI with letrozole does not impact how many cycles a patient needs to undergo to achieve their first clinical pregnancy.
- Metformin use impacts the number of follicles per cycle that are greater 14mm.
- Stratification of pregnancy outcomes by BMI does not affect statistical significance. However, for patients with BMI <30, there is a trend towards higher clinical pregnancy rate with metformin use (20.4% versus 12%), though this does not ultimately impact live birth rates.