Background
Therapy using monoclonal antibodies specific to TNF-α plays an important role in maintaining remission in patients with inflammatory bowel disease (IBD). Infliximab (IFX) is a chimeric monoclonal antibody that has a high rate of immunogenicity, thus increasing the incidence of antibody development. An alternative is adalimumab (ADA), a fully human monoclonal antibody in which the incidence of antibodies is much less. The American Gastrointestinal Association (AGA) has published guidelines on the use of therapeutic drug monitoring (TDM) in IBD to ensure adequate trough concentrations and to assess for antibody development. Many studies have shown the reduction of antibody formation with the use of concurrent immunosuppressants such as 6-mercaptopurine, methotrexate, and azathioprine. However, there are no current guidelines that recommend the standardized use of immunosuppressants to prevent anti-drug antibody formation. At our current institution, it is not standard practice to prescribe patients on anti-TNF therapy immunosuppressants. Thus, the objective of this investigation was to determine if concurrent immunosuppression is associated with a decrease in drug antibody formation and to compare the development of antibodies to IFX to that of ADA

Design
The inclusion criteria in this single center, retrospective study was: age ≥ 18 years with a diagnosis of Crohn’s disease or ulcerative colitis who have received IFX or ADA with reported serum drug levels and antibody levels. Patient demographics, CRP levels, concomitant immunosuppressant therapy, serum drug levels, and drug antibody levels were analyzed. The primary outcome was to evaluate the effectiveness of concurrent immunosuppression in preventing the formation of drug antibodies and to determine incidence of drug antibodies IFX compared to ADA. Secondary outcomes were to evaluate clinical response based on therapy received and to determine relationship of serum drug levels and drug antibody levels to clinical response. Descriptive and inferential statistics were used to analyze outcomes.

Results
The average patient was a 41-year-old white female weighing 81 kg with a BMI of 28.7 kg/m2 with a diagnosis of Crohn’s disease. Out of 50 patients, about 62% received ADA for anti-TNF therapy with the other 38% receiving IFX. About 50% of patients were on immunosuppressants along with anti-TNF therapy. Twenty-two percent of patients achieved complete response with therapy, 68% achieved partial, and 10% achieved no clinical response with therapy. Of the 50 patients, only 28% had therapeutic drug levels with 20% developing antibodies to anti-TNF therapy. In the ADA group, 80.6% of patients experience a partial to no clinical response, of which 52% had developed antibodies. Only 16 of the patients were on immunosuppressive therapy of which 33.3% had detectable antibodies (p=1). In the IFX group, 73.7% had a partial to no clinical response with 64.3% of patients having developed antibodies. Nine patients were on immunosuppressive therapy of which 33.3% had detectable antibodies (p=0.63).

Conclusion
In patients who had a partial to no clinical response to therapy, most had developed antibodies. Patients receiving IFX therapy plus an immunosuppressant were less likely to develop antibodies whereas patients receiving ADA plus immunosuppressant showed no difference in prevention of antibodies. Although the addition of immunosuppressant to anti-TNF therapy did not show statistical significance in preventing the formation of antibodies, it may play a role in preventing antibodies when used in conjunction with IFX. A major limitation of this study was a small sample size affecting the power of the study, resulting in a non-statistically significant finding.