Background
Predicting the outcome of acute severe colitis (ASC) with endoscopic information has been examined using the Ulcerative Colitis Endoscopic index of Severity (UCEIS). Higher scores predict the need for rescue therapy, but this index has yet to be correlated with calprotectin, a marker of intestinal inflammation. Intestinal mucosal calprotectin (IMC) itself has yet to be examined as a predictor of outcome in ASC.

Methods
Cases of ASC admitted between July 2010 and November 2012 were retrospectively examined, using a database that included clinical parameters and UCEIS score (range 0-8) on admission, response to inpatient therapy, and outcome defined as need for colectomy or rescue therapy with either infliximab or ciclosporin. Sections of archived biopsies taken during admission were stained for calprotectin using immunohistochemistry for the S100A8/A9 heterodimer. The IMC count was defined as the mean number of calprotectin positive cells per 20x high power field (hpf) determined by counting 5 hfps per specimen. Statistical methods used were multivariate logistic regression, Student’s t-tests and rank sum Mann-Whitney tests as appropriate.

Results
24/52 patients had rescue therapy and 11/52 underwent colectomy. The mean IMC count in the cohort was 202 (SD ± 112, median 204, range 1 to 540).

Figure 1: calprotectin staining. 2 stained sections with 5 selected hfps for each section with a mean value of 34 positive cells/hpf (a) and 403 positive cells/hpf (b)

The UCEIS score was grouped into three: <4, 5-6 and 7-8. No significant differences in mean IMC numbers were found between the three UCEIS groups (171, 237, 183 positive cells/hpf with p-values 0.07, 0.71 and 0.24 respectively). IMC did not predict the need for colectomy (p= 0.10) (mean IMC count for colectomy and non-colectomy patients was 145 and 216 respectively). However, higher IMC counts were associated with rescue therapy (95 % CI 1.00-1.002; p=0.03) (mean IMC count for rescue therapy and non-rescue therapy patients 239 and 171 respectively).

Figure 2: mean IMC value and the need for rescue therapy with ciclosporin or infliximab

The odds ratio of having rescue therapy increased with the IMC; an increase by 50 calprotectin positive cells/hpf increased the odds by 1.54. On multivariate logistic regression analysis, a model that significantly predicted the need for rescue therapy included the IMC count, the UCEIS score, and age as predictors (p= 0.0008).

Conclusion
Intestinal mucosal calprotectin did not correlate with UCEIS in this small cohort, although it did predict the need for rescue therapy in ASC. IMC may therefore provide a valuable correlate in evaluating the severity of mucosal inflammation.