Introduction Barrett’s surveillance traditionally requires mapping biopsies to identify neoplasia. Acetic acid (AA) allows only targeted biopsies, potentially reducing the number of biopsies required. This study aims to compare neoplasia detection with AA targeted biopsies and protocol guided non-targeted biopsies during Barrett’s surveillance.

Methods Multicentre randomised crossover feasibility study in UK secondary care. Patients under surveillance for Barrett’s metaplasia (>2 cm) with no history of dysplasia or cancer were recruited. All patients underwent two gastroscopies 8 weeks apart, one with AA guided biopsy of abnormal areas only (Portsmouth Protocol) and one with non-targeted mapping biopsies (Seattle Protocol). Neoplasia yield (low grade dysplasia LGD, high grade dysplasia (HGD) and cancer) from each strategy was evaluated and the number of biopsies recorded.

Results 200 patients recruited from 6 centres. Mean age 66 years. 145 were male. Mean length C4M6. 175 patients completing both procedures. The prevalence of LGD, HGD and cancer was 11/192 (5.8%). All HGD and cancer was found with both protocols and confirmed with definitive treatment. One LGD was found with Portsmouth protocol not found with Seattle. 5 LGD were found with Seattle protocol not found with Portsmouth. This difference was not significant (p=0.2188), and on follow up gastroscopy no neoplastic changes were found in any of the LGD cases. 2139 biopsies were taken using Seattle protocol at a cost of £1.25 987 (306 biopsies per neoplasia, £18,023). 226 biopsies with Portsmouth Protocol at a cost of £13 311 (75 biopsies per neoplasia, £6,656) a 4 fold difference. In terms of HGD/cancer, 1070 biopsies/neoplasia found using Seattle protocol and 113 biopsies/neoplasia using Portsmouth Protocol, a 9.5 fold difference.

Conclusions This is the first RCT comparing these techniques. No HG or cancer was missed with either technique. There was a 4 fold reduction in biopsies per neoplasia detected with Portsmouth compared to Seattle protocol and a 9.5 fold difference when restricted to high risk neoplasia. If implemented nationally then this could lead to a massive reduction in histopathology work load and costs. LGD remains controversial and we believe inflammation could support a definitive trial of AA targeted biopsies in a surveillance population.