require second intestinal surgery during the clinical course. Immunomodulators (IM) and anti-tumour necrosis factor-alpha (anti-TNF) agents can be prophylactic against postoperative recurrence, however, it remains unclear whether such medications can decrease second intestinal surgery in CD. The present study aimed to investigate the preventive effect of postoperative medications on the second intestinal surgery in postoperative CD.

Methods: This is a retrospective cohort study. 112 CD patients who had undergone initial intestinal surgery during 2002 and 2017 in our institutions were enrolled. Postoperative clinical course of the patients was carefully reviewed, and possible factors associated with second intestinal surgery were investigated. Medications initiated within a year after surgery was defined as the postoperative therapies. Intestinal resection due to complication of CD or strictureplasty was defined as intestinal surgery. Cumulative probabilities of second intestinal surgery were estimated using Kaplan–Meier method, and compared by the log-rank test. Cox proportional hazard model was used to analyse factors associated with second intestinal surgery.

Results: Of the 112 patients, IM and anti-TNF agent were applied to 25 (22%) and 58 (52%) patients as the postoperative medications, respectively. Among them, both medications were used in 14 patients (13%). During median follow-up of 60.5 months, 30 patients (27%) required second intestinal surgery. Cumulative probabilities of second intestinal surgery were estimated to be 19.4% at 5 years, and 33.4% at 10 years after surgery, respectively. Under univariate analysis, clinical characteristics including age at diagnosis, smoking status and CD behaviour were not associated with second intestinal surgery. However, postoperative IM and anti-TNF agent were associated with reduced risk of second intestinal surgery ($p = 0.014$ and 0.047, respectively). The multi-variate analysis by Cox proportional hazard model revealed that postoperative IM [hazard ratio (HR); 0.12, 95% confidence interval (CI); 0.01–0.54] and anti-TNF agent [HR; 0.40, 95% CI; 0.15–0.96] were independent factors associated with the reduced risk of second intestinal surgery.

Conclusions: Both postoperative IM and anti-TNF agent might decrease the risk of second intestinal surgery in patients with CD.

P396
Monitoring adalimumab compliance using smart sharp bin technology

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Background: Adalimumab is a patient-administered subcutaneous anti-TNF agent used in both Crohn’s disease and ulcerative colitis. It has previously been shown that there is non-compliance with patient-administered subcutaneous therapies. The aim of this study was to evaluate compliance with adalimumab among our patient cohort enrolled in the Health Beacon programme.

Methods: We collated data supplied by Health Beacon on a monthly basis to determine rates of non-compliance with adalimumab therapy including, early, late and missed dosing. A drop is counted as administration of adalimumab and placement of the pre-filled pen or syringe into the smart sharps bin.

Results: A total of 496 drops were counted among 26 patients. Fifteen males and 11 females are currently enrolled in the programme with an average age of 40.6 years. Seventeen patients have a diagnosis of Crohn’s disease and 9 with ulcerative colitis. 355 drops were recorded as being on-time, giving an overall compliance rate of 71.5%. Compliance among males is 76.8% and females 63.8%. Compliance is 71.7% and 70.6 in Crohn’s disease and ulcerative colitis, respectively. 46.2% of patients have missed at least two doses.

Conclusions: We have shown high rates of non-compliance with adalimumab therapy in patients who have agreed to have their compliance tracked. This may be attributed to the administration of the medication by the patient at home. In this case, infusion therapy may show benefit over subcutaneous therapy. Further correlation with inflammatory markers, endoscopic findings and faecal calprotectin may aid in deescalating therapy in those patients who are non-compliant, yielding significant savings for our department.

P397
Autologous stem cell transplantation in refractory Crohn’s disease: evaluation of a modified mobilisation regimen and analyses of the cost-effectiveness

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Background: Autologous stem cell transplantation (ASCT) is a last resort treatment in patients with refractory Crohn’s disease (CD), but is associated with high costs and considerable toxicity. In this study, we evaluate the impact of a modified mobilisation regimen on toxicity, efficacy and costs.

Methods: In this prospective observational study, adult patients with refractory CD were included between 2014 and 2017 from six University Medical Centres. We eliminated cyclophosphamide from the mobilisation regimen to limit toxicity. The aims of this study were to assess the sustained remission at 1 year (clinical remission (CDAI < 150) AND no use of immunosuppressives or biologicals AND no endoscopic or radiologic evidence of active disease), the clinical benefit (CDAI < 150 or a significant decrease of 100 points), toxicity, cost effectiveness and quality of life (QoL).

Results: Eight patients (5 females, median age 49 years, range 40–67 years) underwent ASCT. Seven patients completed a follow-up of 52 weeks. None of the patients reached the combined primary endpoint at Week 52. However, 3/5 (60%) patients reached clinical remission defined as CDAI < 150, and a fourth had a significant decrease of 100 points in the CDAI (clinical benefit in 4/6 patients). The CDAI was not assessed in two patients, because of the presence of an endostomy. In 2/6 patients no radiologic and in another 2/6 no endoscopic disease activity was observed at Week 52. In 4/7 patients QoL significantly increased (IBDQ increase of >16 points, range 28–49 points). All patients were discharged from the hospital within 4 weeks after ASCT. In total, 35 adverse events were reported of which 8 were considered serious. Analysis of the healthcare costs (1 year before vs. 1 year after ASCT) of the first 4 patients shows a substantial reduction in the costs.
of healthy donors and Crohn’s disease patients. Furthermore, the immune-stimulatory effects of leptin substitution were assessed in a mouse model of acute DSS colitis.

Results: In the absence of mesenteric fat, we observed a unique immune cell composition in the peripheral blood of the AGLCD patient. Characterised by reduced frequencies of NK cells and CD14+ monocytes, an accumulation of lipid droplets in monocytes, NK and CD8+ T cells, decreased expression of CCR7 on T cells and an increased expression of CD38 on T and NK cells compared with healthy donors and Crohn’s disease patients. Treatment of the AGLCD patient with rLeptin reduced the lipid droplet contents of immune cells and in vitro application of leptin decreased fatty acid oxidation in macrophages. Furthermore, rLeptin treatment led to increased expression of pro-inflammatory markers in mononuclear cells as well as increased TNFα production in monocytes and T cells, ultimately resulting in a high inflammatory disease activity and subsequently ileocolic resection. Accordingly, IHC of the resected specimen of the AGLCD patient showed a higher infiltration of TNFα-producing cells and reduced numbers of CD206+ anti-inflammatory cells compared with CD patients. Likewise, injection of leptin aggravated intestinal inflammation in colitic mice by inducing TNFα-producing CD4+ T cells. Importantly, these pro-inflammatory effects of rLeptin in the AGLCD patient could be overcome by treatment with the TNF-blocking antibody adalimumab, which resulted in complete clinical and endoscopic remission 6 month after initiation of therapy despite ongoing rLeptin treatment.

Conclusions: Our results suggest that leptin might play a crucial role in human immune cell homeostasis and that in the setting of a pre-existing inflammatory condition leptin therapy might fuel inflammation and increase disease activity via the induction of TNFα-producing cells, which can be reversed by TNFα-blockade.

P399  
Cost-effectiveness of utilising proactive Infliximab therapeutic drug monitoring for inflammatory bowel disease in routine clinical practice  
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Background: Therapeutic drug monitoring (TDM) is increasingly utilised in IBD practice to guide dosing of anti-TNFα. Proactive TDM assessment has not, however, been clearly shown to improve clinical outcomes compared with empiric dose optimisation. The aim of our study was to assess whether a proactive-TDM strategy, with the aim of dosing patients to an IFX-level in the therapeutic range, is a cost-effective strategy in routine practice.

Methods: IFX TDM has been available at SJH for a 1-year period. On a pilot basis, IBD patients receiving IFX had a single trough sample collected. IFX-levels and antibody-to-IFX concentrations (ADA) were determined. IFX levels from 3 to 7 µg/l were considered therapeutic. ADA of 50 AU/ml and above were considered significant. IFX treatment decisions based on TDM were documented. Costs/savings related to TDM use were estimated by documenting alterations to IFX regimens prompted by TDM and extrapolating annualised total dose increases/reductions.

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**P398**  
Leptin controls immune cell composition and activity in acquired generalised lipodystrophy with combined Crohn’s disease  
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Background: Leptin, a fat-derived adipokine, has been suggested to modulate intestinal inflammation in mice. However, clinical evidence regarding its immune-stimulatory potential in Crohn’s disease remains sparse. We here describe a 21-year-old patient with the solitary combination of acquired generalised lipodystrophy and combined Crohn’s disease (AGLCD) featuring a complete lack of visceral and subcutaneous adipose tissue, absent leptin production and severe intestinal inflammation, who received daily injections with 2.5 mg recombinant n-Methionyleptin (rLeptin).

Methods: Using mass and flow cytometry, immunohistochemistry (IHC), ELISA and Seahorse analyses, we characterised the effects of rLeptin substitution on the patient’s immune cell composition and function in vivo and in vitro and compared our results to a cohort