

Pearson **TABLE 1: Baseline clinical characteristics of inflammatory bowel disease cohort**

		Crohn's disease
Patients (n)		97
Ethnicity	Caucasian	95 (98%)
	Asian	2 (2%)
Male (n, %)		49 (51%)
Age at baseline (years) (median, range)		31 (18-49)
Smoking	Current	25 (26%)
	Ex-smoker	26 (27%)
	Never smoked	46 (47%)
Alcohol use (>20g ethanol/day, n, %)		4 (3%)
Age at diagnosis (median, range)		21 (9-48)
Montreal criteria^		A1 16 (17%) A2 75 (77%) A3 6 (6%)
Disease duration (months)	Mean \pm SD	118.4 \pm 90
	Median, IQR	97 (56-150)
Disease phenotype (n, %)	Montreal criteria^	L1 28 (29%) B1 43 (44%)
		L2 32 (33%) B2 38 (39%) L3 37 (38%) B3 16 (17%) p 37 (38%) L4 2 (2%)
Extra-intestinal manifestations (n, %)	Overall	26 (27%)
	Primary sclerosing cholangitis	2 (2%)
	Arthropathy	15 (16%)
	Skin lesion	6 (6%)
	Other	3 (3%)
IBD-related surgery (n, %)		40 (41%)
Clinical disease activity score	Mean \pm SD	CDAI 95 \pm 101
	Median, IQR	60 (26-144)
C-reactive protein (mg/L)	Mean \pm SD	9 \pm 19
	Median, IQR	2.4 (0.6-12)
Faecal calprotectin (μ g/g)	Mean \pm SD	252 \pm 297
	Median, IQR	95 (20-475)

Composite disease activity assessment (n active disease, %)		43 (44%)
Corticosteroids	Current (n, %)	27 (28%)
	Median, IQR	6 (0.6-24)
	Use ≥ 12 months (n, %)	41 (42%)
Biologic therapy (n, %)	Overall	47 (48%)
	Infliximab	30 (33%)
	Adalimumab	16 (17%)
	Vedolizumab	1 (1%)
5-aminosalicylic acid (5-ASA) therapy (n, %)		33 (33%)
Immunomodulator (n, %)	Overall	58 (60%)
	Azathioprine	39 (40%)
	Mercaptopurine	4 (4%)
	Methotrexate	2 (2%)
	Thiopurine/allopurinol	13 (13%)
Exercise (IPAQ~)	Continuous	Mean \pm SD 4345 \pm 6215
		Median, IQR 1671 (841- 4650)
	Categorical	Low 44 (45%)
		Medium 22 (23%)
		High 19 (20%)
Health related quality of life (SIBDQ*)		Mean \pm SD 50 \pm 12.6
		Median, IQR 53 (42- 60)
Body mass index (BMI)		Mean \pm SD 26.5 \pm 5.4
		Median, IQR 25.3 (22.9- 30.4)
Body mass index categories (n, %)		BMI <18.5 5 (5%)
		BMI 18.5- 24.9 41 (42%)
		BMI 25-29.9 24 (25%)
		BMI 30-34.9 17 (18%)
		BMI 35- 39.9 6 (6%)
		BMI ≥ 40 2 (2%)

Table legend: Data presented as mean \pm standard deviation (SD), median (interquartile range (IQR)), counts and percentage. IBD, inflammatory bowel disease; ^Montreal Criteria for classification of IBD; *SIBDQ, Short Inflammatory Bowel Disease Questionnaire; ~IPAQ, International Physical Active

Questionnaire (data for 87 patients available); `Excess alcohol use defined according to Australian healthy Drinking guidelines. Composite disease activity assessment using clinical indices (CDAI or Partial Mayo) and biomarker of inflammation (faecal calprotectin and C-reactive protein).

Table 2: Associations with Crohn's disease behaviour at baseline (stricturing or fistulising (B2 or B3))^

Covariates	Unadjusted		Multiple adjusted		Reduced model	
	log(OR) [95% CI]	p-value	log(OR) [95% CI]	p-value	log(OR) [95% CI]	p-value
Gender (male v female)	-0.2 [-1.0, 0.6]	0.60	-1.6 [-3.0, -0.3]	0.02	-1.6 [-2.9, -0.3]	0.01
Age at IBD diagnosis	-0.009 [-0.015, -0.003]	0.003	-0.06 [-0.14, 0.01]	0.08	-0.06 [-0.13, 0.01]	0.10
VHI	0.5 [-1.2, 2.2]	0.56	-0.07 [-3.6, 3.5]	0.97		
VAT:SAT	0.3 [-0.5, 1.1]	0.41	1.4 [-0.04, 2.8]	0.05	1.4 [0.2, 2.6]	0.02
Body mass index (BMI)	0.04 [-0.05, 0.11]	0.38	0.01 [-0.14, 0.16]	0.87		
IBD disease duration	0.008 [0.003, 0.014]	0.004	-0.06 [-0.13, 0.01]	0.10	-0.05 [-0.12, 0.02]	0.12
Prior IBD abdominal surgery (baseline)	2.3 [1.3, 3.4]	<0.0001	2.7 [1.3, 4.0]	<0.0001	2.7 [1.4, 4.1]	<0.0001
Faecal calprotectin (µg/g)	-0.0013 [-0.0029, 0.00026]	0.09	-0.0006 [-0.0026, 0.0013]	0.52		
C-reactive protein (mg/L)	-0.005 [-0.026, 0.016]	0.61	-0.001 [-0.029, 0.026]	0.91		

Table legend: VHI, visceral adipose tissue/height² index; VAT:SAT, visceral adipose tissue: subcutaneous adipose tissue ratio measured at baseline.

^Montreal Criteria for classification of IBD. log(OR) = log odds ratio. Statistical analysis using logistic regression multivariable analysis.

Table 3: Associations with serial VAT:SAT measurements in Crohn's disease over 24-months.

Covariates	Unadjusted		Multiple adjusted		Reduced model	
	Est. [95% CI]	p-value	Est. [95% CI]	p-value	Est. [95% CI]	p-value
Age	0.028 [0.010, 0.047]	0.002	0.030 [0.012, 0.048]	0.001	0.037 [0.022, 0.052]	<0.0001
Gender (male v female)	0.93 [0.63, 1.2]	<0.0001	0.98 [0.69, 1.3]	<0.0001	1.0 [0.7, 1.3]	<0.0001
Montreal B criteria^ (vs. B1)						
Strictureing (B2)	0.07 [-0.32, 0.46]	0.71	0.34 [-0.02, 0.69]	0.06	0.38 [0.04, 0.71]	0.03
Fistulising (B3)	-0.14 [-0.65, 0.38]	0.59	0.08 [-0.36, 0.53]	0.72	0.08 [-0.34, 0.49]	0.72
Montreal L criteria^ (vs. L1)						
Colonic (L3)	-0.12 [-0.57, 0.33]	0.59	-0.04 [-0.42, 0.33]	0.82		
Ileo-colonic (L2)	-0.29 [-0.72, 0.15]	0.19	-0.14 [-0.51, 0.22]	0.44		
IBD disease duration	0.0015 [-0.0003, 0.0033]	0.10	0.0010 [-0.0011, 0.0031]	0.33		
Biologic therapy	-0.37 [-0.72, -0.02]	0.04	-0.18 [-0.48, 0.12]	0.23	-0.18 [-0.45, 0.10]	0.20
Immunomodulator therapy	0.23 [-0.13, 0.59]	0.20	0.28 [-0.01, 0.58]	0.06	0.26 [-0.02, 0.54]	0.06
Cumulative duration of oral corticosteroid use (months)	0.0012 [-0.0020, 0.0044]	0.46	0.0005 [-0.0024, 0.0034]	0.74		
IBD abdominal surgery prior to enrolment	-0.04 [-0.40, 0.32]	0.82	-0.44 [-0.80, -0.09]	0.01	-0.41 [-0.73, -0.09]	0.01
Faecal calprotectin (µg/g)	-0.00001 [-0.00066, 0.00064]	0.97	0.00010 [-0.00045, 0.00066]	0.72		
C-reactive protein (mg/L)	-0.008 [-0.017, 0.001]	0.07	-0.003 [-0.011, 0.004]	0.38		
Alcohol intake (>20g/day)~	0.80 [-0.08, 1.7]	0.07	0.36 [-0.37, 1.1]	0.33		
Habitual exercise (IPAQ)''	0.009 [-0.022, 0.039]	0.57	-0.010 [-0.035, 0.015]	0.41	-0.007 [-0.030, 0.017]	0.58

Table legend: VAT, visceral adipose tissue; SAT, subcutaneous adipose tissue (VAT:SAT) ratio assessed at baseline, 12-months, and 24-months; IBD, inflammatory bowel disease; ^Crohn's disease phenotype defined according Montreal classification at study enrolment. Statistical analysis using linear mixed effects model multivariable analysis. ~Defined according to Australian healthy Drinking guidelines; ''International Physical Activity Questionnaire for assessment of habitual physical activity (per 1000). Age, IBD disease duration, cumulative corticosteroid use, faecal calprotectin, C-reactive protein, and habitual exercise assessed as continuous variables.

Table 4: Associations with serial faecal calprotectin measurements in Crohn's disease over 24-months

Covariates	Unadjusted		Multiple adjusted		Reduced model	
	Est. [95% CI]	p-value	Est. [95% CI]	p-value	Est. [95% CI]	p-value
Age	-0.020 [-0.046, 0.006]	0.13	-0.001 [-0.034, 0.032]	0.95		
Gender (male v female)	0.17 [-0.31, 0.65]	0.48	0.14 [-0.45, 0.73]	0.63		
Montreal B criteria^ (vs. B1)						
Strictureing (B2)	-0.49 [-1.0, 0.03]	0.06	-0.11 [-0.74, 0.52]	0.73	-0.17 [-0.75, 0.41]	0.55
Fistulising (B3)	-0.59 [-1.3, 0.08]	0.08	-0.16 [-0.90, 0.58]	0.67	-0.25 [-0.94, 0.43]	0.46
Montreal L criteria^ (vs. L1)						
Colonic (L3)	0.51 [-0.09, 1.1]	0.09	0.28 [-0.35, 0.92]	0.38	0.27 [-0.31, 0.85]	0.35
Ileo-colonic (L2)	0.36 [-0.21, 0.94]	0.21	0.46 [-0.14, 1.1]	0.13	0.43 [-0.11, 0.97]	0.11
IBD disease duration	-0.0015 [-0.0041, 0.0010]	0.23	0.0002 [-0.0034, 0.0037]	0.91		
Immunomodulator therapy.	0.11 [-0.38, 0.61]	0.65	0.11 [-0.40, 0.62]	0.66		
Cumulative duration of oral corticosteroid use (months).	-0.0035 [-0.0077, 0.0007]	0.10	-0.0019 [-0.0068, 0.0029]	0.43		
Biologic therapy	-0.21 [-0.70, 0.27]	0.37	-0.11 [-0.61, 0.38]	0.65		
Prior abdominal surgery (baseline)	-0.63 [-1.1, -0.16]	0.01	-0.52 [-1.1, 0.11]	0.10	-0.49 [-1.0, 0.04]	0.07
Visceral adipose tissue (VAT)						
VAT: SAT (log)	-0.04 [-0.28, 0.21]	0.76	-0.11 [-0.73, 0.51]	0.72	-0.07 [-0.57, 0.43]	0.77
VHI (log)	-0.21 [-0.42, 0.01]	0.05	-0.37 [-0.90, 0.16]	0.16	-0.38 [-0.68, -0.09]	0.01
VAT vs. Montreal (L1)^						
VAT:SAT (log):Colonic			0.11 [-0.51, 0.74]	0.72	0.16 [-0.42, 0.74]	0.59
VAT:SAT (log):Ileo-colonic			0.81 [0.21, 1.4]	0.01	0.83 [0.27, 1.4]	0.004
Body mass index (BMI)	-0.045 [-0.086, -0.004]	0.03	0.003 [-0.066, 0.071]	0.94		
Alcohol intake (>20g/day)~	0.33 [-0.81, 1.5]	0.56	0.03 [-1.2, 1.2]	0.96		

Table legend: VAT, visceral adipose tissue; SAT, subcutaneous adipose tissue; VHI, visceral adipose tissue volume (cm³)/height (m²) index; ^Crohn's disease phenotype defined according Montreal classification at study enrolment. Statistical analysis using linear mixed effects model multivariable analysis; ~Defined according to Australian healthy Drinking guidelines.

Table 5: Multivariable Cox regression analysis of time to IBD-related hospitalisation and surgery over 4 years of follow-up.

Time to hospitalisation					
Variable	VHI - Multiple adjusted			VAT:SAT - Multiple adjusted	
	Est. [95% CI]	p-value		Est. [95% CI]	p-value
VHI	-0.0011 [-0.0026, 0.0004]	0.13	VAT:SAT	-0.27 [-0.94, 0.40]	0.42
Strictureing	0.46 [-0.25, 1.2]	0.19	Strictureing	0.42 [-0.28, 1.1]	0.23
Fistulising	0.81 [-0.04, 1.7]	0.06	Fistulising	0.70 [-0.15, 1.5]	0.10
Colonic	-0.11 [-1.0, 0.78]	0.81	Colonic	-0.13 [-1.0, 0.76]	0.78
Ileo-colonic	0.43 [-0.32, 1.2]	0.25	Ileo-colonic	0.45 [-0.28, 1.2]	0.22
Time to surgery					
	VHI - Multiple adjusted			VAT:SAT - Multiple adjusted	
	Est. [95% CI]	p-value		Est. [95% CI]	p-value
VHI	-0.0011 [-0.0034, 0.0012]	0.33	VAT:SAT	-0.27 [-1.2, 0.65]	0.55
Strictureing	1.4 [0.05, 2.7]	0.04	Strictureing	1.4 [0.057, 2.7]	0.04
Fistulising	1.3 [-0.2, 2.9]	0.08	Fistulising	1.3 [-0.2, 2.9]	0.09
Colonic	-1.0 [-2.7, 0.7]	0.25	Colonic	-0.8 [-2.5, 0.9]	0.34
Ileo-colonic	0.45 [-0.64, 1.5]	0.41	Ileo-colonic	0.58 [-0.52, 1.7]	0.29

Table legend: VAT, visceral adipose tissue; SAT, subcutaneous adipose tissue (VAT:SAT ratio); VHI, visceral adipose tissue volume (cm³)/height (m²) index; Crohn's disease phenotype defined according Montreal classification at study enrolment. Statistical analysis using linear mixed effects model multivariable analysis.

Supplementary Table 1: Associations with serial Visceral adipose tissue /height squared, VHI) in Crohn's disease

	Unadjusted		Multiple adjusted		Reduced model	
	Est. [95% CI]	p-value	Est. [95% CI]	p-value	Est. [95% CI]	p-value
Age	0.045 [0.024, 0.067]	<0.0001	0.048 [0.021, 0.074]	0.0004	0.053 [0.032, 0.074]	<0.0001
Gender (male v female)	0.37 [-0.07, 0.80]	0.1	0.50 [0.07, 0.93]	0.02	0.51 [0.10, 0.92]	0.01
Montreal B criteria^ (vs. B1)						
Strictureing (B2)	0.17 [-0.32, 0.65]	0.49	0.48 [-0.05, 1.00]	0.07	0.55 [0.05, 1.10]	0.03
Fistulising (B3)	-0.073 [-0.71, 0.56]	0.82	0.16 [-0.51, 0.82]	0.64	0.23 [-0.39, 0.85]	0.46
Montreal L criteria^ (vs. L1)						
Colonic (L3)	-0.24 [-0.81, 0.32]	0.39	-0.19 [-0.75, 0.37]	0.49		
Ileo-colonic (L2)	-0.15 [-0.7, 0.39]	0.58	0.03 [-0.51, 0.58]	0.91		
IBD disease duration	0.0022 [-0.0000079, 0.0043]	0.05	0.0006 [-0.0024, 0.0036]	0.69		
Biologic therapy	-0.38 [-0.81, 0.055]	0.08	-0.33 [-0.77, 0.11]	0.14	-0.31 [-0.72, 0.1]	0.14
Immunomodulator therapy	0.22 [-0.23, 0.67]	0.33	0.34 [-0.10, 0.78]	0.12	0.26 [-0.15, 0.68]	0.20
Cumulative duration of oral corticosteroid use (months)	0.003 [-0.002, 0.007]	0.22	0.002 [-0.002, 0.006]	0.30		
Prior abdominal surgery (baseline)	-0.15 [-0.60, 0.29]	0.50	-0.67 [-1.2, -0.15]	0.01	-0.58 [-1.1, -0.10]	0.02
Faecal calprotectin (µg/g)	-0.0002 [-0.001, 0.0006]	0.55	-0.0002 [-0.001, 0.0007]	0.68		
C-reactive protein (mg/L)	-0.005 [-0.016, 0.006]	0.38	-0.001 [-0.012, 0.01]	0.87		
Alcohol intake (>20g/day)~	0.68 [-0.42, 1.8]	0.22	0.10 [-0.98, 1.2]	0.85		
Habitual exercise (IPAQ)''	-0.02 [-0.05, 0.02]	0.42	-0.03 [-0.07, 0.01]	0.11	-0.025 [-0.06, 0.011]	0.17

Table legend: VHI, visceral adipose tissue volume (cm³)/height (m²) index; ~Defined according to Australian healthy Drinking guidelines; ''International Physical Activity Questionnaire for assessment of habitual physical activity (per 1000). ^Crohn's disease phenotype defined according Montreal classification. Statistical analysis using linear mixed effects model multivariable analysis.

Supplementary Table 2: Associations with serial C-reactive protein measurements over 24-months in Crohn's disease

	Unadjusted		Multiple adjusted	
	Est. [95% CI]	p-value	Est. [95% CI]	p-value
Age	-0.008 [-0.041, 0.025]	0.65	-0.001 [-0.043, 0.042]	0.98
Gender (male v female)	-0.59 [-1.2, -0.004]	0.05	-0.29 [-1.0, 0.45]	0.44
Montreal B criteria^ (vs. B1)				
Stricturing (B2)	0.15 [-0.52, 0.81]	0.66	0.46 [-0.35, 1.3]	0.26
Fistulising (B3)	-0.05 [-0.91, 0.80]	0.90	0.10 [-0.85, 1.1]	0.83
Montreal L criteria^ (vs. L1)				
Colonic (L3)	0.31 [-0.45, 1.1]	0.42	0.15 [-0.69, 1.0]	0.72
Ileo-colonic (L2)	0.41 [-0.32, 1.1]	0.27	0.28 [-0.51, 1.1]	0.48
IBD disease duration	-0.001 [-0.004, 0.002]	0.62	0.0004 [-0.0042, 0.0051]	0.85
Immunomodulator therapy.	-0.06 [-0.68, 0.55]	0.84	0.04 [-0.63, 0.71]	0.91
Cumulative duration of oral corticosteroid use (months).	-0.0023 [-0.0076, 0.0030]	0.38	-0.0031 [-0.0094, 0.0032]	0.33
Biologic therapy	0.38 [-0.21, 0.98]	0.20	0.38 [-0.27, 1.0]	0.24
Prior abdominal surgery (baseline)	-0.4 [-1.0, 0.2]	0.18	-0.6 [-1.4, 0.2]	0.14
Visceral adipose tissue (VAT)				
VAT: SAT (log)	-0.18 [-0.45, 0.09]	0.18	0.01 [-0.53, 0.56]	0.97
VHI (log)	-0.04 [-0.28, 0.20]	0.77	-0.22 [-0.80, 0.37]	0.46
Body mass index (BMI)	0.03 [-0.02, 0.08]	0.18	0.06[-0.02, 0.14]	0.15
Alcohol intake (>20g/day)~	0.02 [-1.5, 1.5]	0.97	0.1 [-1.5, 1.7]	0.92

Table legend: VAT, visceral adipose tissue; SAT, subcutaneous adipose tissue; VHI, visceral adipose tissue volume (cm³)/height (m²) index; ^Crohn's disease phenotype defined according Montreal classification. ~Defined according to Australian healthy Drinking guidelines.

Supplementary Table 3: Associations with serial measurements of quality of life over 24-months in Crohn's disease

	Unadjusted		Multiple adjusted		Reduced model	
	Est. [95% CI]	p-value	Est. [95% CI]	p-value	Est. [95% CI]	p-value
Age	-0.05 [-0.30, 0.20]	0.70	0.10 [-0.24, 0.44]	0.56		
Gender (male v female)	3.5 [-0.86, 7.9]	0.11	6.8 [1.2, 12]	0.02	5.8 [0.7, 11]	0.03
Montreal B criteria^ (vs. B1)						
Stricturing (B2)	-0.8 [-5.7, 4.1]	0.75	2.4 [-3.7, 8.4]	0.43		
Fistulising (B3)	1.0 [-5.5, 7.4]	0.77	1.7 [-5.4, 8.8]	0.63		
Montreal L criteria^ (vs. L1)						
Colonic (L3)	2.0 [-3.7, 7.7]	0.48	1.7 [-4.6, 8.0]	0.59	2.1 [-3.6, 7.8]	0.46
Ileo-colonic (L2)	2.5 [-2.9, 8.0]	0.35	2.1 [-3.9, 8.0]	0.49	2.6 [-2.7, 7.9]	0.33
IBD disease duration	0.013 [-0.011, 0.037]	0.27	0.028 [-0.007, 0.062]	0.11		
Immunomodulator therapy.	-0.9 [-5.4, 3.7]	0.70	1.1 [-3.8, 6.1]	0.65		
Cumulative duration of oral corticosteroid use (months).	0.004 [-0.035, 0.043]	0.83	-0.007 [-0.054, 0.040]	0.77		
Biologic therapy	-0.5 [-4.9, 4.0]	0.83	-0.7 [-5.6, 4.2]	0.77		
Prior abdominal surgery (baseline)	-1.7 [-6.2, 2.8]	0.45	-6.1 [-12, 0.05]	0.05	-2.2 [-6.7, 2.3]	0.33
Visceral adipose tissue (VAT)						
VAT: SAT (log)	-1.0 [-3.0, 1.0]	0.30	-4.5 [-9.5, 0.5]	0.08	-4.5 [-9.1, 0.09]	0.05
VHI (log)	-1.2 [-3.1, 0.6]	0.17	-1.2 [-5.6, 3.2]	0.58	-0.3 [-3.0, 2.5]	0.83
VAT vs. Montreal (L1)						
VAT:SAT (log):Colonic			6.2 [0.9, 12]	0.02	6.0 [0.8, 11]	0.02
VAT:SAT (log):Ileo-colonic			1.2 [-4.0, 6.3]	0.64	1.8 [-3.1, 6.8]	0.46
Body mass index (BMI)	-0.12 [-0.49, 0.25]	0.52	0.09 [-0.51, 0.68]	0.78		
Alcohol intake (>20g/day)~	1.4 [-9.4, 12]	0.80	-1.8 [-13, 10]	0.76		

Table legend: VAT, visceral adipose tissue; SAT, subcutaneous adipose tissue; VHI, visceral adipose tissue volume (cm³)/height (m²) index; ~Defined according to Australian healthy Drinking guidelines; ^Crohn's disease phenotype defined according Montreal classification.