

**SUPPLEMENTARY TABLES**

Supplementary Table 1 Efficacy inputs for induction phase

Treatment	Dose	Length of course	Population	Remission rate	Reference
Clinical remission (base case analysis)					
Rectal 5-ASA	1g/d	4–8 weeks	Distal UC	59.8%	Zhao et al. 2017[1]
Topical budesonide	2–2.3mg/d	4–8 weeks	Distal UC	38.1%	Zhao et al. 2017[1]
Topical prednisolone	20–25mg/d	4–8 weeks	Distal UC	43.5%	Zhao et al. 2017[1]
Oral 5-ASA	2–2.9g/d	6–12 weeks	UC	26.7%	Murray et al. 2020[2]
Oral 5-ASA	≥3g/d	6–12 weeks	UC	32.5%	Murray et al. 2020[2]
Rectal 5-ASA + Oral 5-ASA	1g/d 2–2.4g/d	6–8 weeks	UC	35.5%	Calculated from studies in Murray et al. 2020[2]
Rectal 5-ASA + Oral 5-ASA	1g/d 4–4.8g/d	6–8 weeks	UC	46.2%	Calculated from studies in Murray et al. 2020[2]
Budesonide MMX	9mg/d	8 weeks	UC	26.3%	Sherlock et al. 2015[3]
BDP*	5mg/d	4 weeks	UC	34.8%	Manguso et al. 2016[4]
Prednisolone	40mg/d <sup>†</sup>	4 weeks	UC	21.4%	Manguso et al. 2016[4]
Combined remission (scenario analysis)					
Oral 5-ASA	2–2.9g/d	6–12 weeks	UC	37.1%	Barberio et al. 2021[5]
Oral 5-ASA	≥3g/d	6–12 weeks	UC	39.8%	Barberio et al. 2021[5]

Rectal 5-ASA + Oral 5-ASA	1g/d 2–2.4g/d	6–8 weeks	UC	49.3%	Treatment effect from Murray et al. 2020[2] applied to Barberio et al. 2021[5]
Rectal 5-ASA + Oral 5-ASA	1g/d 4–4.8g/d	6–8 weeks	UC	56.6%	Treatment effect from Murray et al. 2020[2] applied to Barberio et al. 2021[5]
Budesonide MMX	9mg/d	8 weeks	UC	15.4%	Sherlock et al. 2015[3]

\*BDP data was used to supplement limited data on prednisolone, as clinical trial showed equivalence between these treatments[4,6] †Maximum dose, tapered by 10mg every 14 days

Supplementary Table 2 Efficacy inputs for maintenance phase

Treatment	Dose	Timepoint	Population	Relapse rate	Reference
Rectal 5-ASA	0.5–2g/d	6–24 months	UC	31.5%	Barberio et al. 2021[5]
Oral 5-ASA	2.4–3g/d	6–24 months	UC	37.2%	Barberio et al. 2021[5]
Oral 5-ASA	4–4.8g/d	6–24 months	UC	30.4%	Barberio et al. 2021[5]
Oral 5-ASA + FC	2–2.4g/d 4–4.8g/d*	18 months	UC	26.2%	Treatment effect from Lason 2015[7] applied to Barberio et al. 2021[5]
Rectal 5-ASA + Oral 5-ASA	2–8g/w 1.6–3g/d	6–24 months	UC	24.8%	Barberio et al. 2021[5]

\*Escalated dose when triggered by FC levels

Supplementary Table 3 Treatment acquisition costs

Treatment	Dose	Length of course	Cost per unit	Size of unit	Cost per dose	Doses per course	Cost per course
<i>Induction</i>							
5-ASA suppository	1g/d	8 weeks	£0.99	1g	£0.99	56	£55.29
5-ASA enema	1g/d	8 weeks	£2.53	1g	£2.53	56	£141.84
5-ASA foam	1g/d	8 weeks	£2.16	1g	£2.16	56	£120.68
Topical budesonide	2mg/d	8 weeks	£4.08	2mg (foam)	£4.08	56	£228.44
Topical prednisolone	20mg/d	8 weeks	£13.36	20mg (foam)	£13.36	56	£748.00
Oral 5-ASA (low dose)	2g/d	8 weeks	£1.23	2g	£1.23	56	£68.86
Oral 5-ASA (high dose)	4g/d	8 weeks	£1.23	2g	£2.46	56	£137.72
Budesonide MMX	9mg/d	8 weeks	£2.50	9mg	£2.50	56	£140.00
Oral prednisolone	30 mg/d	4 weeks	£0.04	5mg	£0.23	28	£6.48
6-mercaptopurine	1.5mg/kg/d oral	12 weeks	£0.38	50mg	£1.13	84	£94.95
Azathioprine	2.5mg/kg/d IV	12 weeks	£0.03	50mg	£0.12	84	£10.20
Tacrolimus	0.1 mg/kg/d oral	8 weeks	£1.11	1mg	£8.91	56	£498.89
Ciclosporin	2 mg/kg IV for 7 days	12 weeks	£2.32	50mg	£9.29	7	£65.04
Infliximab	5 mg/kg at w0, w2 and w6 IV	8 weeks	£377.00	100mg	£1,508.00	3	£4,524.00
Adalimumab	160/80/40 mg 14d SC	8 weeks	£316.80	40mg	£316.80	8	£2,534.40
Golimumab	200/100 mg 14d SC	6 weeks	£762.97	50mg	£1,525.94	3	£4,577.82
<i>Maintenance</i>							
5-ASA suppository	3g/w	52 weeks	£0.99	1g	£2.96	52	£154.02
5-ASA enema	3g/w	52 weeks	£2.53	1g	£7.60	52	£395.13
5-ASA foam	3g/w	52 weeks	£2.16	1g	£6.47	52	£336.18
Oral 5-ASA (low dose)	2g/d	52 weeks	£1.23	2g	£1.23	364	£447.60
Oral 5-ASA (high dose)	4g/d	52 weeks	£1.23	2g	£2.46	364	£895.20

All treatment costs were taken as the lowest displayed 'NHS indicative price' on BNF website for required dosing of each treatment[8]

Supplementary Table 4 Treatment administration costs

Method	Cost per unit	Source
IV administration (single outpatient appointment, as modelled in NICE TA329)	£145.33	Gastroenterology outpatient appointment cost from National Schedule of NHS costs[9]
SC self-administration training	£27.78	30 mins with Band 6 hospital nurse, PSSRU[10]
Cost of FC home test (first test with training)	£71.50	NICE, MIB132.[11]
Cost of FC home test (subsequent tests)	£53.38	

FC: faecal calprotectin

Supplementary Table 5 Treatment course costs model inputs

Treatment	Cost per course
<i>Induction</i>	
Topical 5-ASA (average of suppository, enema and foam costs)	£105.94
Topical budesonide	£228.44
Oral 5-ASA (low dose)	£68.86
Oral 5-ASA (high dose)	£137.72
Combined 5-ASA low dose (oral plus topical costs)	£174.80
Combined 5-ASA high dose (oral plus topical costs)	£243.66
Topical steroids or low dose combined (oral plus topical 5-ASA/steroid costs)	£205.42
Budesonide MMX	£140.00
Oral prednisolone	£6.48
6-mercaptopurine	£94.95
Azathioprine	£10.20
Tacrolimus	£498.89
Ciclosporin	£1,082.35
Mixed therapies (average of 6-MP, azathioprine, tacrolimus & ciclosporin)	£2,232.10
Infliximab	£4,959.99
Adalimumab	£2,562.18
Golimumab	£4,605.60
Anti-TNF (average of infliximab, adalimumab & golimumab)	£4,042.59
<i>Maintenance</i>	
Rectal 5-ASA (average of suppository, enema and foam costs)	£295.11
Low dose oral 5-ASA	£447.60
Low dose oral 5-ASA + FC (FC test every three months)	£679.24
High dose oral 5-ASA	£895.20
Combined 5-ASA (oral plus topical costs)	£1,190.31

Supplementary Table 6 Modelled treatment cost results

	Number of patients		Cost
<i>Induction phase</i>			
Oral steroids avoided by optimisation	1,840		£11,923.20
Advanced therapies avoided by optimisation	1,323		£5,348,346.57
<b>TOTAL COSTS AVOIDED</b>			<b>£5,360,269.77</b>
Additional high dose combined 5-ASA in optimised arm	5,725		£1,285,304.16
Additional optimised oral steroids in optimised arm	3,798		£531,720.00
<b>TOTAL ADDITIONAL COSTS</b>			<b>£1,817,024.16</b>
<b>NET COST</b>			<b>-£3,543,245.61</b>
<b>Net cost per patient</b>			<b>-£354.32</b>
<i>Maintenance phase</i>			
	<b>Number completing full course</b>	<b>Number relapsed*</b>	<b>Cost</b>
Rectal 5-ASA in standard arm	1,578	726	£572,808.33
Low dose oral 5-ASA in standard arm	2,676	1,585	£1,552,495.98
<b>Total cost in standard arm</b>			<b>£2,125,304.30</b>
Rectal 5-ASA in optimised arm	1,204	554	£437,057.77
Low dose oral 5-ASA + FC in optimised arm	2,189	778	£1,758,125.96
High dose oral 5-ASA in optimised arm	526	230	£573,821.49
Combined 5-ASA in optimised arm	815	269	£1,130,196.72
<b>Total cost in optimised arm</b>			<b>£3,899,201.94</b>
<b>NET ADDITIONAL COST</b>			<b>£1,773,897.64</b>
<i>Re-induction of remission</i>			
	<b>Number of patients</b>		
Rectal 5-ASA avoided by optimisation	30		£3,178.11
Topical steroids or low dose combined	12		£2,465.09
Low dose combined	450		£78,659.20
Oral steroids	297		£1,924.56
Advanced therapies	214		£865,114.26
<b>TOTAL COSTS AVOIDED</b>			<b>£951,341.21</b>
<b>NET COST</b>			<b>£822,556.43</b>
<b>Net cost per patient entering maintenance</b>			<b>£125.29</b>
<i>Combined induction and maintenance</i>			
<b>NET COST</b>			<b>-£2,720,689.18</b>
<b>Net cost per patient</b>			<b>-£272.07</b>

\*Relapsed patients assumed to require an average of 6 months therapy (based on the assumption that relapse rate was linear over time)

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