



Figure S1: Markov Tree

Table S1, - Screening strategies

Screening strategy	Screening test	Interval
FIT 2/2y	Fecal immunochemical test	2
Colonoscopy 10/10y	Colonoscopy assisted with anaesthesia	10
Colonoscopy 3/10y	Colonoscopy assisted with anaesthesia	(3), 10 [#]
CT 5/5y	CT-colonography	5
FIT 1/1y	Fecal immunochemical test	1

[#]First uptake after 3 years of the initial colonoscopy, and then at 10-year intervals

Table S2, - distribution of patients across health states

Health state	Base case (range)	SD	Source
No polyp	0.680	0.02	[6]
Non-advanced adenoma	0.251 (0.05-0.30)	0.03	[6]
Advanced adenoma	0.063 (0.015-0.09)	0.02	[6]
Preclinical CRC	0.0060	-	[28]
Stage 1	0.0035	0.003	[6]
Stage 2	0.0013	0.0003	[6]
Stage 3	0.0010	0.0003	[6]
Stage 4	0.0002	0.0003	[6]

SD- standard deviation

Table S3- annual transition probabilities

Annual transition probabilities	Base case (range)	SD	Source
Probability of progression			
Low-risk polyp from normal	0.012	0.001	[29]
Advanced adenoma from low-risk polyp	0.024 (0.01-0.04)	0.001	[29]
CRC stage 1 from advanced adenoma	0.034 (0.02-0.10)	0.001	[29]
CRC stage 2 from CRC stage 1	0.583 (0.10-0.60)	0.02	[29]
CRC stage 3 from CRC stage 2	0.656 (0.15-0.70)	0.02	[29]
CRC stage 4 from CRC stage 3	0.865 (0.32-0.90)	0.02	[29]
Probability of symptomatic presentation			
CRC stage 1	0.065 (0.05-0.08)	0.01	[29]
CRC stage 2	0.26 (0.15-0.35)	0.02	[29]
CRC stage 3	0.46 (0.45-0.65)	0.02	[29]
CRC stage 4	0.92 (0.9-1)	0.02	[29]
Probability of developing adenomas following polypectomy			
Low-risk adenoma after polypectomy	0.07	0.01	[29]
High-risk adenoma after polypectomy	0.176	0.02	[29]

Table S4- probability of death

	Base case	Source
Death from background mortality	Age-dependent	[7]
Death from colonoscopy	0.0002	[30]
Death from CRC:		[31]
Stage I		
5-year survival	0.932	
After 5 years	0.015	
Stage II		
5-year survival	0.770	
After 5 years	0.015	
Stage III		
5-year survival	0.477	
After 5 years	0.015	
Stage IV		
5-year survival	0.066	
After 5 years	0.03	

Table S5- Medical Costs

Variable	Cost (€)	Source
Screening		
Primary care Physician Visit	15	[10]
Fecal immunochemical test	3	[9]
Screening colonoscopy	397	[8]
CT colonography	160.60	[8]
Laboratory tests for colonoscopy	17.81	[9]
ECG	3.87	[9]
Colonoscopy assisted with anesthesia	169.73	[9]
Histopathological examination	12.75	[9]
Hospital care		
Colonoscopy perforation	4.340.10	[8]
Gastroenterology/ Oncology consultation*	75	[10]
Abdominal CT	84.50	[8]
Pelvic CT	61.59	[8]
Carcinoembryonic antigen	7.20	[8]
Laboratory tests for colonoscopy	16.6	[8]
ECG	6.50	[8]
Colonoscopy assisted with anesthesia	179.1	[8]
Polypectomy	64.50	[8]
Cost of colorectal cancer		
Stage I:		
Year 1	4,340.10	[8]
Year 2	620.98	[8]
Stage II-IV:		

Year 1	11,867.0	[10]
Year 2	5,245.0	[10]
Stage I-IV:		
Year 3	302.9	[8]
Year 4	228.29	[8]
Year 5	302.09	[8]

(year: 2020)

Table S6 - Utilities

	Base case (range)	SD	Source
No cancer	1 (0.91-1.0)	0	[13]
CRC			
Stage I	0.74 (0.70-0.78)	0.22	[11]
Stage II	0.67 (0.64-0.70)	0.21	[11]
Stage III	0.55 (0.50-0.60)	0.19	[11]
Stage IV	0.25 (0.24-0.26)	0.075	[11]
Death	0.00	0	[13]

Table S7- Scenarios

Scenario	Adherence at initial screening test	Adherence after initial screening test	Colonoscopy for a positive screening test
Scenario 1	Base case estimate	Base case estimate	Base Case estimate
Scenario 2	100%	100%	100%

Table S8- cost-effectiveness Report – Perfect Adherence Scenario

Dominance	Strategy	Cost(€)	Incr Cost	Eff(QALYs)	Incr Eff	ICER	NMB
undominated	Colonoscopy 10/10y	1,063.367		20.650			618,428.59
undominated	Colonoscopy 3/10y	1,190.484	127.117	20.670	0.020	6,361.083	618,900.98
abs. dominated	FIT 1/1y	1,770.529	580.046	20.634	-0.035	dominated	617,256.78
abs. dominated	CT 5/5y	1,807.395	616.911	20.668	-0.001	dominated	618,241.96
abs. dominated	FIT 2/2y	2,369.174	1,178.690	20.567	-0.103	dominated	614,635.70
abs. dominated	No screening	6,683.806	5,493.322	20.218	-0.452	dominated	599,849.91

Table S9 - clinical outcomes per 1000 patients – Perfect Adherence Scenario

Strategy	QALY Gained	LY Gained	CRC Cases	CRC Deaths	CRC Death Reduction	CRC cases Reduction	Screening Test	Colon*	Total cost
Colonoscopy 10/10y	431.9	781.0	30.5	7.4	-88%	-76%	2,325	2,855	€ 1,063,366.85
Colonoscopy 3/10y	451.9	812.2	26.4	5.5	-91%	-80%	2,980	3,566	€ 1,190,483.53
FIT 1/1y	416.5	785.7	37.9	7.4	-88%	-71%	20,436	2,237	€ 1,770,529.28
CT 5/5y	450.5	812.0	29.7	5.7	-91%	-77%	4,307	1,715	€ 1,807,394.81
FIT 2/2y	349.0	687.5	58.9	14.8	-76%	-55%	10,735	1,327	€ 2,369,173.86
No screening	0.0	0,0	129.7	62.2	0%	0%	0	70	€ 6,683,805.71

*All colonoscopies