

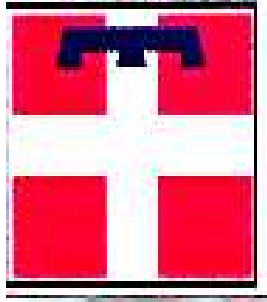


Workshop 2018

Aggiornamenti del protocollo regionale

Il protocollo inviti per i non aderenti alla sigmoidoscopia

C. Senore



PREVENZIONE SERENA

**INVITO
A UOMINI E DONNE DI 58 ANNI**

FS

**ADERISCE:
esegue una FS**

**NON ADERISCE:
viene proposto lo screening
con FIT**

**In caso di rifiuto del
FIT riproposta della
FS un anno dopo per
2 anni consecutivi**

**In caso di
adesione: FIT
con periodicità
biennale**

Effectiveness of flexible sigmoidoscopy screening in men and women and different age groups: pooled analysis of randomised trials

Øyvind Holme,^{1,2} Robert E Schoen,³ Carlo Senore,⁴ Nereo Segnan,⁴ Geir Hoff,^{5,6} Magnus Løberg,^{2,8} Michael Bretthauer,^{1,2,7,8} Hans-Olov Adami,^{2,7,9} Mette Kalager^{2,7,8}

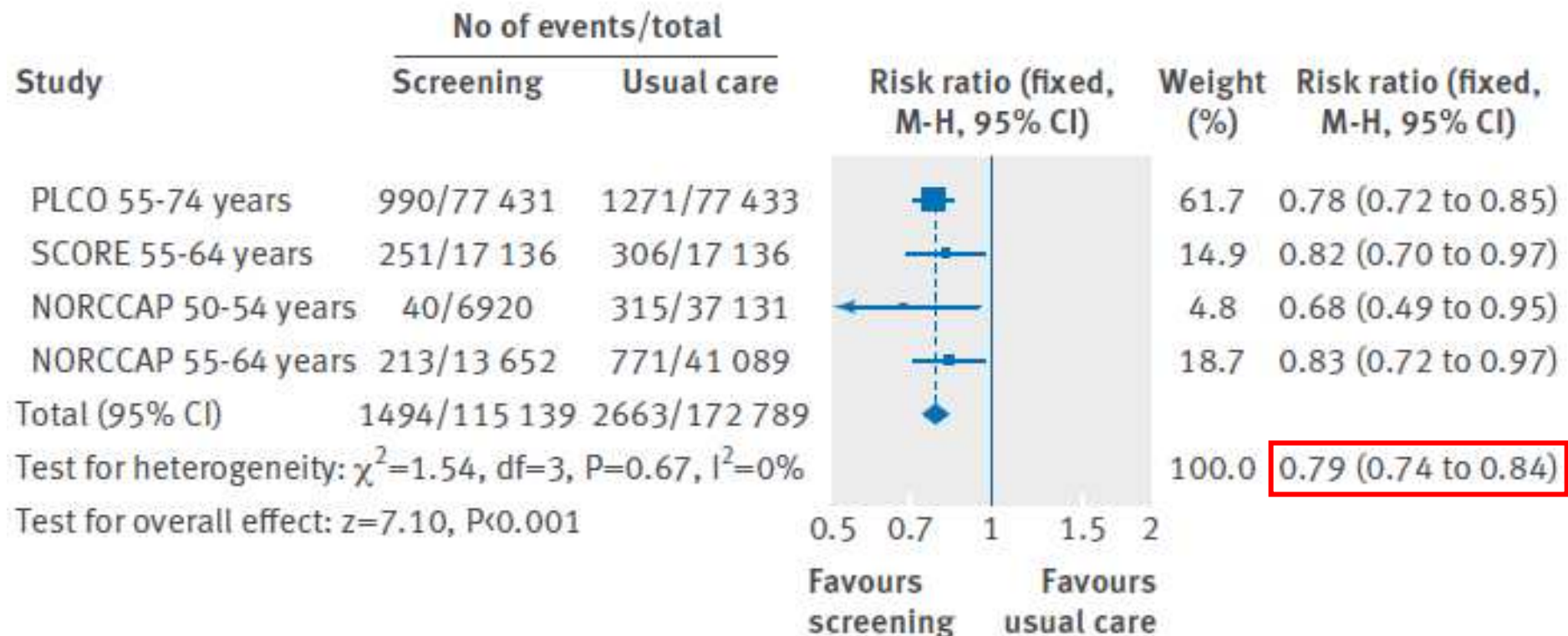


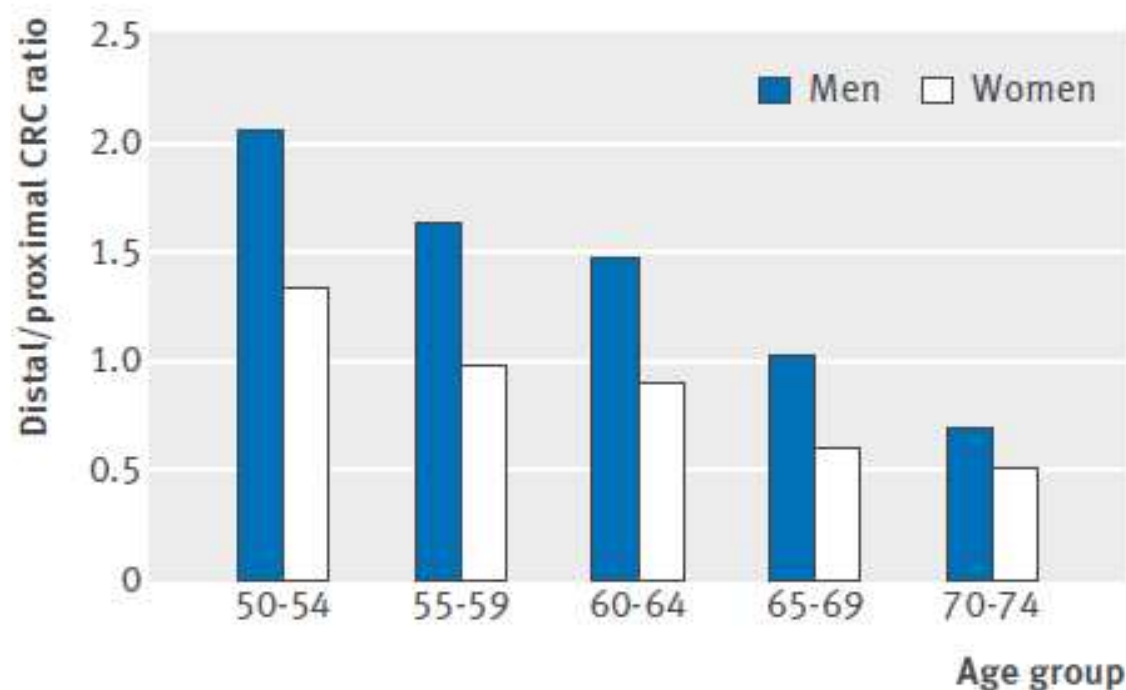
Fig 1 | Colorectal cancer incidence in the three trials comparing flexible sigmoidoscopy screening with usual care.

Effectiveness of flexible sigmoidoscopy screening in men and women and different age groups: pooled analysis of randomised trials

	Screening group v control group			
	Colorectal cancer incidence (relative risk (95% CI))	P for interaction	Colorectal cancer mortality (relative risk (95% CI))	P for interaction
Colon and rectum				
Both sexes*	0.79 (0.74 to 0.84)	0.12	0.73 (0.64 to 0.83)	0.55
Men†	0.76 (0.70 to 0.83)		0.67 (0.57 to 0.80)	
≥60 years‡	0.76 (0.68 to 0.84)		0.67 (0.55 to 0.82)	
<60 years§	0.76 (0.65 to 0.88)		0.67 (0.49 to 0.91)	
Women¶	0.83 (0.75 to 0.92)		0.82 (0.67 to 1.00)	
≥60 years‡	0.90 (0.80 to 1.02)		0.88 (0.69 to 1.12)	
<60 years§	0.71 (0.59 to 0.84)	0.73 (0.53 to 1.02)		
Distal colon				
Both sexes*	0.73 (0.66 to 0.80)	0.66	0.60 (0.49 to 0.72)	0.39
Men†	0.71 (0.63 to 0.80)		0.51 (0.40 to 0.65)	
≥60 years‡	0.72 (0.62 to 0.84)		0.48 (0.35 to 0.64)	
<60 years§	0.69 (0.56 to 0.85)		0.58 (0.38 to 0.90)	
Women¶	0.76 (0.65 to 0.88)		0.79 (0.58 to 1.09)	
≥60 years‡	0.74 (0.61 to 0.91)		0.85 (0.57 to 1.27)	
<60 years§	0.78 (0.61 to 0.99)	0.71 (0.42 to 1.18)		

Effectiveness of flexible sigmoidoscopy screening in men and women and different age groups: pooled analysis of randomised trials

Proximal colon				
Both sexes*	0.86 (0.79 to 0.93)		0.87 (0.73 to 1.04)	
Men†	0.83 (0.73 to 0.94)		0.89 (0.70 to 1.13)	
≥60 years‡	0.82 (0.71 to 0.95)		0.96 (0.73 to 1.28)	
<60 years§	0.84 (0.66 to 1.07)	0.04	0.71 (0.44 to 1.14)	0.61
Women¶	0.91 (0.79 to 1.03)		0.85 (0.66 to 1.10)	
≥60 years‡	1.03 (0.88 to 1.20)		0.89 (0.65 to 1.21)	
<60 years§	0.65 (0.50 to 0.84)		0.79 (0.51 to 1.23)	



OBSERVATION: BRIEF RESEARCH REPORT

Reanalysis of All-Cause Mortality in the U.S. Preventive Services Task Force 2016 Evidence Report on Colorectal Cancer Screening

Andrew W. Swartz, MD

Yukon-Kuskokwim Delta Regional Hospital
Bethel, Alaska

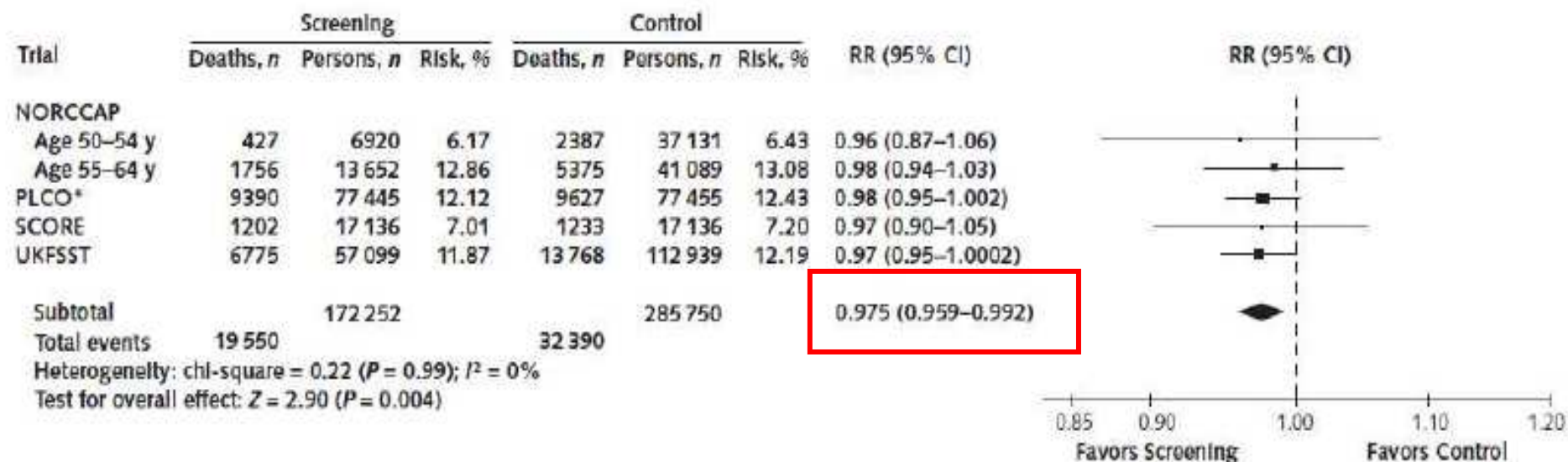
Jan M. Eberth, PhD

Michele J. Josey, MS

Scott M. Strayer, MD

University of South Carolina
Columbia, South Carolina

Figure 2. RR for death with screening with flexible sigmoidoscopy in randomized controlled trials.



NORCCAP – Norwegian Colorectal Cancer Prevention; PLCO – Prostate, Lung, Colorectal, and Ovarian; RR – relative risk; SCORE – Screening for Colon Rectum; UKFSST – U.K. Flexible Sigmoidoscopy Screening Trial.

* This trial reports a modified all-cause mortality that excludes deaths from prostate, lung, and ovarian cancer because the intervention group was also screened for those types of cancer.

		Intervention Group			Control Group			Averted Events				
		Total	Cancers (Ci)	Deaths (Di)	Total	Cancers (Cc)	Deaths (Dc)	Fatality Rate (FRc)	Cancers ^a	Deaths ^b	ADP ^c	ADP % ^d
		No.	No.	No.	No.	No.	No.	Percentage, (95% CI)	No.	No.	No.	Percentage, (95% CI)
ITT	PLCO 2017 ²⁵	77,445	1008	253	77,445	1291	351	27 (25-30)	283	98	77	79 (69-86)
	SCORE 2011 ³	17,136	251	65	17,136	306	83	27 (22-32)	55	18	15	83 (59-96)
	UK Flexible Sigmoidoscopy Screening Trial 2010 ¹	57,099	706	189	112,939	1818	538	30 (27-32)	422	164	125	76 (69-82)
	UK Flexible Sigmoidoscopy Screening Trial 2017 ²⁶	57,098	1230	353	112,936	3253	996	31 (29-32)	820	298	251	84 (80-88)
PP	SCORE 2011 ³	9911	126	33	17,136	306	83	27 (22-32)	88	26	24	92 (75-99)
	UK Flexible Sigmoidoscopy Screening Trial 2010 ¹	40,621	445	111	112,939	1818	538	30 (27-32)	581	229	172	75 (69-81)
	UK Flexible Sigmoidoscopy Screening Trial 2017 ²⁶	40,621	776	215	112,936	3253	996	31 (29-32)	1096	398	335	84 (80-88)

Abbreviations: 95% CI, 95% confidence interval; ADP, averted deaths due to prevention; Cc, cancers in the control group; Ci, cancers in the intervention group; Dc, deaths in the control group; Di, deaths in the intervention group; FRc, fatality rate in the control group; ITT, intention-to-treat analysis; PLCO, Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial; PP, per-protocol analysis; UK, United Kingdom.

^aEstimated as the difference between the Cc and the Ci, which was estimated assuming a control:intervention population ratio of 1:1.

^bEstimated as the difference between the Dc and the Di, which was estimated assuming a control:intervention population ratio of 1:1.

^cEstimated as the product of fatality rate per the averted cancers: (Cc-Ci)*(Dc/Cc).

^dEstimated as the ratio between the prevented deaths and the averted deaths. The complete algorithm is: ADP % = ((Cc - Ci)*(Dc/Cc))/(Dc-Di).

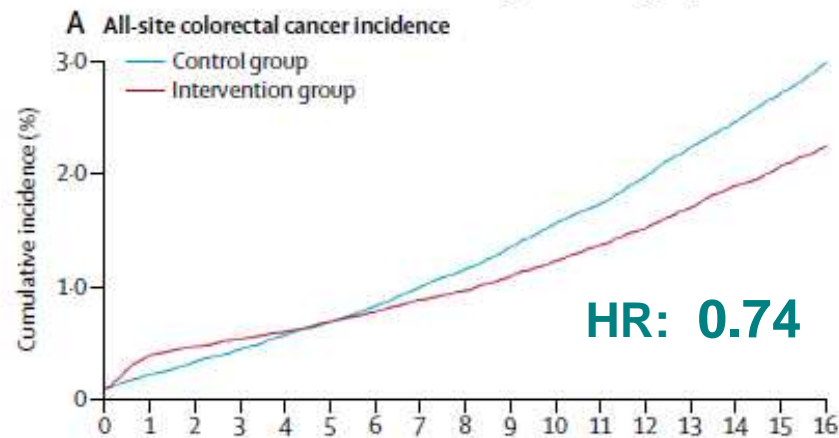
^eUK Flexible Sigmoidoscopy Screening Trial 2017 reports results after 17 years of follow-up versus 10.5 to 11.9 years for the other randomized controlled trials.

Segnan et al. Cancer 2017

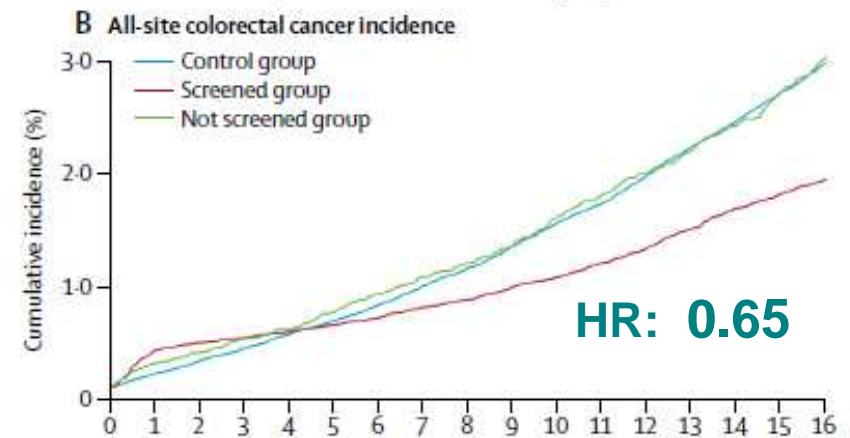
Long-term effects of once-only flexible sigmoidoscopy screening after 17 years of follow-up: the UK Flexible Sigmoidoscopy Screening randomised controlled trial

Wendy Atkin, Kate Wooldrage, D Maxwell Parkin, Ines Kralj-Hans, Eilidh MacRae, Urvi Shah, Stephen Duffy, Amanda J Cross

Invited to screening and control groups



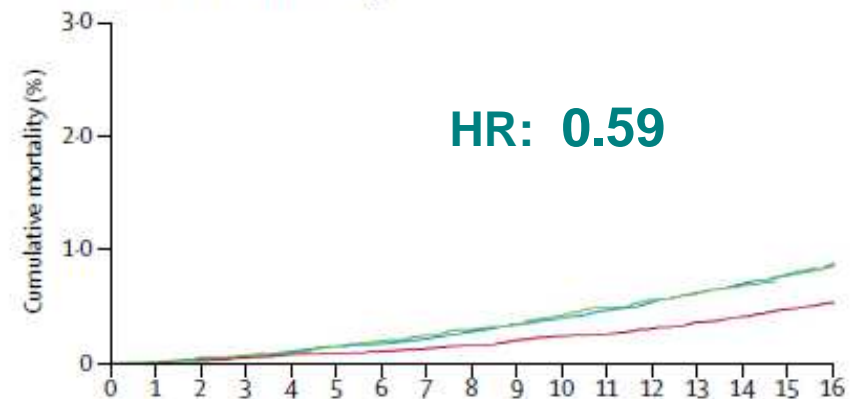
Screened, not screened, and control groups



G Colorectal cancer mortality



H Colorectal cancer mortality



Long-Term Effectiveness of Sigmoidoscopy Screening on Colorectal Cancer Incidence and Mortality in Women and Men

A Randomized Trial

Øyvind Holme, MD, PhD*; Magnus Løberg, MD, PhD*; Mette Kalager, MD, PhD*; Michael Bretthauer, MD, PhD; Miguel A. Hernán, MD, DrPH; Eline Aas, PhD; Tor J. Eide, MD, PhD; Eva Skovlund, MSc, PhD; Jon Lekven, MD, PhD; Jörn Schneede, MD, PhD; Kjell Magne Tveit, MD, PhD; Morten Vatn, MD, PhD; Giske Ursin, MD, PhD; and Geir Hoff, MD, PhD; for the NORCCAP Study Group†

Women

	Screening Group (n = 10 297)		Control Group (n = 39 254)		
	Cases, n	Cases per 100 000 Person-Years, n	Cases, n	Cases per 100 000 Person-Years, n*	Hazard Ratio (95% CI)
CRC incidence	207	140.1	789	153.6	0.92 (0.79 to 1.07)
Person-years of observation		147 762		556 457	–
Location†					
Distal	89	60.2	389	74.3	0.81 (0.64 to 1.02)
Proximal	113	76.5	383	76.1	1.01 (0.82 to 1.25)
Age group					
50–54 y	39	81.0	237	94.2	0.86 (0.61 to 1.21)
55–64 y	168	168.7	552	181.1	0.93 (0.78 to 1.11)
CRC mortality	65	43.7	225	43.3	1.01 (0.77 to 1.33)
Person-years of observation		148 705		575 166	–
Location†					
Distal	33	22.2	99	18.8	1.17 (0.79 to 1.73)
Proximal	27	18.2	114	22.2	0.83 (0.54 to 1.26)
Age group					
50–54 y	12	24.8	70	27.7	0.90 (0.49 to 1.65)
55–64 y	53	52.8	155	50.5	1.05 (0.77 to 1.42)

Long-Term Effectiveness of Sigmoidoscopy Screening on Colorectal Cancer Incidence and Mortality in Women and Men

A Randomized Trial

Øyvind Holme, MD, PhD*; Magnus Løberg, MD, PhD*; Mette Kalager, MD, PhD*; Michael Bretthauer, MD, PhD; Miguel A. Hernán, MD, DrPH; Eline Aas, PhD; Tor J. Eide, MD, PhD; Eva Skovlund, MSc, PhD; Jon Lekven, MD, PhD; Jörn Schneede, MD, PhD; Kjell Magne Tveit, MD, PhD; Morten Vatn, MD, PhD; Giske Ursin, MD, PhD; and Geir Hoff, MD, PhD; for the NORCCAP Study Group†

	Men				
	Screening Group (<i>n</i> = 10 255)		Control Group (<i>n</i> = 38 872)		
	Cases, <i>n</i>	Cases per 100 000 Person-Years, <i>n</i>	Cases, <i>n</i>	Cases per 100 000 Person-Years, <i>n</i> *	Hazard Ratio (95% CI)
CRC incidence	186	131.4	962	196.9	0.66 (0.57 to 0.78)
Person-years of observation		141 510		528 317	–
Location†					
Distal	105	74.2	611	124.3	0.59 (0.48 to 0.73)
Proximal	78	55.1	326	67.6	0.81 (0.63 to 1.04)
Age group					
50–54 y	38	81.9	317	126	0.65 (0.46 to 0.91)
55–64 y	148	155.6	645	233.1	0.67 (0.56 to 0.80)
CRC mortality	57	40	305	63.3	0.63 (0.47 to 0.83)
Person-years of observation		142 370		539 415	–
Location†					
Distal	35	24.6	180	37.3	0.65 (0.45 to 0.93)
Proximal	20	14.1	112	23.3	0.60 (0.37 to 0.96)
Age group					
50–54 y	8	17.2	88	34.8	0.49 (0.24 to 1.02)
55–64 y	49	51.1	217	77.7	0.66 (0.48 to 0.90)

Long-term effects of once-only flexible sigmoidoscopy screening after 17 years of follow-up: the UK Flexible Sigmoidoscopy Screening randomised controlled trial


Wendy Atkin, Kate Wooldrage, D Maxwell Parkin, Ines Kralj-Hans, Eilidh MacRae, Urvi Shah, Stephen Duffy, Amanda J Cross

	Control group		Invited to screening group						Hazard ratio (95% CI); invited to screening vs control group
	Cases	Rate (95% CI)	Total		Not screened		Screened		
			Cases	Rate (95% CI)	Cases	Rate (95% CI)	Cases	Rate (95% CI)	
Incidence									
All sites									
Men	1981†	236 (225-246)	709†‡	166 (154-179)	263†	246 (218-277)	446†‡	140 (127-153)	0.70 (0.65-0.77)
Women	1272†	137 (130-145)	521†‡	111 (102-121)	191†	136 (118-157)	330†‡	100 (90-112)	0.81 (0.73-0.89)
Age 55-59years	1403†	154 (146-162)	521†‡	114 (104-124)	189†	151 (131-174)	332†‡	100 (90-111)	0.74 (0.67-0.82)
Age 60-64years	1850†	216 (207-226)	709†‡	162 (150-174)	265†	217 (193-245)	444†‡	141 (128-154)	0.75 (0.69-0.82)
Distal§									
Men	1307¶	155 (147-164)	386†¶	90 (82-100)	170¶	158 (136-184)	216†¶	67 (59-77)	0.58 (0.52-0.65)
Women	680¶	73 (68-79)	206†¶	44 (38-50)	97¶	69 (57-84)	109†¶	33 (27-40)	0.60 (0.51-0.70)
Age 55-59years	881¶	97 (90-103)	247†¶	54 (47-61)	108¶	86 (71-104)	139†¶	42 (35-49)	0.56 (0.48-0.64)
Age 60-64years	1106¶	129 (121-137)	345†¶	79 (71-87)	159¶	130 (111-152)	186†¶	59 (51-68)	0.61 (0.54-0.69)
Proximal									
Men	681¶	80 (75-87)	308†¶	72 (64-80)	90¶	83 (68-103)	218†¶	68 (59-78)	0.89 (0.78-1.02)
Women	574¶	62 (57-67)	304†¶	65 (58-72)	92¶	65 (53-80)	212†¶	64 (56-74)	1.05 (0.91-1.20)
Age 55-59years	515¶	56 (52-61)	256†¶	56 (49-63)	77¶	61 (49-77)	179†¶	54 (46-62)	0.99 (0.85-1.15)
Age 60-64years	740¶	86 (80-92)	356†¶	81 (73-90)	105¶	86 (71-104)	251†¶	79 (70-90)	0.94 (0.83-1.07)

COST-EFFECTIVENESS MODEL

	No screening	FS	FIT	FS + FIT
CRC cases, n	1,517	1,372	1,312	1,264
CRC deaths, n	528	460	442	414
CRC prevented, %	-	10%	14%	17%
CRC deaths prevented, %	-	13%	16%	22%
Life-years lost, n	19,431	18,025	17,700	17,119
Life-years saved, nç	-	1,406	1,731	2,312
Life-years saved discounted, n	-	1,207	1,460	1,959
Sigmoidoscopy, n	-	28,799	-	28,799
FIT, n	-	-	293,333	159,514
Colonoscopy, n	-	2,592	12,115	9,180
Cost CRC care, €	44,294,628	37,097,188	38,503,258	34,781,125
Cost screening, €	-	4,607,776	6,146,373	7,893,681
Total cost, €	44,294,628	41,704,964	44,649,631	42,674,806
Total cost discounted, €	37,884,430	36,336,360	38,400,217	37,251,655
ICER vs no screening,	-	€ 15 saving per person invited	€ 6 additional cost per person invited	€ 6 saving per person invited

Cost-effectiveness of colorectal cancer screening programmes using sigmoidoscopy and immunochemical faecal occult blood test

Carlo Senore¹ , Cesare Hassan^{1,2}, Daniele Regge^{3,4}, Eva Pagano⁵, Gabriella Iussich⁶, Loredana Correale⁷ and Nereo Segnan¹

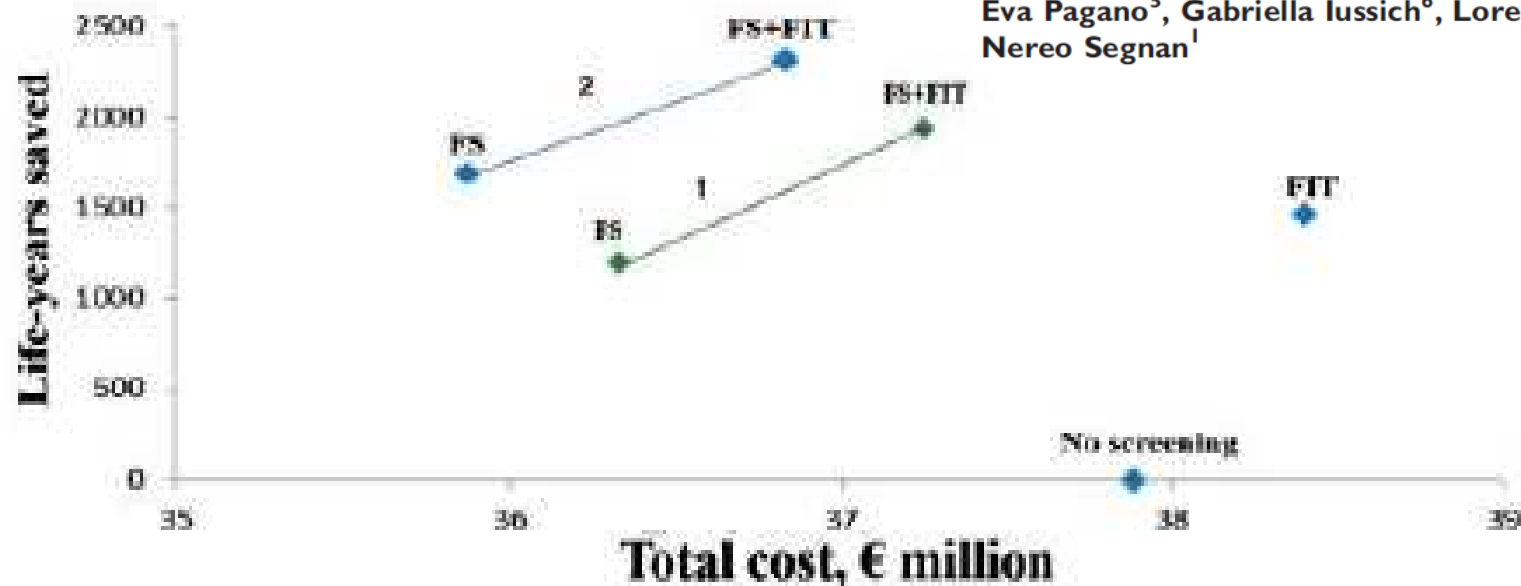
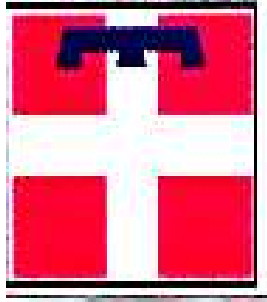
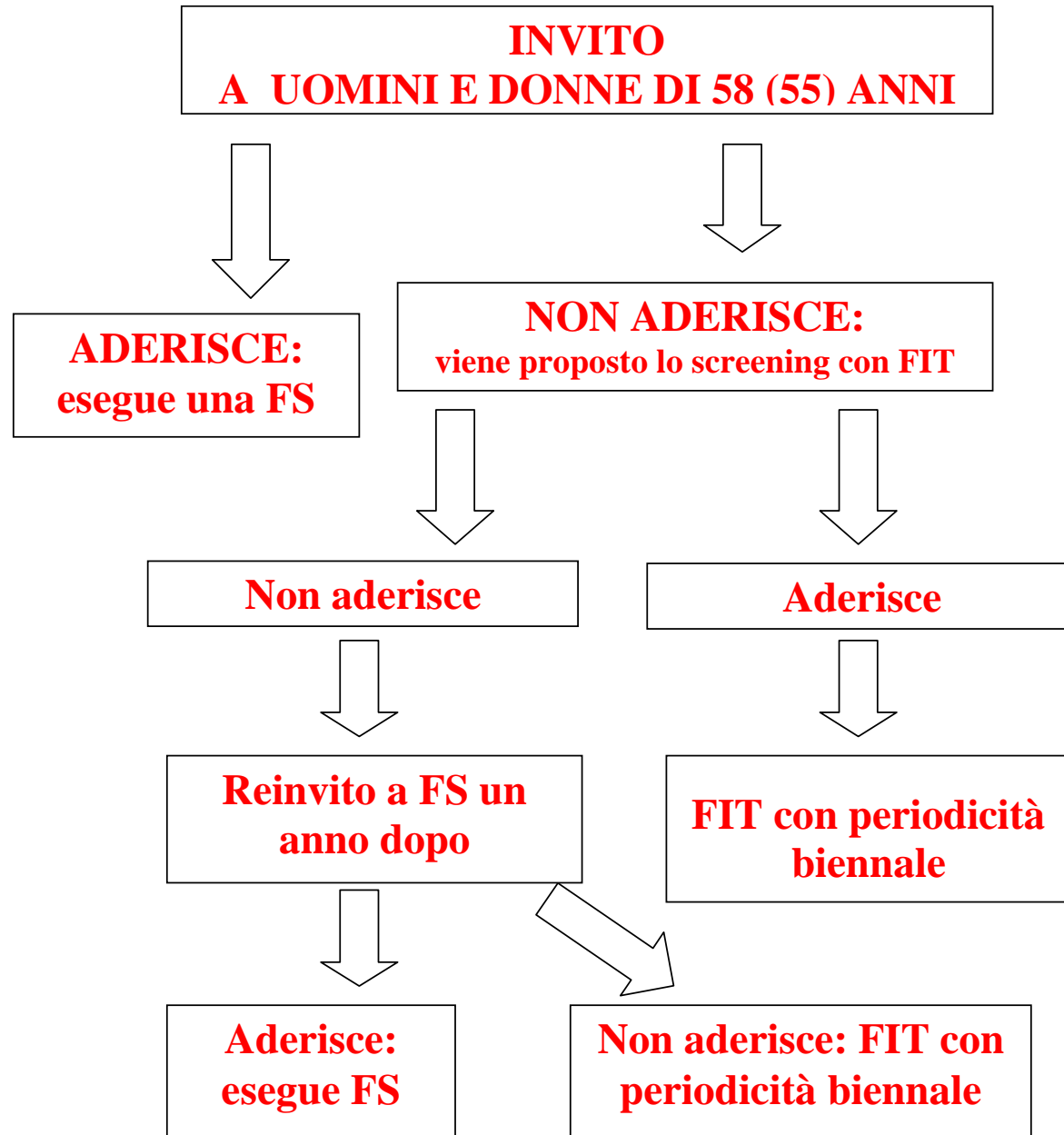


Figure 1. Cost-effectiveness of the different strategies. Scenario 1 (reference) – adherence: FS = 30%; FIT alone = 42%; FS + FIT – FS: 30% – FIT (FS–): 19%. Scenario 2 – adherence: FS = 42%; FIT alone = 42%; FS + FIT – FS: 42% – FIT (FS–): 19%.



FS

PREVENZIONE SERENA



PREVENZIONE S E R E N A

Dipartimento	Non aderenti	Popolazione annuale	CT attese 1	Ambulatoriale 58-70	CT attese 2	Totale CT attese
1	61774	27798	662	4447	265	926
2	17393	7827	233	1319	78	311
3	43727	19677	468	2820	168	636
4	31648	14242	339	2094	125	464
5	31738	14282	340	1501	89	429
6	41860	18837	448	2174	129	578
7	37220	16749	399	2586	154	552
8	16457	7406	176	1024	61	237
9	21107	9498	226	2670	159	385

PREVENZIONE S E R E N A

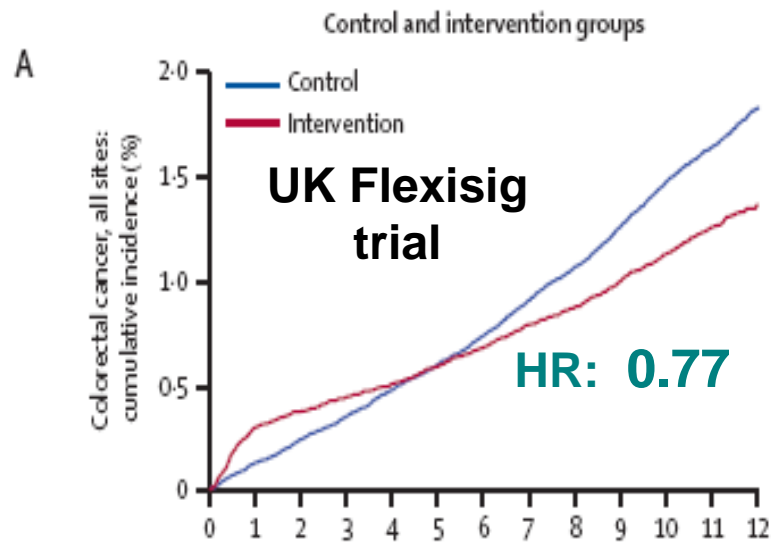
Ex- Dipartimento	Totale CT attese	CT 2017	Adesione 2017	CT 3-4 mesi 2016-17	CT 5-6 mesi 2016-17	CT extra screening 2017
1	838	422	79,6%	10,4%	3,3%	10,4%
2	234	413	77,3%	28,8%	7,7%	28,3%
3	585	587	76,7%	13,7%	5,1%	7,0%
4	425	488	66,5%	40,8%	12,8%	0,2%
5	366	177	78,7%	16,5%	5,4%	8,5%
6	514	193	68,2%	18,6%	2,6%	0,5%
7	493	766	77,4%	15,4%	2,6%	0,0%
8	211	206	74,6%	25,4%	4,8%	12,1%
9	400	220	46,0%	7,1%	6,2%	0,0%

Grazie per l'attenzione

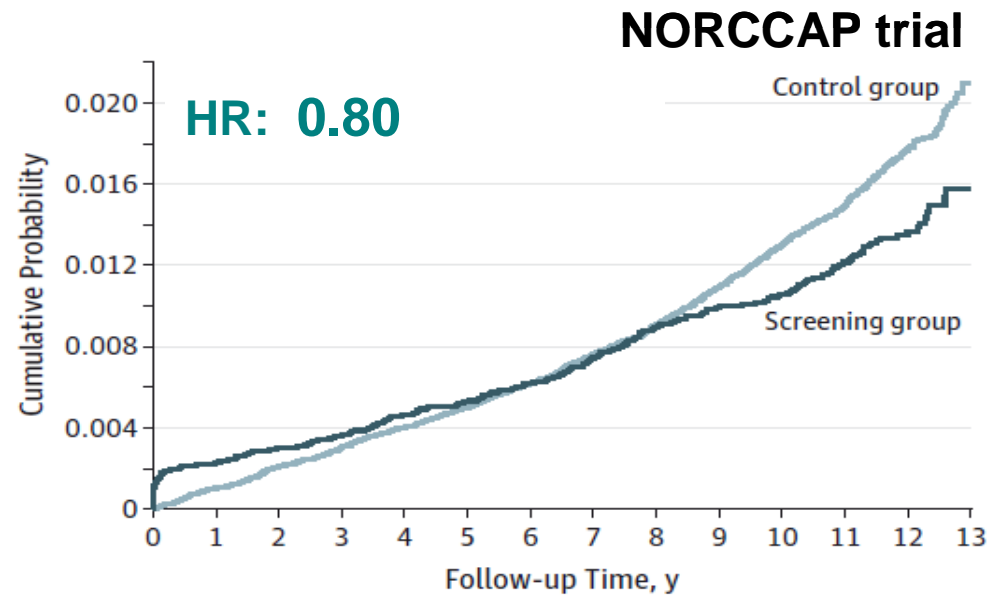
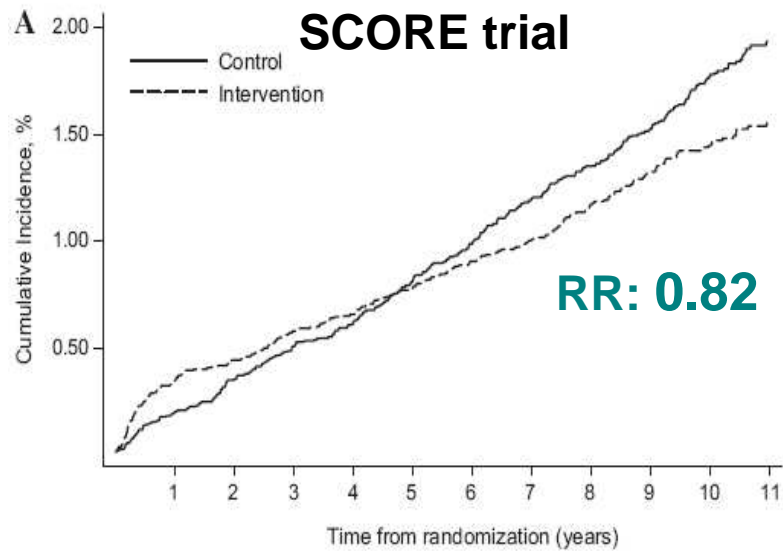
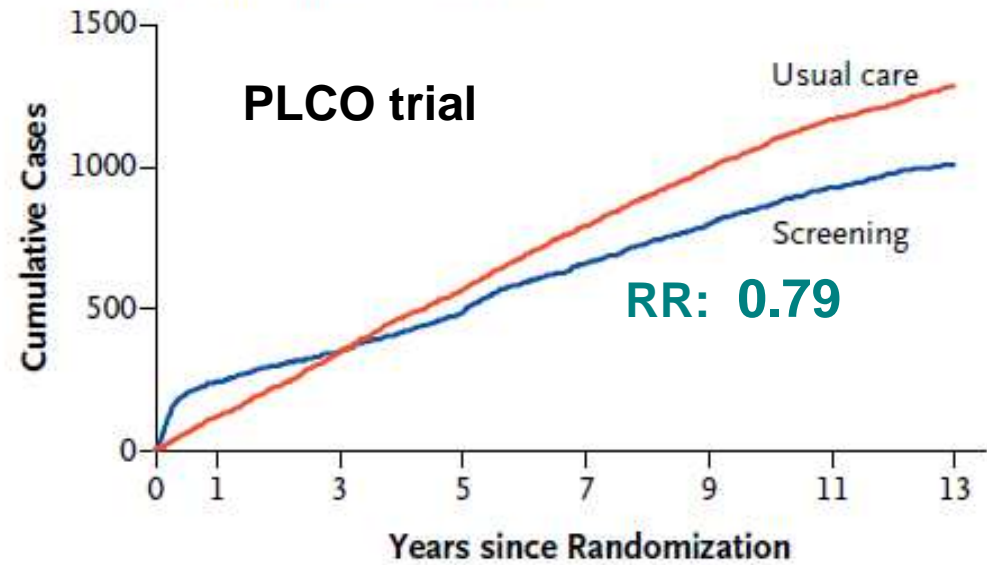
carlo.senore@cpo.it



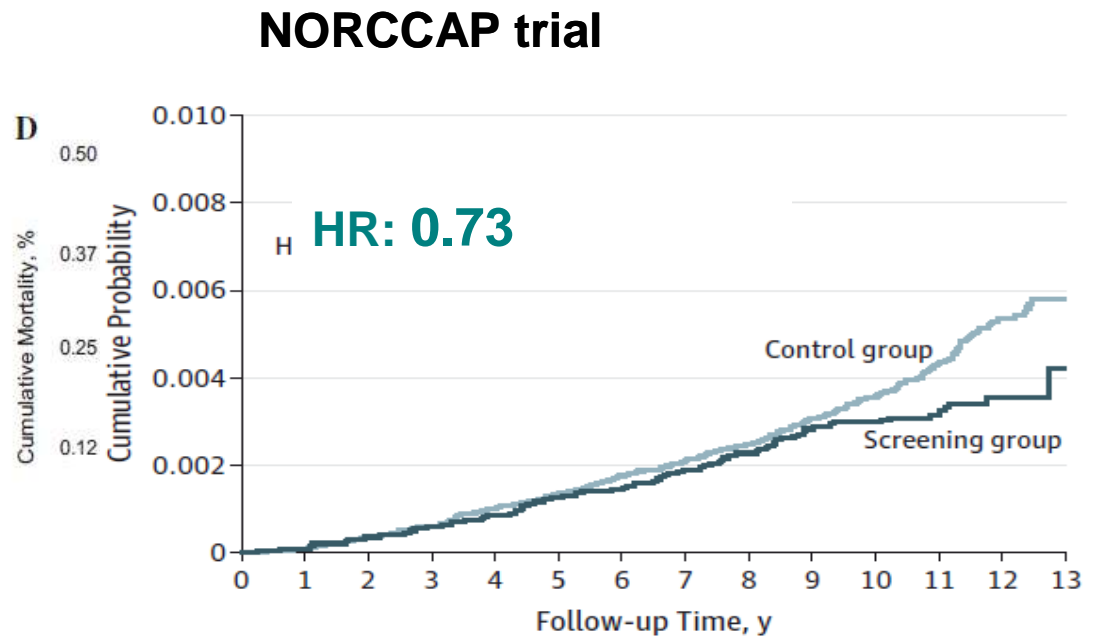
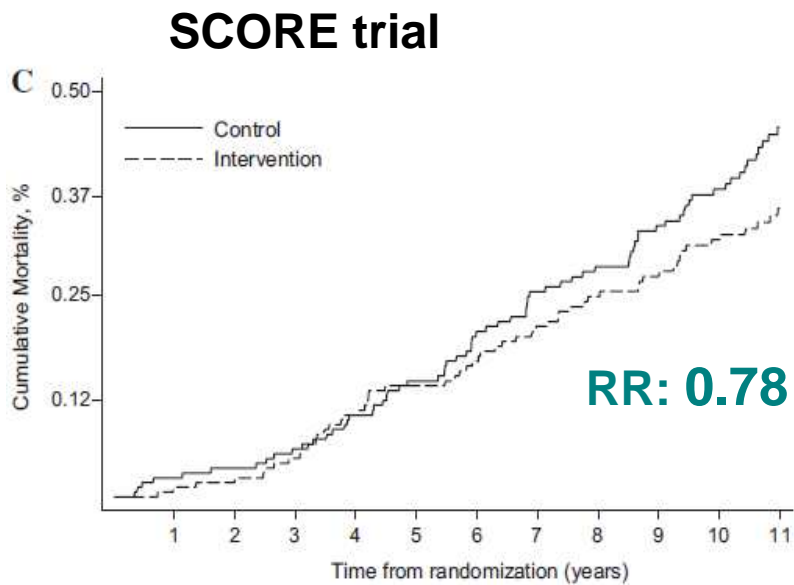
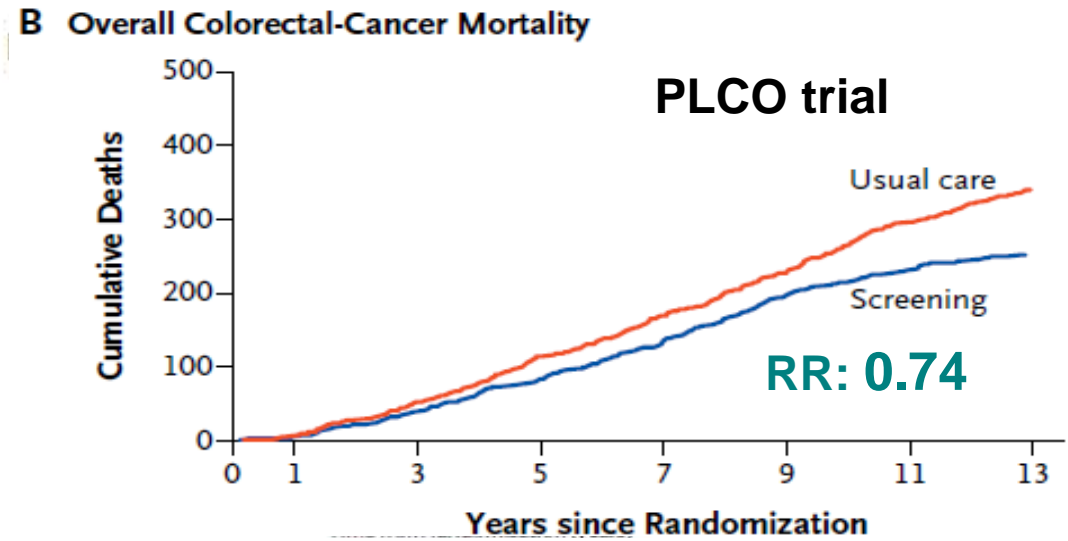
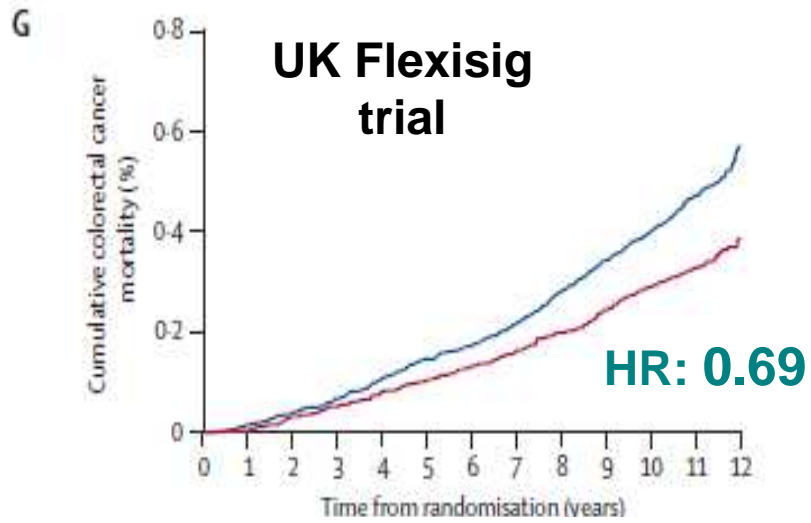
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e la Prevenzione Oncologica in Piemonte



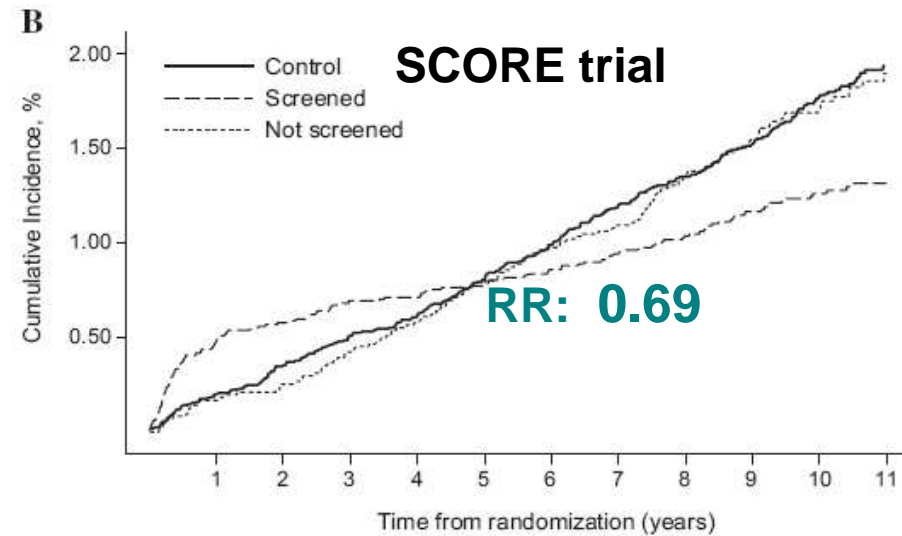
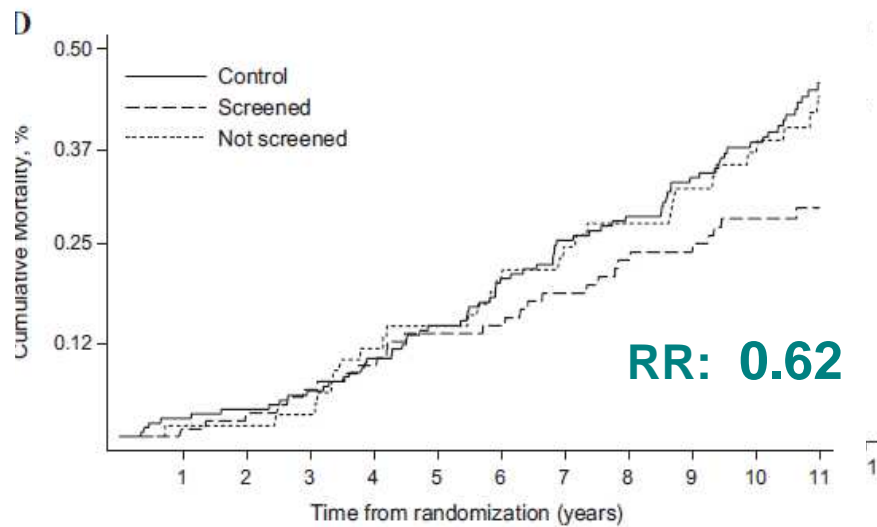
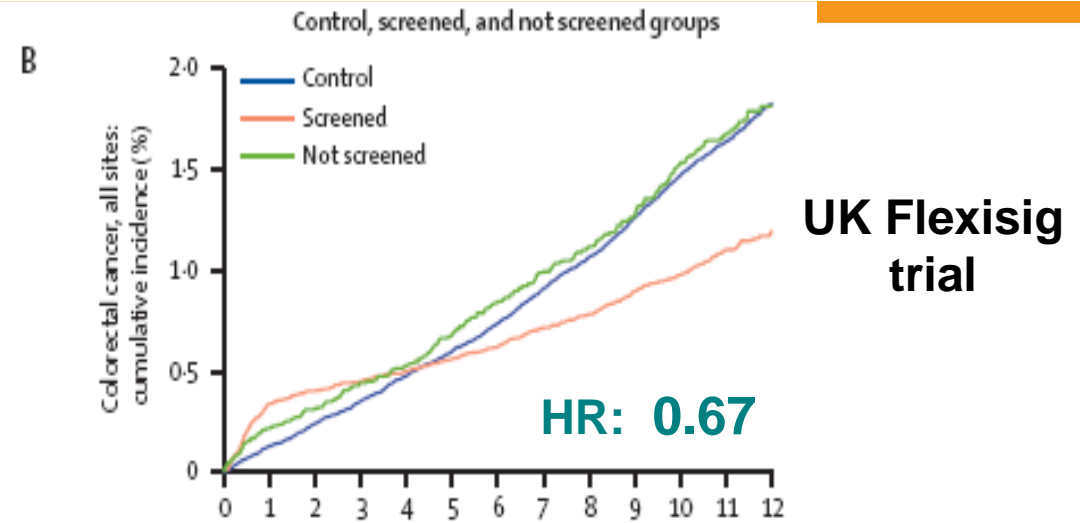
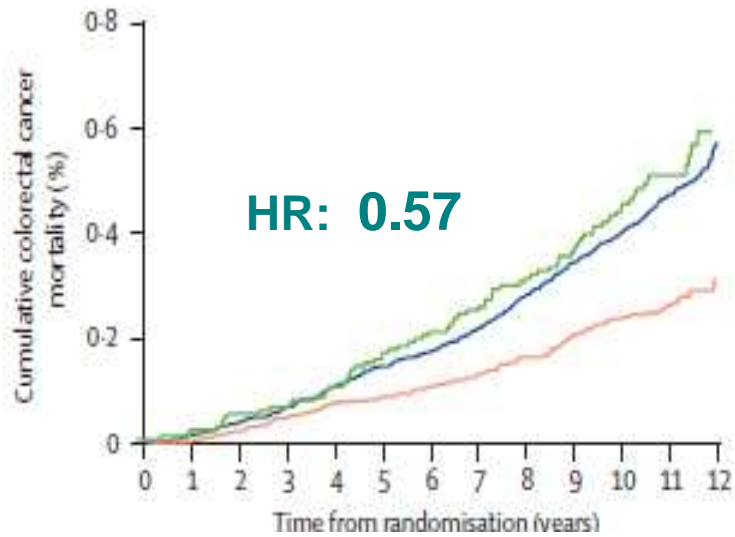
A Overall Colorectal-Cancer Incidence



RIDUZIONE DI INCIDENZA



RIDUZIONE DI MORTALITA'



RIDUZIONE DI MORTALITA'

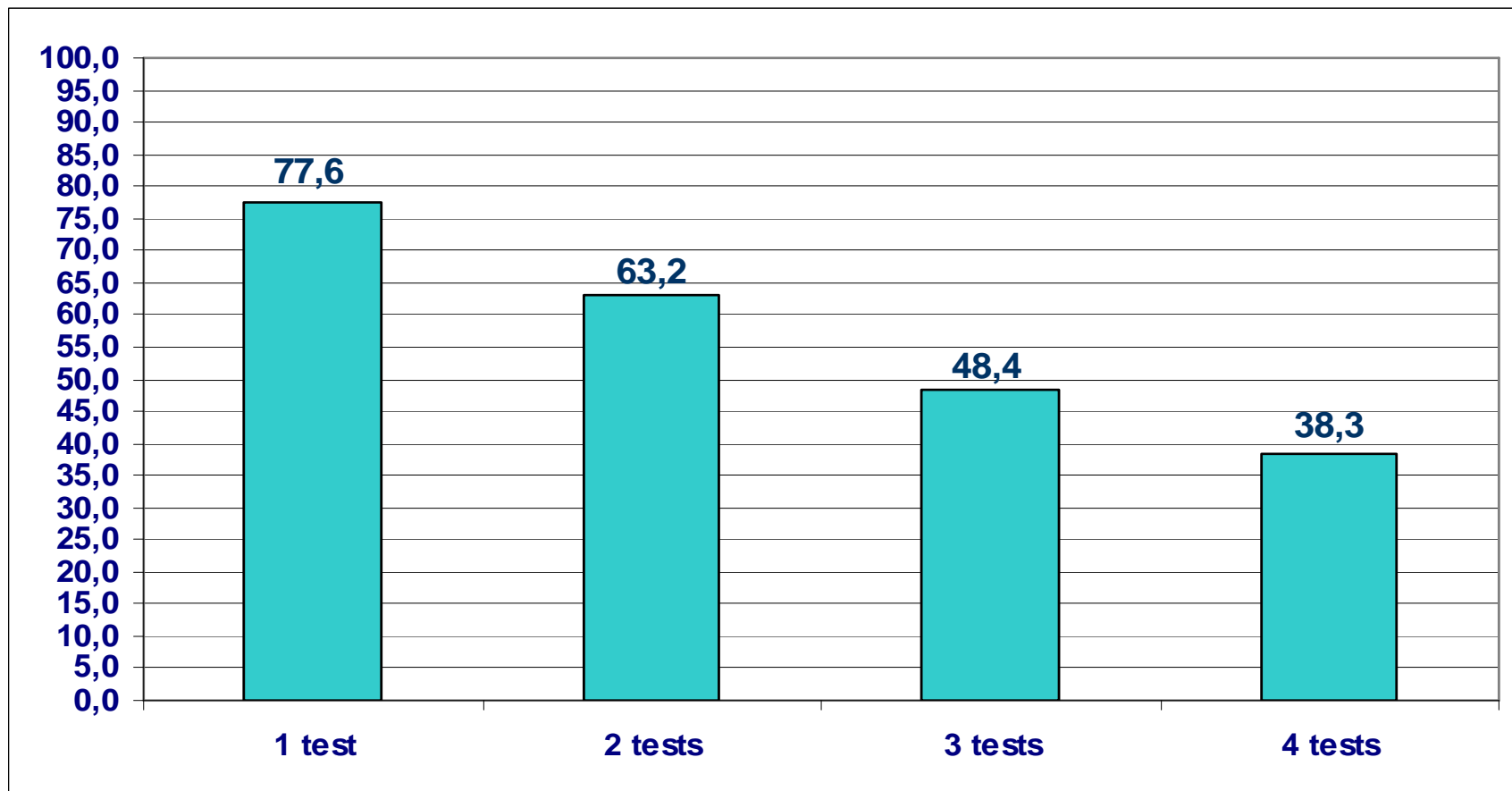
RIDUZIONE DI INCIDENZA

PER-PROTOCOL ANALYSIS

Proportion of regular attenders FIT repeated screening

Cohort 50-74 years - 4 FIT screening rounds

60% of people participating in each round



SERGIO CROTTA,* NEREO SEGNAN,† SIMONA PAGANIN,* BRUNA DAGNES,* ROBERTO ROSSET,[§] and CARLO SENORE[‡]

CLINICAL GASTROENTEROLOGY AND HEPATOLOGY 2012;10:633-638

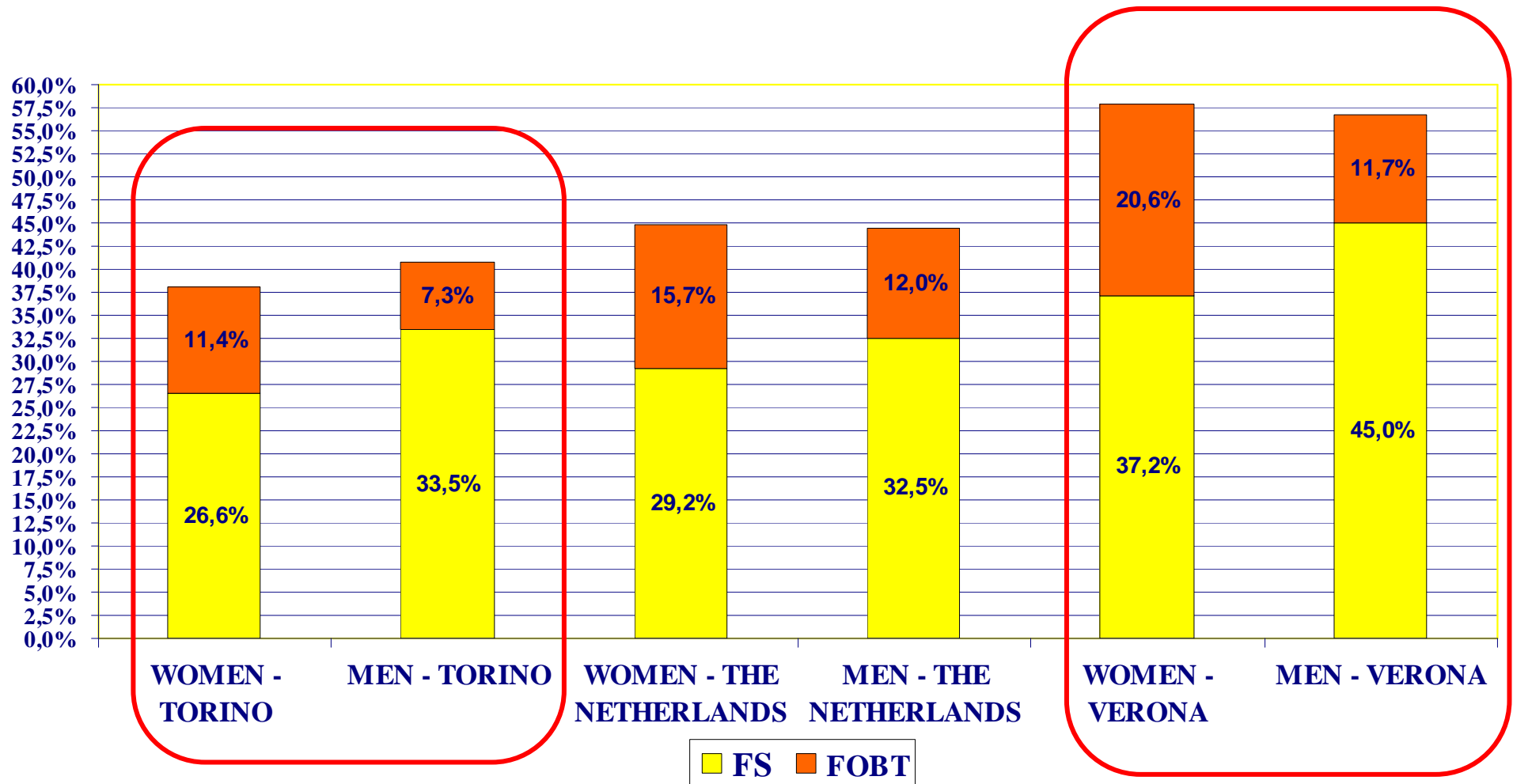
Uptake of faecal immunochemical test screening among nonparticipants in a flexible sigmoidoscopy screening programme

ORIGINAL ARTICLE

Offering people a choice for colorectal cancer screening

Lieke Hol¹, Ernst J. Kuipers^{1,2}, Marjolein van Ballegooijen³, Anneke J. van Vuuren¹, Jaqueline C.I.Y. Reijerink⁴, Dik J.F. Habbema³ and Monique E. van Leerdam¹

Carlo Senore,¹ Andrea Ederle,² Luca Benazzato,² Arrigo Arrigoni,³ Marco Silvani,¹ Alberto Fantin,² Mario Fracchia,⁴ Paola Armaroli,¹ Nereo Segnan¹



MODELLO COSTO-EFFICACIA

Stime di riduzione di incidenza e mortalità derivate dalla letteratura

Analisi dei costi diretti condotta separatamente per FIT (primo esame ed esami successivi) e FS.

Analisi dei costi condotta nel programma piemontese. Confronto con l'analisi di Firenze per il FIT

Variabile	Sigmoidoscopia	FIT 1° round	FIT \geq 2° round
	Costo per persona esaminata € (%)		
Organizzazione e valutazione	29 (18)	10 (30)	6 (29)
Personale	68 (43)	14 (43)	10 (47)
Strumentazione	23 (14)	2 (6)	1.1 (5)
Accessori endoscopica	9 (6)	3 (8)	1.5 (7)
Materiale di consumo	2 (1)	0.1 (0.4)	0.01 (0.4)
Attrezzature ospedaliere	1 (1)	0.03 (0.1)	0.1 (0.1)
Altro (SI, campagna promozione, etc)	28 (14)	4 (13)	2 (12)
Totale	160	33	21



In Inghilterra introduzione FIT a partire da 50 anni

FS mantenuta in alcune aree per valutare modalità di integrazione con FIT

FIT introdotto con cut-off a 80-120 μg . Hb/gr.

Estensione dell'offerta di screening a fronte di una riduzione dell'impatto del programma sull'incidenza di cancro

PARTICIPATION RATE IN FS SCREENING

Screening for colorectal cancer: randomised trial comparing guaiac-based and immunochemical faecal occult blood testing and flexible sigmoidoscopy

gFOBT : 49.5%
FIT : 61.5%
FS : 32.4%

L Hol,¹ M E van Leerdam,¹ M van Ballegooijen,² A J van Vuuren,¹ H van Dekken,³ J C I Y Reijerink,⁴ A C M van der Togt,⁵ J D F Habbema,² E J Kuipers^{1,6}

Comparing Attendance and Detection Rate of Colonoscopy With Sigmoidoscopy and FIT for Colorectal Cancer Screening

TC : 26.5%
FIT : 32.3%
FS : 32.3%

NEREO SEGNAN,* CARLO SENORE,* BRUNO ANDREONI,⁺ ALBERTO AZZONI,[§] LUIGI BISANTI,^{||} ALESSANDRO CARDELLI,[¶] GUIDO CASTIGLIONE,[#] CRISTIANO CROSTA,^{**} ANDREA EDERLE,^{##} ALBERTO FANTIN,⁺⁺ ARNALDO FERRARI,^{§§} MARIO FRACCHIA,^{|||} FRANCO FERRERO,^{||} STEFANO GASPERONI,^{¶¶} SERAFINO RECCHIA,^{¶¶¶} MAURO RISIO,^{##} TIZIANA RUBECA,^{***} GIORGIO SARACCO,⁺⁺⁺ MARCO ZAPPA,^{§§§} and the SCORE3 Working Group—Italy

ORIGINAL ARTICLE

Offering people a choice for colorectal cancer screening

Carlo Senore,¹ Andrea Ederle,² Luca Benazzato,² Arrigo Arrigoni,³ Marco Silvani,¹ Alberto Fantin,² Mario Fracchia,⁴ Paola Armaroli,¹ Nereo Segnan¹

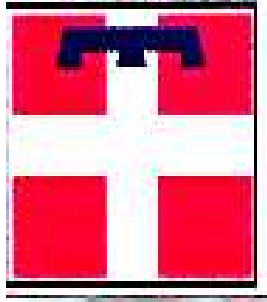
FS : 29-39%

Uptake of Bowel Scope (Flexible Sigmoidoscopy) Screening in the English National Programme: the first 14 months

J Med Screen OnlineFirst, published on September 20, 2015

FS : 43%

Lesley M McGregor¹, Bernardette Bonello¹, Robert S Kerrison¹, Claire Nickerson², Gianluca Baio³, Lindy Berkman⁴, Colin J Rees^{5,6}, Wendy Atkin⁷, Jane Wardle¹ and Christian von Wagner¹



FIT

PREVENZIONE **S E R E N A**

