



Rijksinstituut voor Volksgezondheid  
en Milieu  
*Ministerie van Volksgezondheid,  
Welzijn en Sport*

## CRC screening in the Netherlands; issues to consider

*Marie-Louise Heijnen, PhD*  
*Iris Lansdorp-Vogelaar, PhD*

17 Oktober 2014

FIT for Screening working  
group



# Lead-up to the bowel cancer screening programme

2006: Start of pilot screening programmes

2009: Advisory report issued by the Health Council of the Netherlands

2011: Feasibility study conducted by RIVM

June 2011: Ministerial decision

Early 2013: Application and recommendation for permit under Population Screening Act

September 2013: Start of pilot

January 2014: National launch





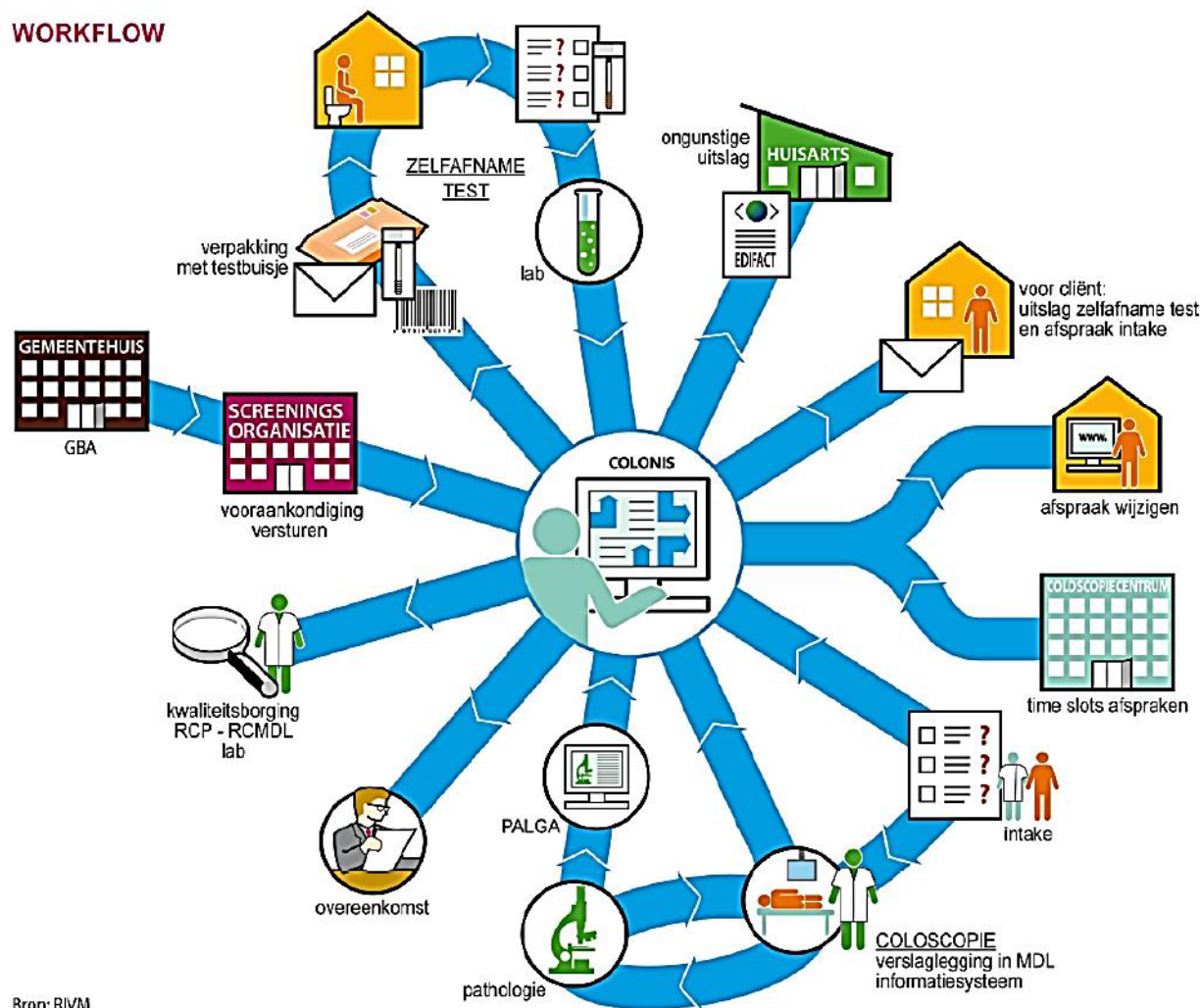
# CRC screening started end of January 2014

- FIT (FOB Gold, cut-off 15  $\mu\text{g/g}$ ) + colonoscopy
- Men and women 55–75 years old
- Bi-annually
- Phased introduction; when implemented: 2,2 million invitees per year
- Till 13 October: 473,435 invitees; 14,894 colonoscopies



# ColonIS

## WORKFLOW





# First results March-May 2014

Participation rate 65-68%, referral rate 13%  
(we planned with 60% and 8%)

## Referral rate by age

	age	negative	positive	total	%positive	95% CI
1951	63	951	72	1.023	7,04%	5,47 - 8,61
1949	65	1.574	146	1.720	8,49%	7,17 - 9,81
1947	67	6.956	826	7.782	10,61%	9,93 - 11,30
1939	75	13.342	2.011	15.353	13,10%	12,56 - 13,63
1938	76	39.930	6.454	46.384	13,91%	13,60 - 14,23
total		62.753	9.509	72.262	13,16%	12,91 - 13,41



## Results: colonoscopy (August 2014)

	Number	Percent
Colorectal cancer	763	6.7%
Advanced adenoma	3,832	33.5%
Non-advanced adenoma	2,640	23.1%
Serrated polyp/adenoma	544	4.8%
No findings	3,649	31.9%
Other tumors	2	0.0%
Total	11,430	



## Consequences

- Increasing waiting times: temporarily less people were invited
- With a referral rate of 12-13% there was not sufficient colonoscopy capacity
- We wouldn't be able to keep to the invitation scheme with a referral rate of 12-13% and acceptable waiting times
- Positive predictive value was lower than expected based on the pilot studies



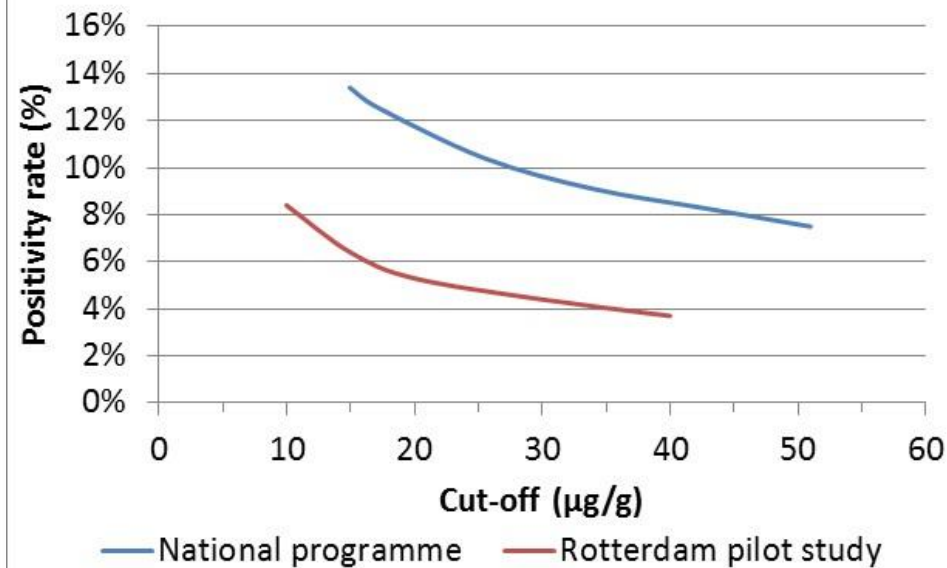
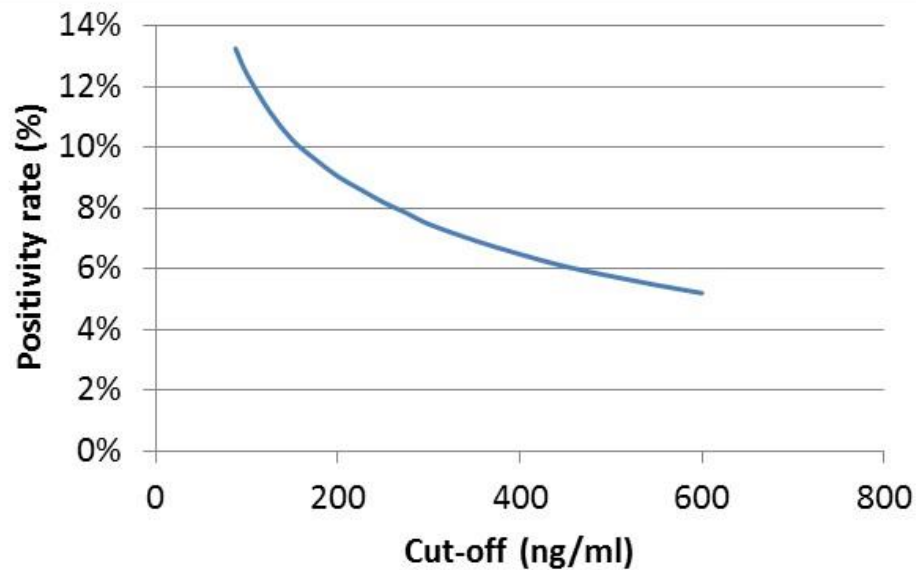


# Actions taken from middle March

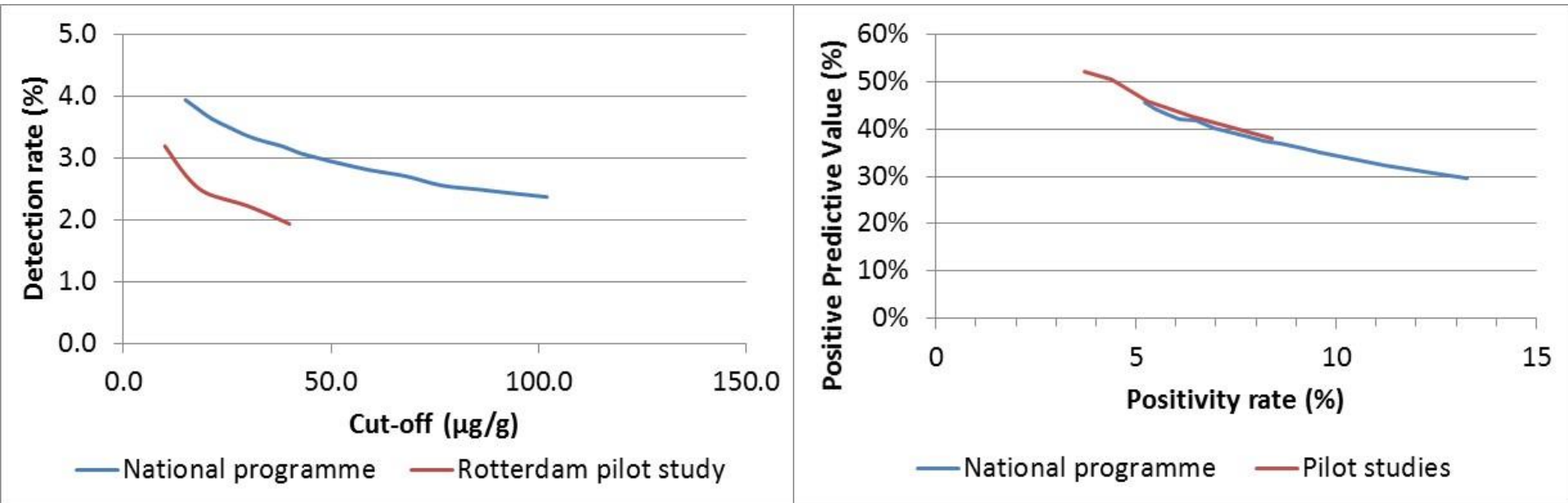
- Active surveillance of waiting times and intake capacity: if necessary slowing down number of invitations and adaptations in ColonIS
- Further analysis and development of scenarios to support decision what to do: RIVM, screening organisations and national evaluator Erasmus Medical Centre



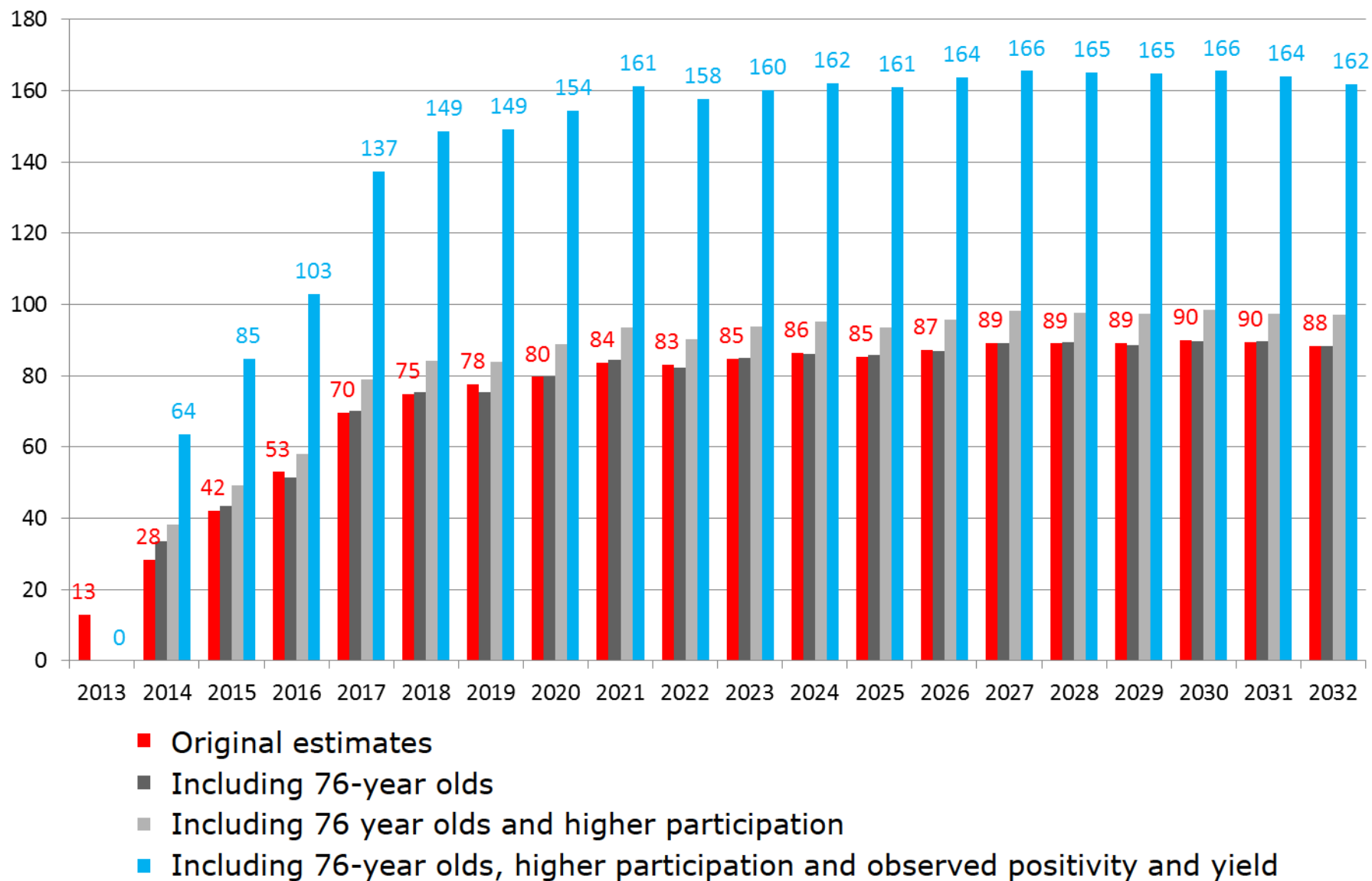
# Cut-off and referral in national programme (vs Rotterdam pilot study)



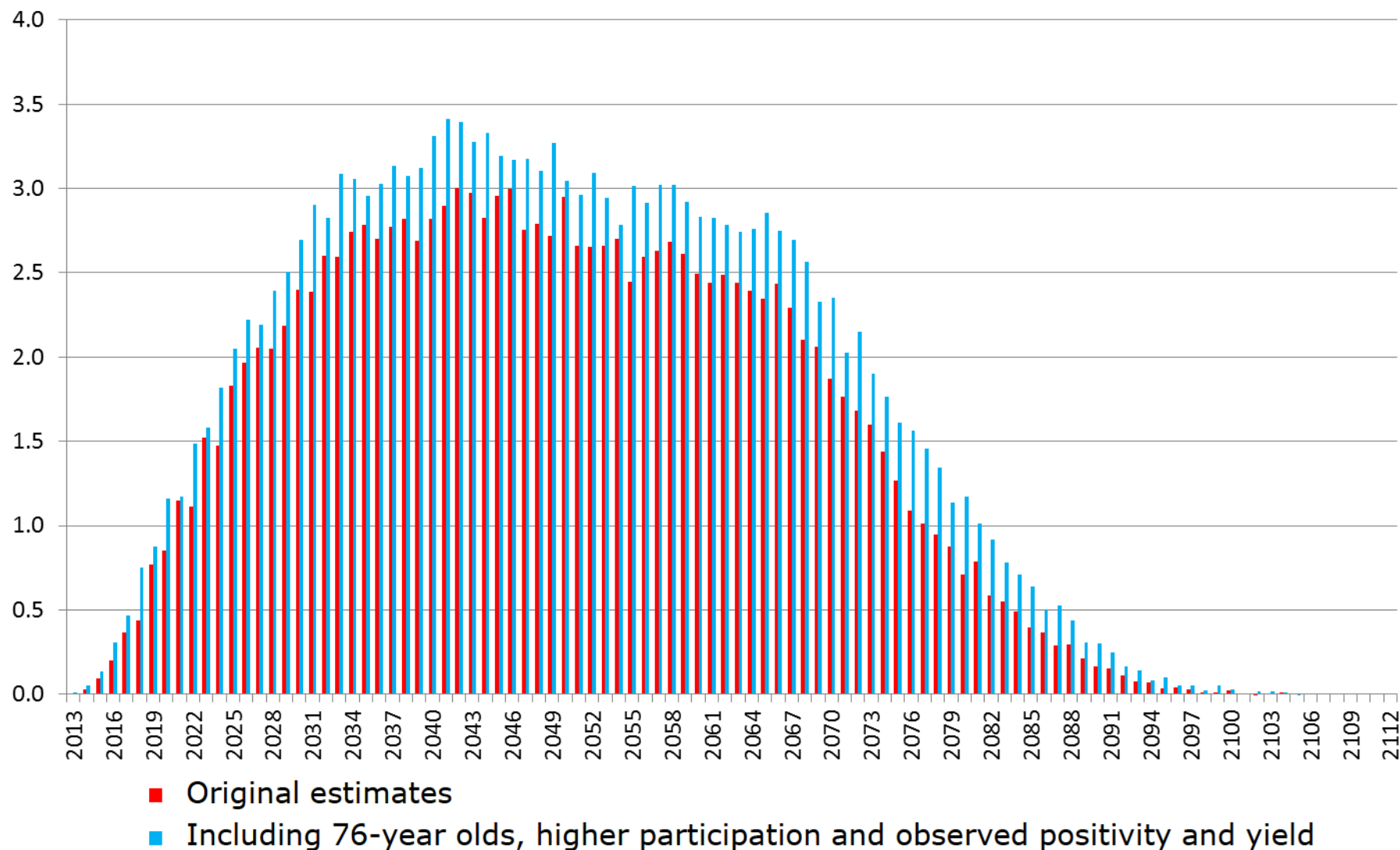
# Cut-off and yield in national programme vs Rotterdam pilot study



# Number of required colonoscopies in the national programme (x1,000)



# Estimated number of colorectal cancer deaths prevented in the national programme (x1,000)



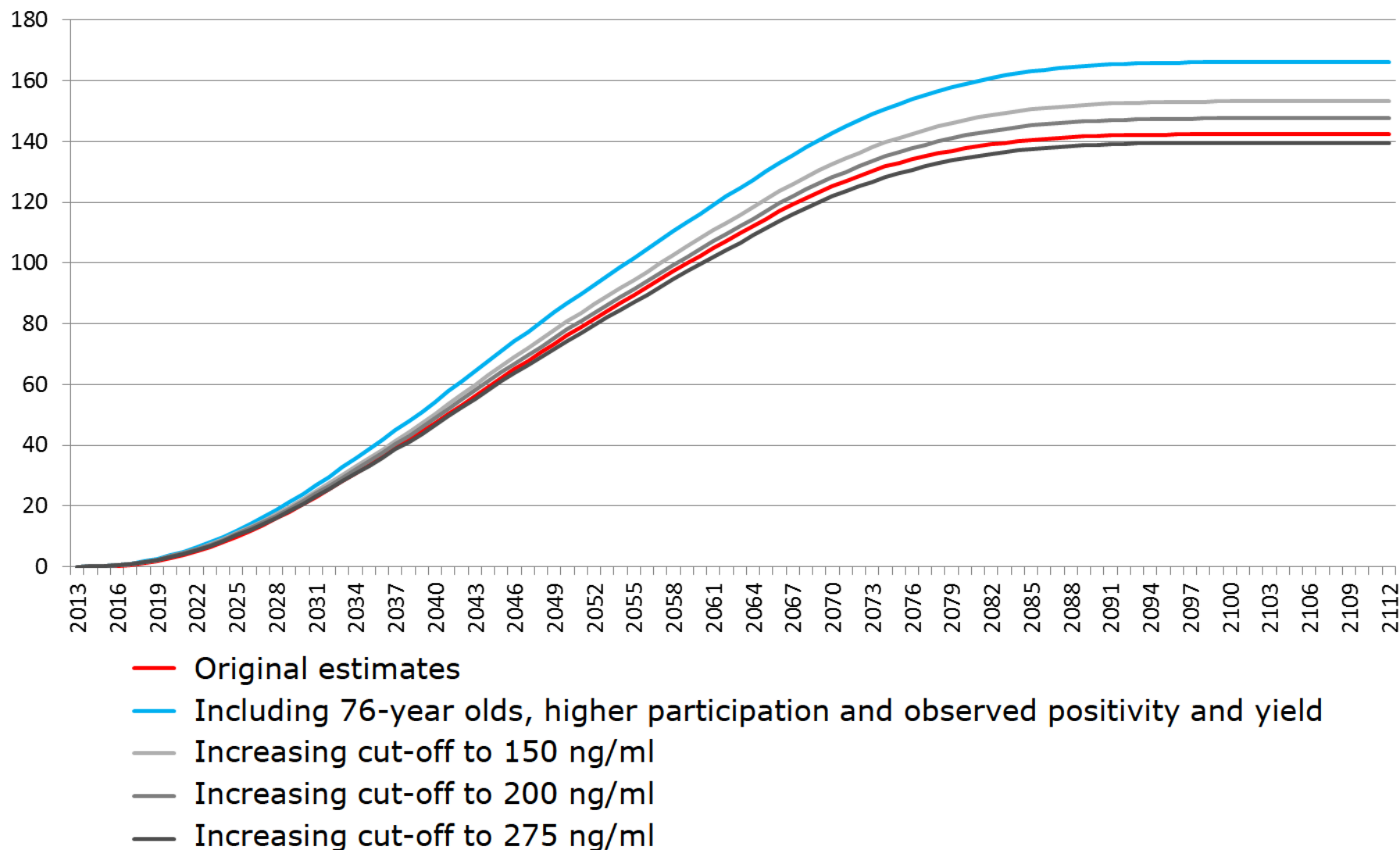
# Options to reduce required colonoscopies

- Slowing down rate of invitations
- Increasing colonoscopy capacity
- Changing implementation scheme
- Increasing cut-off value

# Efficient measures to reduce required colonoscopy capacity in 2014

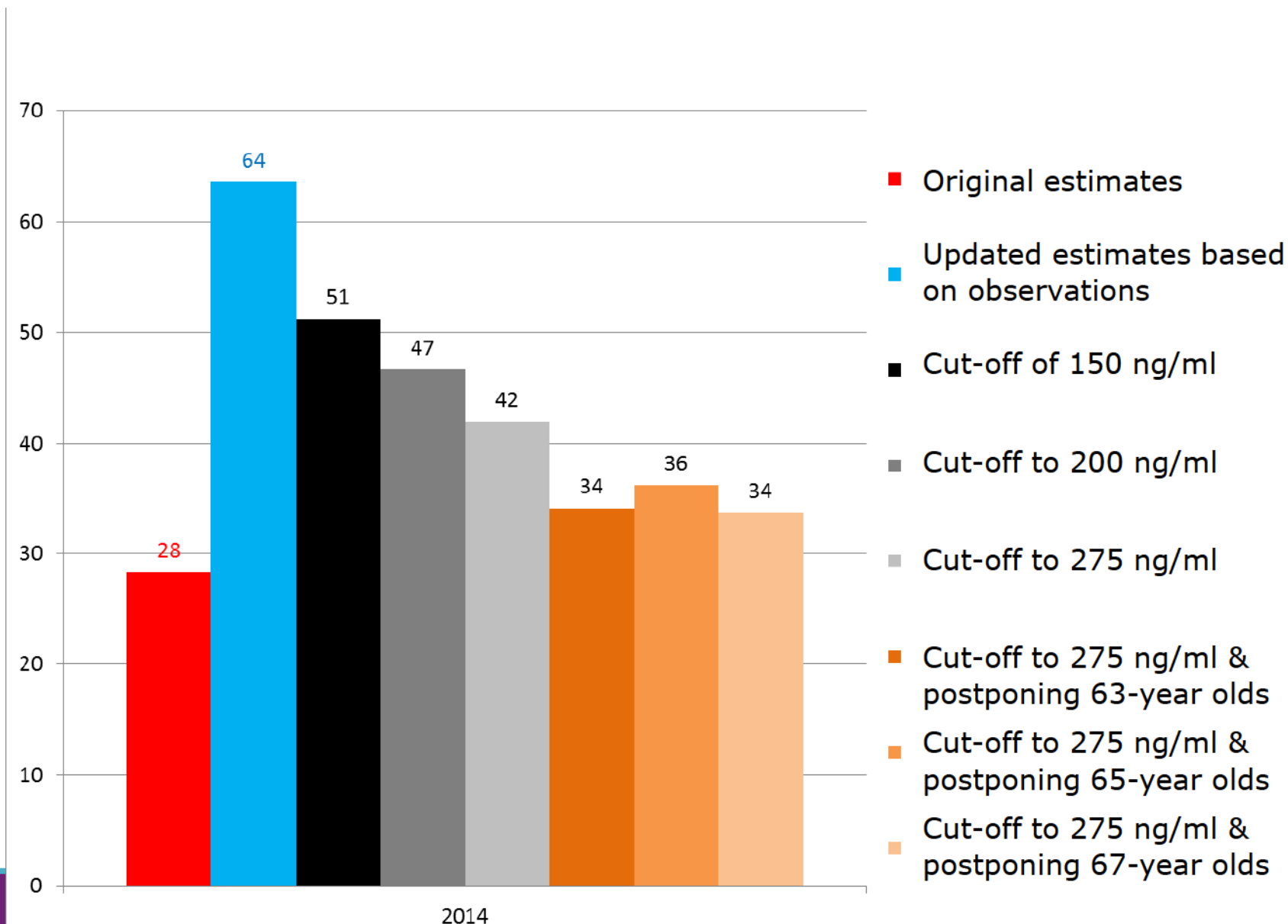
Measure	Reduction in colonoscopies	Reduction in cancer deaths prevented	Cancer deaths <i>not</i> prevented per 1,000 colonoscopies saved	Rank
Postpone screening in 63-year olds	17.9	0.33	18	3
Postpone screening in 65-year olds	18.4	0.31	17	2
Postpone screening in 67-year olds	19.9	0.38	19	4
Postpone screening in 75-year olds	11.8	0.56	48	6
Postpone screening in 76-year olds	11.3	0.51	45	5
Increase cut-off to 150 ng/ml	18.9	0.24	12	1
Increase cut-off to 200 ng/ml	26.4	0.35	13	
Increase cut-off to 275 ng/ml	34.3	0.50	15	

## Estimated cumulative number of colorectal cancer deaths prevented in the national programme (x1,000)





## Required number of colonoscopies in the national programme in 2014 (x1,000) – impact of measures per July 2014



# Conclusions of evaluation

- Inviting 76-year olds in 2014, higher participation rate and especially the higher positivity rate of FIT have increased the required colonoscopy capacity in 2014 from 28,000 to 64,000 per year; in the long term, a colonoscopy capacity of 90,000 tot 160,000 per year is needed
- The higher participation rate and especially the higher positivity rate of FIT also increase the health benefits by approximately 300 additional prevented colorectal cancer deaths per year

# Conclusions of evaluation (2)

- Increasing the cut-off is the most efficient way to reduce required colonoscopy capacity while maintaining a high number of colorectal cancer deaths prevented
- Increasing the cut-off of the FIT in the national programme to 275 ng/ml results in a similar balance of harms and benefits as observed in the Rotterdam pilot study



## Proposal RIVM short term: 2014/2015

Increasing cut-off value to 275 ng/ml in order to

- Balance harms & benefits in accordance with advice Health Council 2009
- Invite people according to plan, given the available colonoscopy capacity => gives the most health gain
- Where possible extra colonoscopy capacity: meetings with hospitals and health insurances

### May/June

Meetings with advisory board screening programme, Ministry of Health and Health Council

### July

Cut-off value was increased



## Proposal long term (after 2015)

- Modelling scenario's again when more data are available
- First half of 2015: proposal further implementation of the programme from 2016 onwards.

Searching as much colonoscopy capacity as possible + options:

- Changing screening interval and/or cut-off value?
- Age and/or sexe specific cut-off value?
- Changing surveillance guideline / accelerate shift in work distribution?

**Afternoon: presentation results until June**



## Further information

[http://www.rivm.nl/en/Topics/B/Bowel\\_cancer\\_screening\\_programme](http://www.rivm.nl/en/Topics/B/Bowel_cancer_screening_programme)

[marie-louise.heijnen@rivm.nl](mailto:marie-louise.heijnen@rivm.nl)

[i.vogelaar@erasmusmc.nl](mailto:i.vogelaar@erasmusmc.nl)