



Quantitative FIT tests in the Czech Republic Past, present and future

Kocna Petr



European Colorectal Cancer Days - Brno, 26. April 2014

Laboratory of Gastroenterology of the
Institute of Medical Biochemistry and Laboratory Diagnostics
shows long-standing – 40 years experiences with FOBT analytics

**1st GENERATION OF FOBT
GUAIAIC TEST: g-FOBT**

1970 – 1980 different chemically based tests
with guaiac or o-tolidine were compared for
reproducibility, sensitivity and assurance

Haemoccult, HemDetect, KryptoHaem SSW

40 years ago



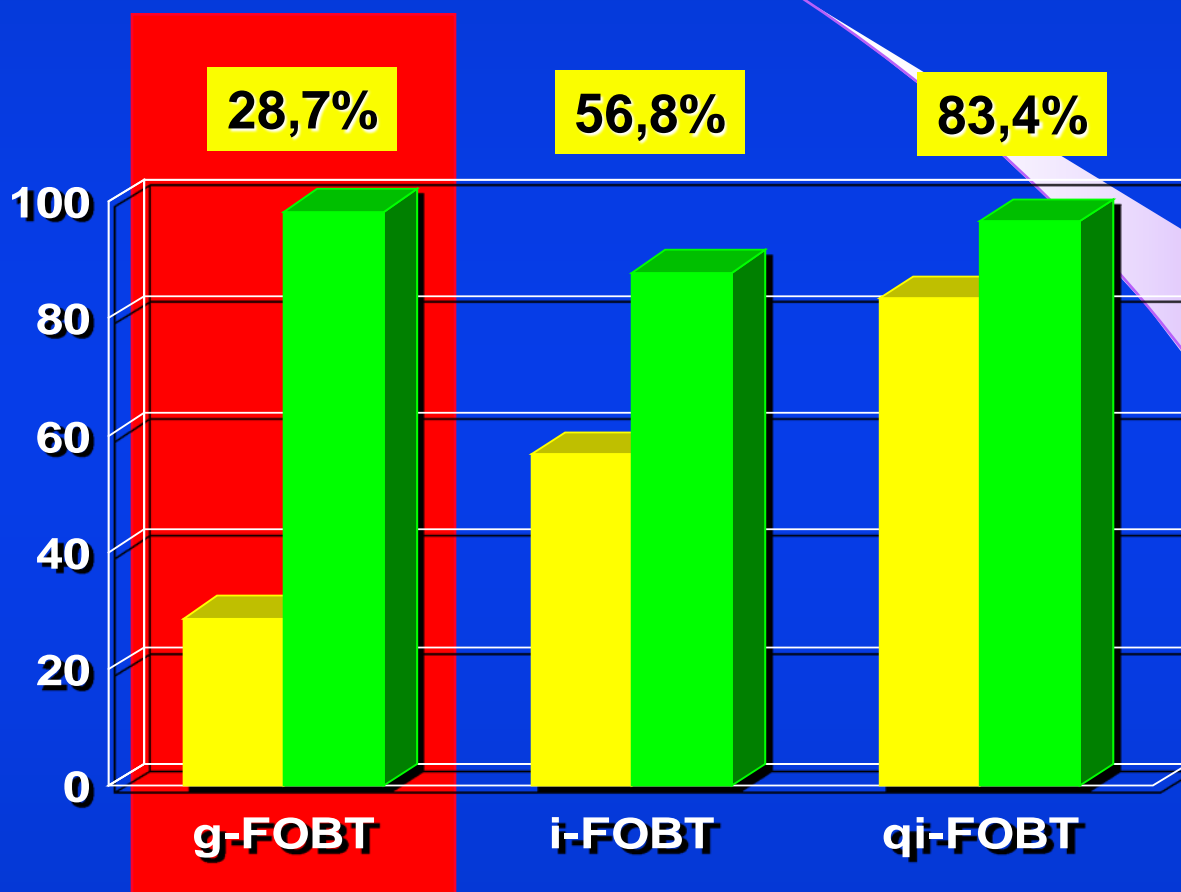
**Haemoccult exclusively has been recommended
for CRC screening with highest reproducibility**

An adapted program of colorectal cancer screening.

Fric P, Zavoral M, Dvoráková H et al. - Hepatogastroenterology. 1994



g-FOBT – GUAJAC TEST, HAEMOCCULT



g-FOBT WITH SENSITIVITY LESS 30% FINISHED AT END OF 2012

i-FOBT QUALITATIVE, RAPID TESTS

1990 – 2000 different immunochemically tests were compared for reproducibility, sensitivity and assurance, compared with Haemocult, and validated by colonoscopy.

ImmoCare, HemeSelect, Hemolex, Actim FB, Hexagon OBTI



None of iFOBT test has been recommended for CRCA screening. iFOBT tests are very different in sensitivity, very high false positivity - more then 25%, and variable sample preparation

Ferkl M, Kocna P, Fric P. - Cas Lek Cesk. 1992

Benesova A, Fric P, Zavoral M, Kocna P, et al. - Cas Lek Cesk. 1993

Dvorak M., Kocna P. Vanickova Z. - Cas Lek Cesk. 2002

Dvorak M., Kocna P. et al. - Z.- Facharzt. 2003



FOBT - THE PAST

20 YEARS WE USED g-FOBT
WITH LOW SENSITIVITY
BUT THE SAME RELIABILITY IN ALL
REGIONS OF THE CZECH REPUBLIC



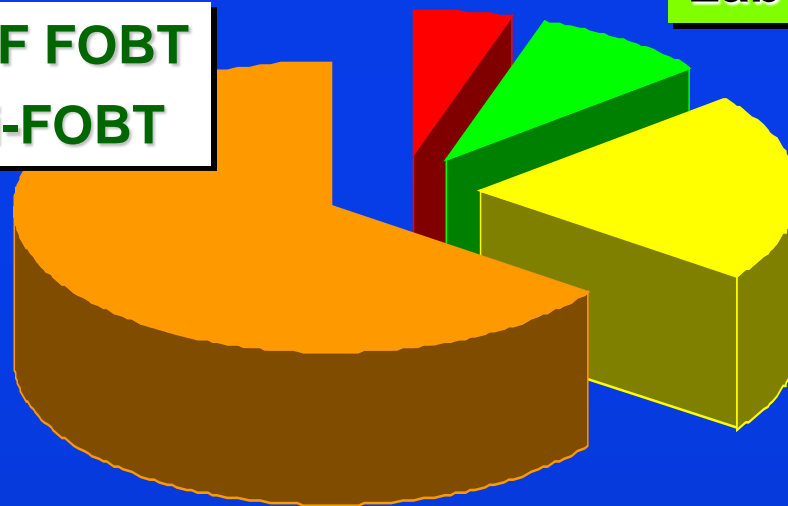
i-FOBT methods for screening in the Czech Republic in 2013

SURVEY IN GENERAL PRACTITIONERS IN 2014

g-FOBT 5%

Laboratory FIT 9%

**2nd GENERATION OF FOBT
QUALITATIVE FIT: i-FOBT**



POCT FIT 11%

Qualitative FIT 65% - 13 different methods

*Report of Committee for colorectal cancer screening
Ministry of Health Care, Czech Republic, Meeting - March 25, 2014*

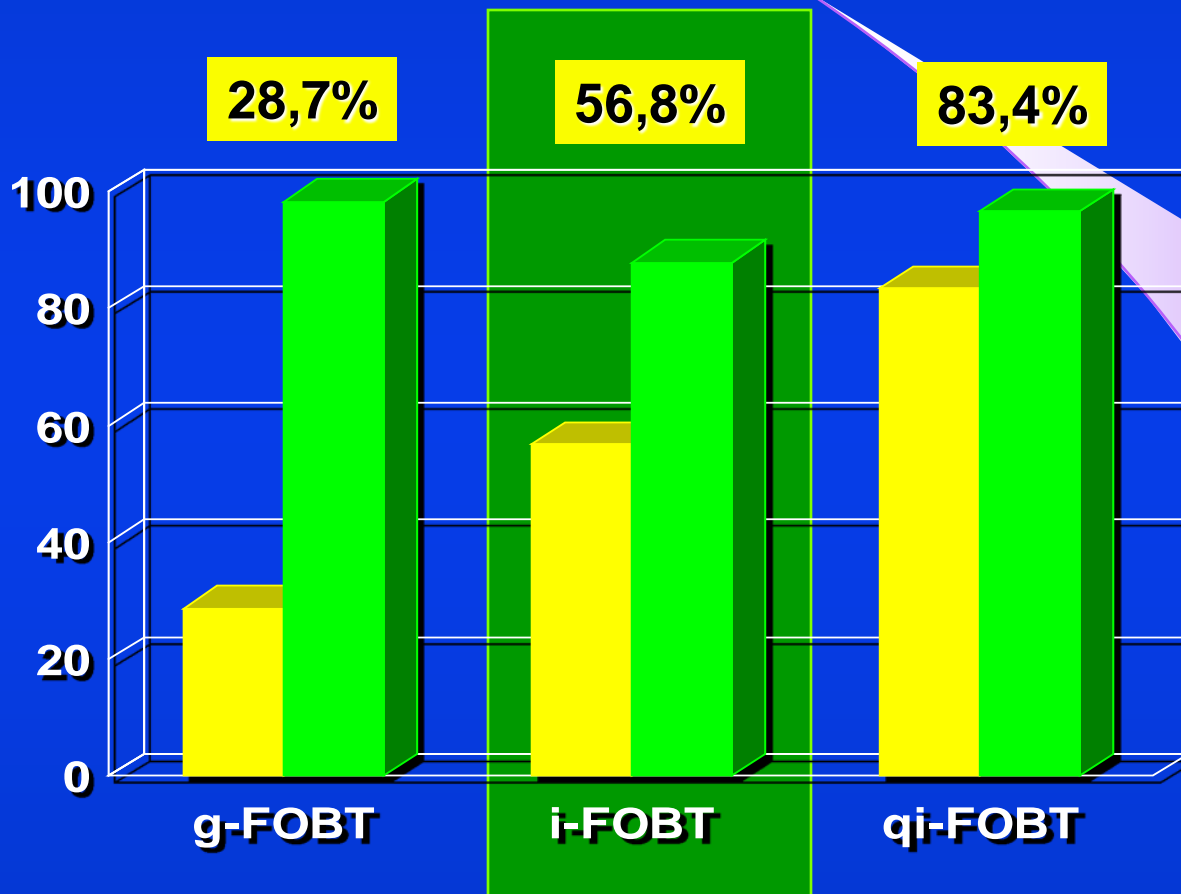
i-FOBT QUALITATIVE, RAPID TESTS



**HIGH RANGE of iFOBT RAPID TESTS
AVAILABLE NOW IN THE CZECH REPUBLIC**



i-FOBT QUALITATIVE, RAPID TESTS



i-FOBT SENSITIVITY COULD BE 2x HIGHER AS HAEMOCCULT



i-FOBT QUALITATIVE, RAPID TESTS

- ✓ iFOBT Rapid tests available in the CR from 20 producers
- ✓ iFOBT tests **varied highly in the sensitivity and accuracy**
- ✓ iFOBT tests sensitivity varied from 100 ng Hb/ml to 2000 ng Hb/ml
- ✓ Rapid iFOBT tests use very **different sampling devices**
- ✓ Rapid iFOBT tests **varied in the Hb/extract buffer stability**

*Haug U, Hundt S, Brenner H. - Am J Gastroenterol. 2010 Mar;105(3):682-690
Quantitative immunochemical fecal occult blood testing for colorectal adenoma detection:
evaluation in the target population of screening and comparison with qualitative tests.*

- ✓ Mayo Clinic study of 750 subjects, colonoscopy verified
- ✓ FIT qualitative - **false positivity - 7.4%**
- ✓ FIT quantitative - **false positivity - 3.8%**

*Colorectal Cancer Screening Committee, DDW 2012 Workshop
Expert Working Group – Fit for Screening - prof. Stephen Halloran
Director: NHS Bowel Cancer Screening*



UNITS & CUT-OFF VALUE (ng Hb/ml / mg Hb/g stool)

FIT test	Sampling	Conc. mg/ml	Ratio	cut-off ng/ml	cut-off mg/g
ColonView	1mg/2ml	0.50	1	40	80
immo-Care-C	11.5 mg/2.5ml	4.60	9,2	50	11
FOB Test	10mg/2ml	5.00	10	40	8
OC-Light	10mg/2ml	5.00	10	50	10
EpiTuub® iFOB	5-10mg/1.1ml	4,5-9	9-18	50	5.5-11
Hema-screen™	x /1.7-1.8ml	1.00	2	50	50
FOB test	3-10mg/3ml	1.0-3,3	2-6,6	10	3.3-10
Hb FECALE	100-200mg/2ml	50-100	100-200	40	0.4-0.8
Actim Fecal Blood	10-20mg/10ml	1.0-2.0	2-4	50	25-50
Easy-Card				200	
SureScreen FOB				50	

Tests with **identical** cut-off in Hb ng/ml may have up to **200x times higher, or lower**, cut-off in mg Hb/g stool



FOBT - THE PAST

20 YEARS WE USED g-FOBT
WITH LOW SENSITIVITY
BUT THE SAME RELIABILITY IN ALL
REGIONS OF THE CZECH REPUBLIC

FOBT - THE PRESENT

IN 2013 WE CHANGED TO i-FOBT (FIT)
WITH 2-TIMES HIGHER SENSITIVITY
BUT DISTINCTLY INCREASING VARIABILITY
IN REGIONS OF THE CZECH REPUBLIC

QUANTITATIVE Hb ANALYSIS IN STOOL

- ✓ Qualitative, rapid tests, quantified by the scanner/software
- ✓ POCT analysers at general practitioners
- ✓ Chemical/biochemical analysers at hospital/laboratories

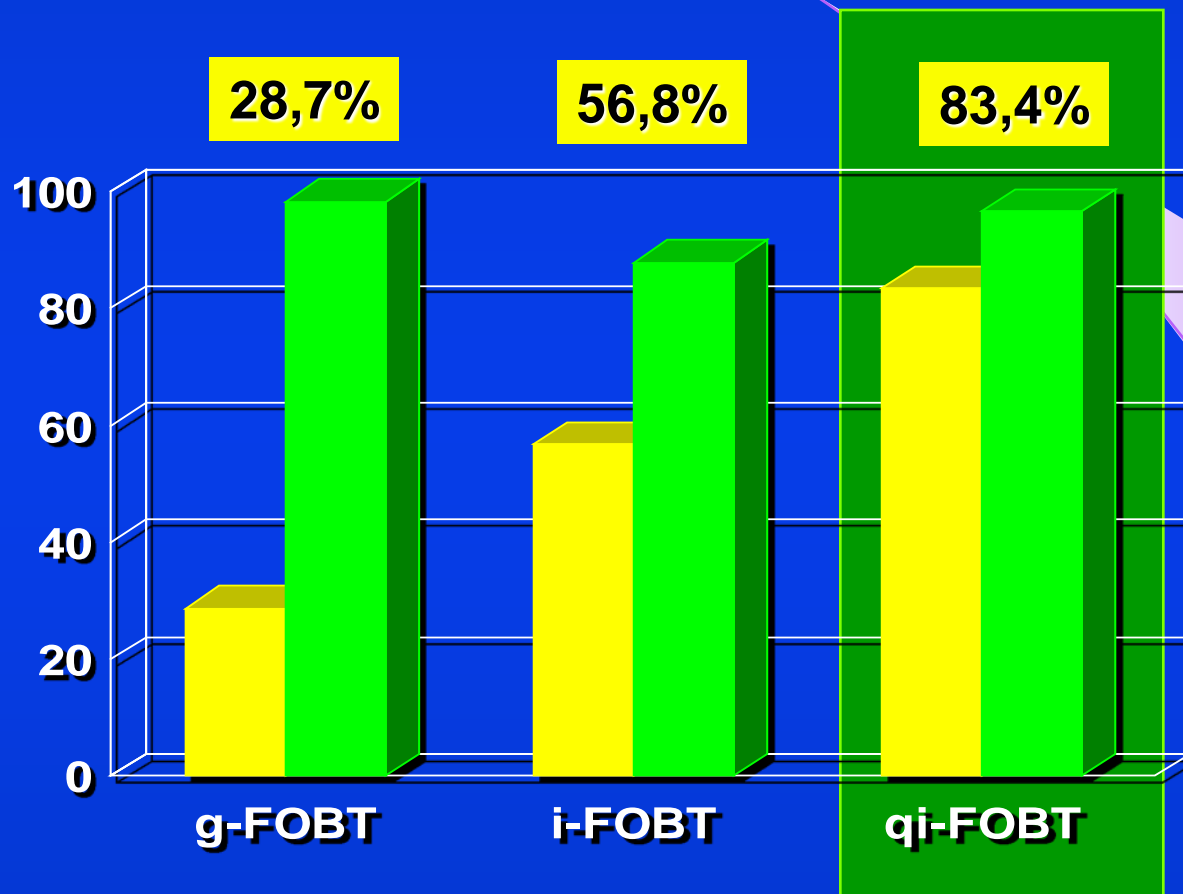
**3rd GENERATION OF FOBT
QUANTITATIVE FIT: qi-FOBT**

Started 5 years ago





qi-FOBT/FIT - QUANTITATIVE Hb ANALYSIS IN STOOL



qi-FOBT SENSITIVITY COULD BE 3x HIGHER AS HAEMOCCULT

RAPID iFOBT QUALITATIVE TEST



STANDARD PC - SCANNER



PC - NOTEBOOK



EVALUATION OF COLOURED BAND INTENSITY
COMPARING WITH DIGITAL / COLOUR STANDARD
QUANTIFICATION OF iFOBT TEST = ONLY PC'S VISUALISATION



qi-FOBT / FIT POCT & LABORATORY ANALYSERS

OC-Sensor Eiken



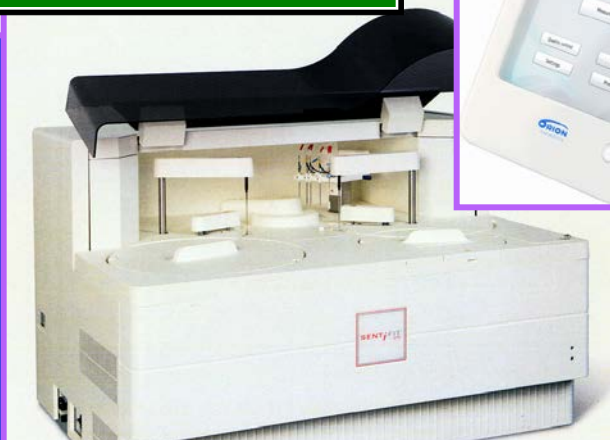
QuikRead Orion



OC-DIANA Eiken



i-Chroma Boditech



QuikReadGo Orion



SmartPlus Eurolyser



SENTi-FIT 270 Sentinel

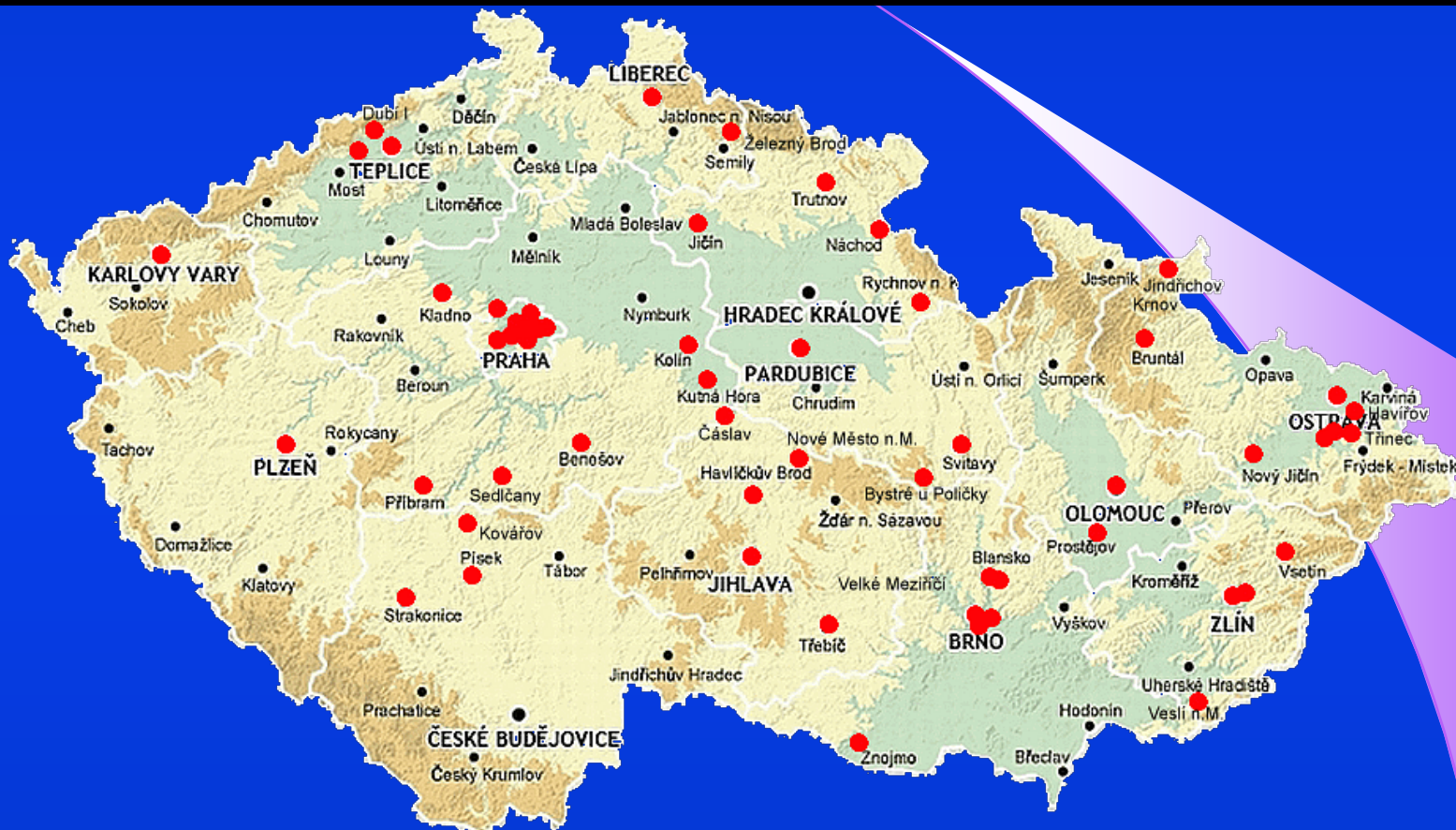


SENTi-FIT mini Sentinel





QUANTITATIVE FIT ANALYSERS IN CZECH REPUBLIC

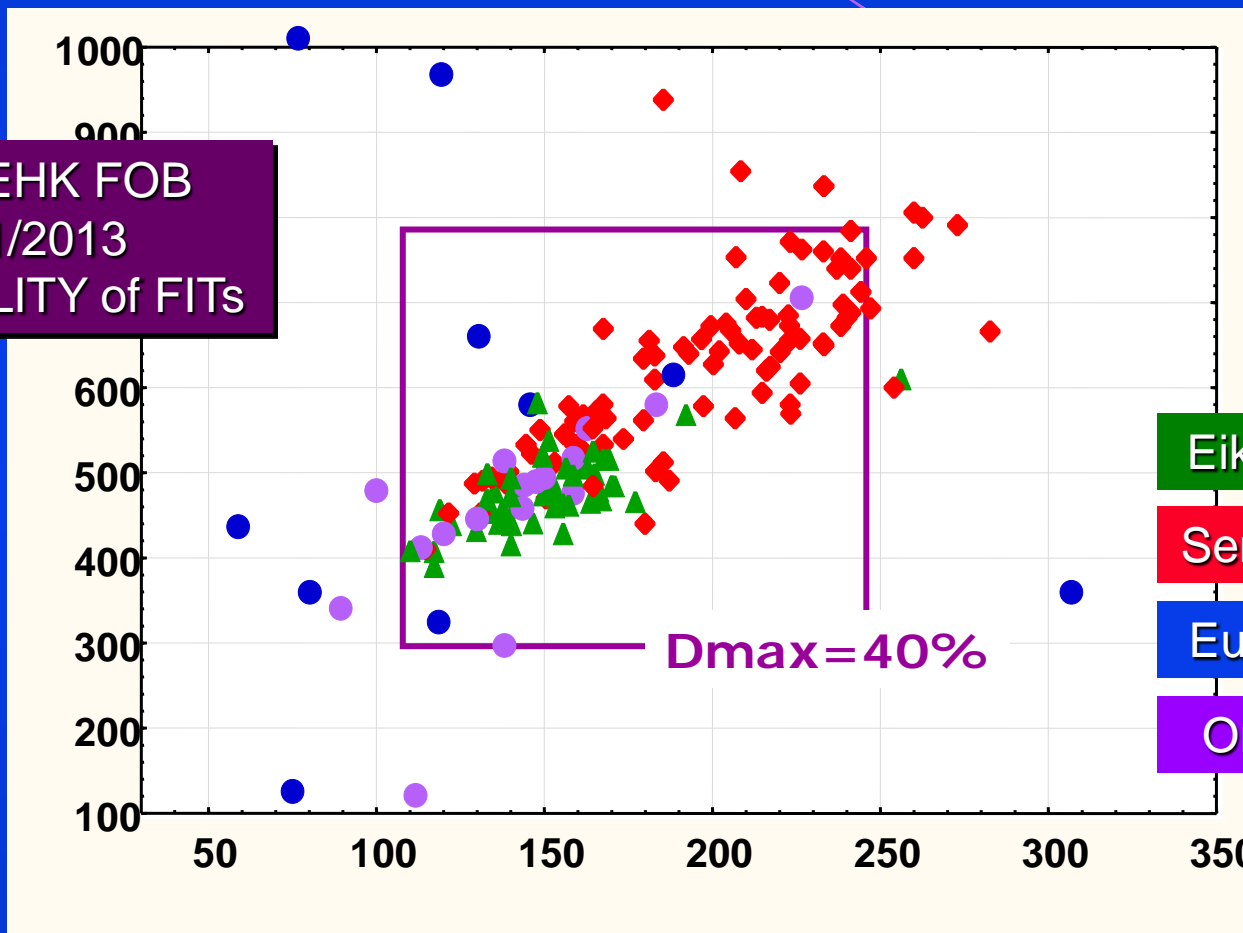


Map of the Czech Republic with marked locations where the quantitative analysis of Hb in stool, controlled with the SEKK external control quality, is available



EXTERNAL CONTROL QUALITY SYSTEM in CR

SEKK EHK FOB
2011/2013
VARIABILITY of FITs



Eiken OC-Sensor

Sentinel FOBGold

Eurolyser - FOB

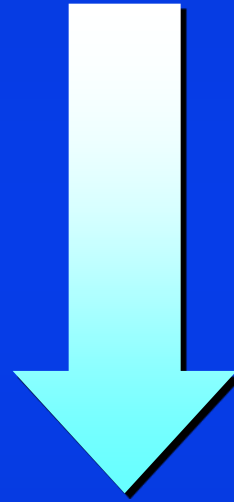
Orion QuikRead

Kocna P., Zima T., Budina M., Ichyanagi T.: External Quality Assessment (EQA) for Quantitative Fecal Blood in Stool (FIT). *Biochimica Clinica*, 2013, 37, 423



Automated analysers for qiFOBT are ready to start CRC screening
with qiFOBT optimised for Czech Republic screening
EQAS control system is since January 2012 available

Committee for CRC screening
Ministry of Health
of the Czech Republic



National screening programme in the Czech Republic
should be modified to use **quantitative qiFOBT** technology

2 years ago

*Quantitative immunochemical qi-FOBT OC-Sensor
Meeting with EC & EP – Prague, January 11, 2012*



QUANTITATIVE Hb STOOL ANALYSIS IN PRAGUE

EXPERIENCES IN GENERAL FACULTY HOSPITAL - PRAGUE, 2008 - 2013



Quantitative determination of Hb in stool
Eiken **OC-Sensor micro** analyser
General Faculty Hospital Prague
15 000 analysis in 5 years (2008 - 2013)
The analytical data-mining tool I-COP
(Cancer Care Information Centre) compare
Laboratory data - FIT - Hb in stool
with **National Cancer Registry** output



Kocna P., Májek O., Blaha M.: Clinical and epidemiological importance of analyzing laboratory data with the data source I-COP. Sborník Medsoft 2014 - March 25; 110-122 on-line: <http://creativeconnections.cz/medsoft/2014.html>



DETECTED COLORECTAL CANCERS

AGE 50 – 90 YEAR (n = 4145)

ng/ml	n	FIT +
75	292	7.05 %
> 1000	47	1.13 %

Patients of the Center for Preventive Care & GPs

Detected CRC – 11/64

CRC detection rate - **2.65/1000 FIT**
Average time FIT - surgery: **5.34 months**

AGE 50 – 90 YEAR (n = 6561)

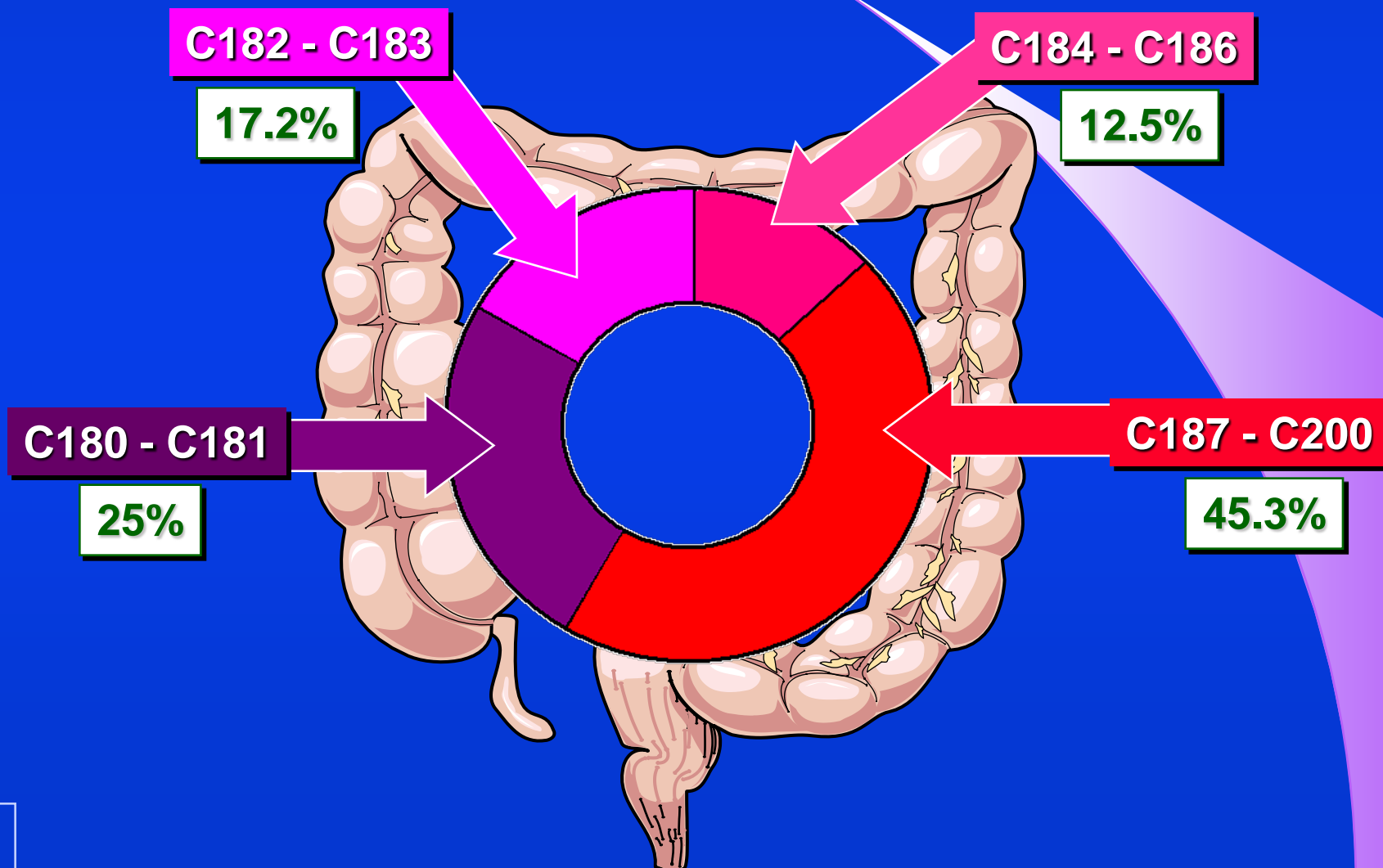
ng/ml	n	FIT +
75	1287	19.62 %
> 1000	311	4.74 %

Patients specialized hospital clinics outpatient and inpatients

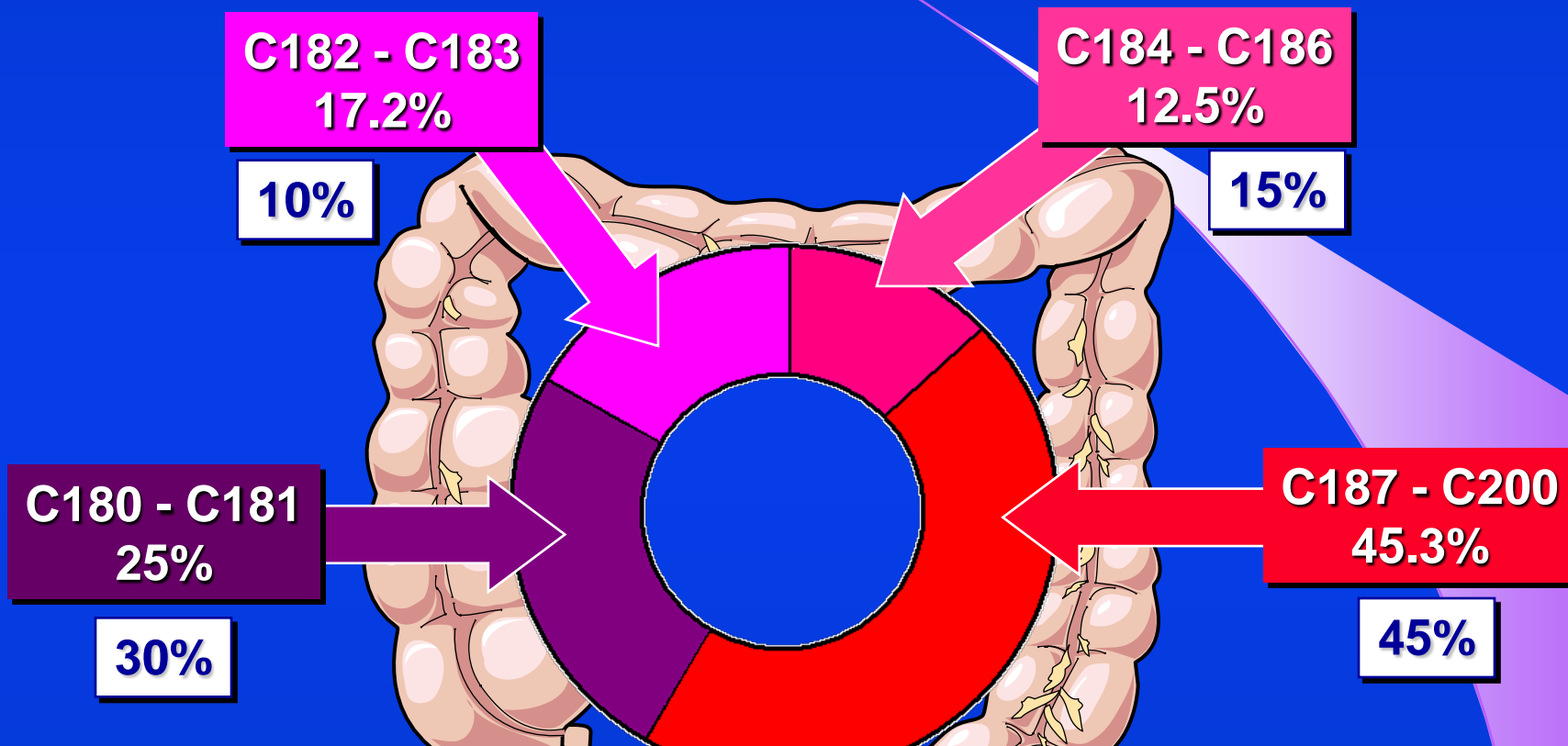
Detected CRC – 53/64

CRC detection rate - **8.08/1000 FIT**
Average time FIT - surgery: **2.95 months**

CRC TUMOR - BOWEL LOCALISATION



CRC TUMOR - BOWEL LOCALISATION



The frequency of tumors in different localisations corresponding published papers

Johns Hopkins Colon Cancer Center
<http://www.hopkinscoloncancercenter.org>

CRC TUMOR - BOWEL LOCALISATION & FIT VALUE

627 ng/ml
(309-1422)

1322 ng/ml
(695-1580)

810 ng/ml
(180-1646)

969 ng/ml
(346-1855)

Hb ng/ml values
are not significantly different
according to tumor localisation

The OC-Sensor FIT could be used reliably
for CRC screening in any tumor localisation

OC - SENSOR FIT FALSE NEGATIVITY

1/11

9.1%

1/8

12.5%

False negativity - is 15.62 %
(cut-off value 75 ng/ml recommended by the CRC Commission)
The sensitivity for CRC - is 84.38 %

3/16

18.7%

5/29

17.2%

OC - SENSOR FIT FALSE NEGATIVITY

1/11

9.1%

1/8

12.5%

False negativity - is 15.62 %
(cut-off value 75 ng/ml recommended by the CRC Commission)
The sensitivity for CRC - is 84.38 %

The percentage of unrecognized cancers - 17.6%
for one test with cut-off 75 ng/ml

3/16

18.7%

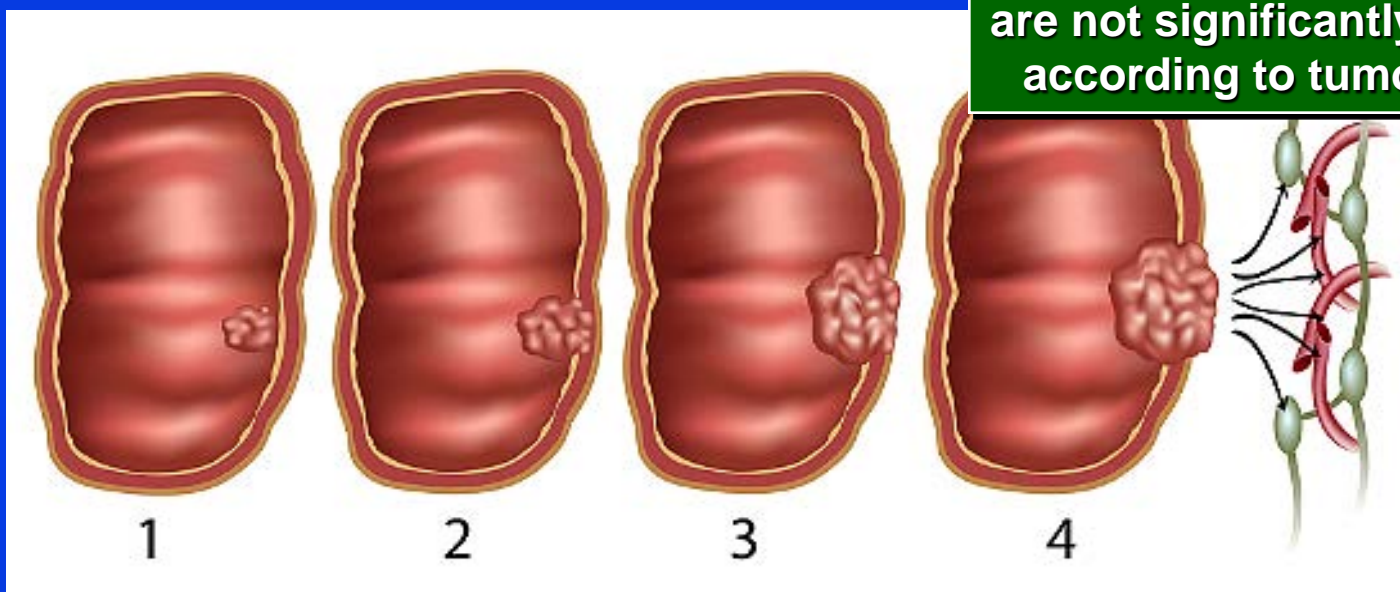
5/29

17.2%

Kelley L, Swan N, Hughes DJ. - *Colorectal Dis.* 2013 Sep; 15(9): e512-21
An analysis of the duplicate testing strategy of an Irish immunochemical FOBT
colorectal cancer screening programme

CRC TUMOR STAGE & FIT VALUE

Hb ng/ml values
are not significantly different
according to tumor stages



CRC stage I
(n=11)
1656 ng/ml
(421-2154)

CRC stage II
(n=21)
960 ng/ml
(453-1639)

CRC stage III
(n=17)
848 ng/ml
(37-1554)

CRC stage IV
(n=15)
720 ng/ml
(175-1396)



FOBT - THE PAST

20 YEARS WE USED g-FOBT
WITH LOW SENSITIVITY
BUT THE SAME RELIABILITY IN ALL
REGIONS OF THE CZECH REPUBLIC

FOBT - THE PRESENT

IN 2013 WE CHANGED TO i-FOBT, FIT
WITH 2-TIMES HIGHER SENSITIVITY
BUT DISTINCTLY INCREASING VARIABILITY
IN REGIONS OF THE CZECH REPUBLIC

FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS



FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

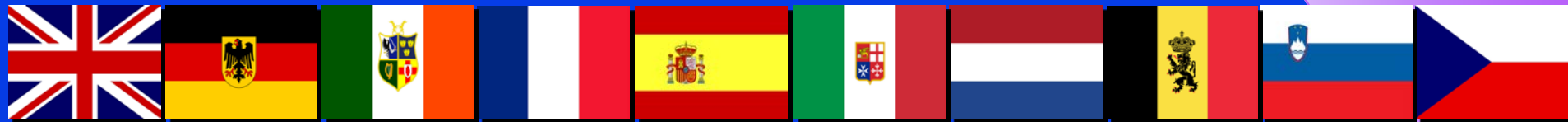
1. TASK

ANALYSE THE EUROPEAN EXPERIENCES



EUROPEAN EXPERIENCES WITH FIT

We analysed 175 scientific publications, available on web
Publications focusing on CRC screening by FIT
Publications published in the last 5 years (2008-2013)
The presentation was focused only on studies of European countries



**'EVIDENCE BASED' RECOMMENDATIONS
AND EXPERIENCES ARE NOW AVAILABLE**



EUROPEAN EXPERIENCES WITH FIT

Recommendations for a colorectal cancer screening programme in Ireland - **12/2008**

The National Cancer Screening Service Board, Ireland

The Board's recommendation that the immunochemical faecal occult blood test (iFOBt) which operates on an **automated testing platform**.

Immunochemical faecal occult blood tests - Evaluation report - **November 2009**

Centre for Evidence-based Purchasing of the NHS Purchasing and Supply Agency.

The OC-Sensor / DIANA analyser is well designed and is the most suitable system for the **English bowel cancer screening programme**.

A national colorectal cancer screening programme, **November 17, 2009**

The Health Council of the Netherlands

The Committee recommends iFOBT-based screening (**OC-Sensor, one faecal sample**) once every two years for men and women between fifty-five and seventy-five years old.

Faecal occult blood test-based screening programme. **2009 May**

Lecco Colorectal Cancer Screening Group

Immunochemical faecal tests (**HM-Jack, Kiowa**; Japan) were processed by a single central laboratory using an **automated reading technique**; the positivity **cut-off was 100 ng/ml**.



FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

ANALYSE THE EUROPEAN EXPERIENCES

2. TASK

HIGHLIGHT QUANTITATIVE FIT



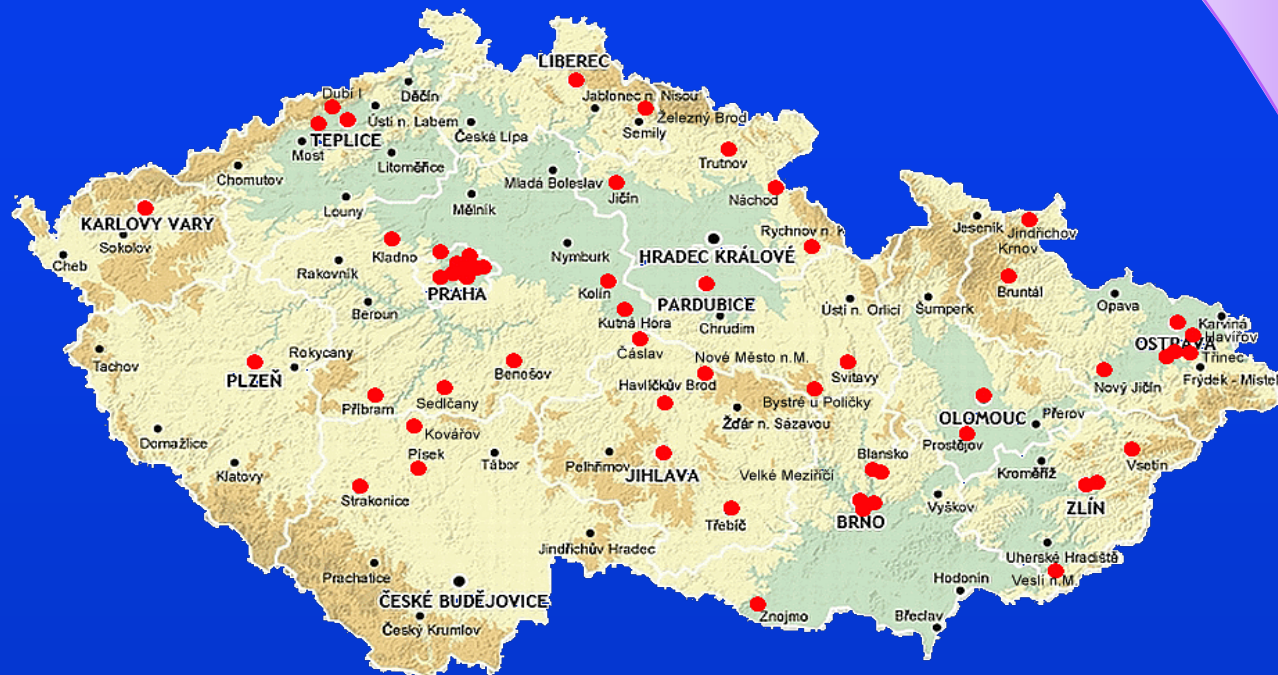
HIGHLIGHT QUANTITATIVE FIT

- ✓ qFIT is 3 times more sensitive and reliable than gFOBT
- ✓ qFIT analysis is based on specific antibody technique
- ✓ qFIT on automatic analyzer eliminates subjective evaluation
- ✓ qFIT allows the quantitative analysis
- ✓ qFIT could be possible to optimize selecting screening cut-off
- ✓ qFIT allows comparing the values on a European scale
- ✓ qFIT may be monitor by quality control system EQAS



HIGHLIGHT QUANTITATIVE FIT

At least 50 laboratories in the Czech Republic offers the quantitative determination of Hb in the stool, verified 2times per year by the external quality control system, with sufficient capacity for population screening of CRC.





FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

ANALYSE THE EUROPEAN EXPERIENCES
HIGHLIGHT QUANTITATIVE FIT

3. TASK

CLEARLY DEFINE CUT-OFF POSITIVITY



Colorectal Disease - 09/2013



9704 kits (2 tests) sent out to residents, 50-74 years
 return rate - 5023 (52%), positivity \geq 100 ng/ml: 514 (10.2%)
 419 FIT+ colonoscopy (81.5%) with caecal intubation 402 (96%)
 CRC found 17 (4.1%), Dukes I + II in 62.5%, 132 advanced adenomas (31.5%)

	Positivity rate (95% CI)	Colonoscopies number	CRC & adv. adenomas	Specificity CRC & AA
FIT one	6.9% (6.3 - 7.7%)	287	108	96.4% (95.7 - 96.9%)
FIT two	10.2% (9.4 - 11%)	419	149	94.5% (93.7 - 95.1%)

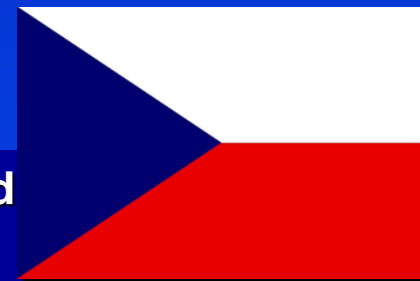
The percentage of unrecognized cancers

23.5% for one test with cut-off 100 ng/ml and 17.6% with 75 ng/ml
 neoplasms, including advanced adenomas - 32% (100 ng/ml) a 30% (75 ng/ml)

*Kelley L, Swan N, Hughes DJ. - Colorectal Dis. 2013 Sep; 15(9): e512-21
 An analysis of the duplicate testing strategy of an Irish immunochemical FOBT
 colorectal cancer screening programme*



Biomedical Papers - 06/2012



**FIT test before colonoscopy - 815 people, two centers (VFN and
Comparison of a two-FIT tests and different cut-off values
FIT test - OC-Sensor micro**

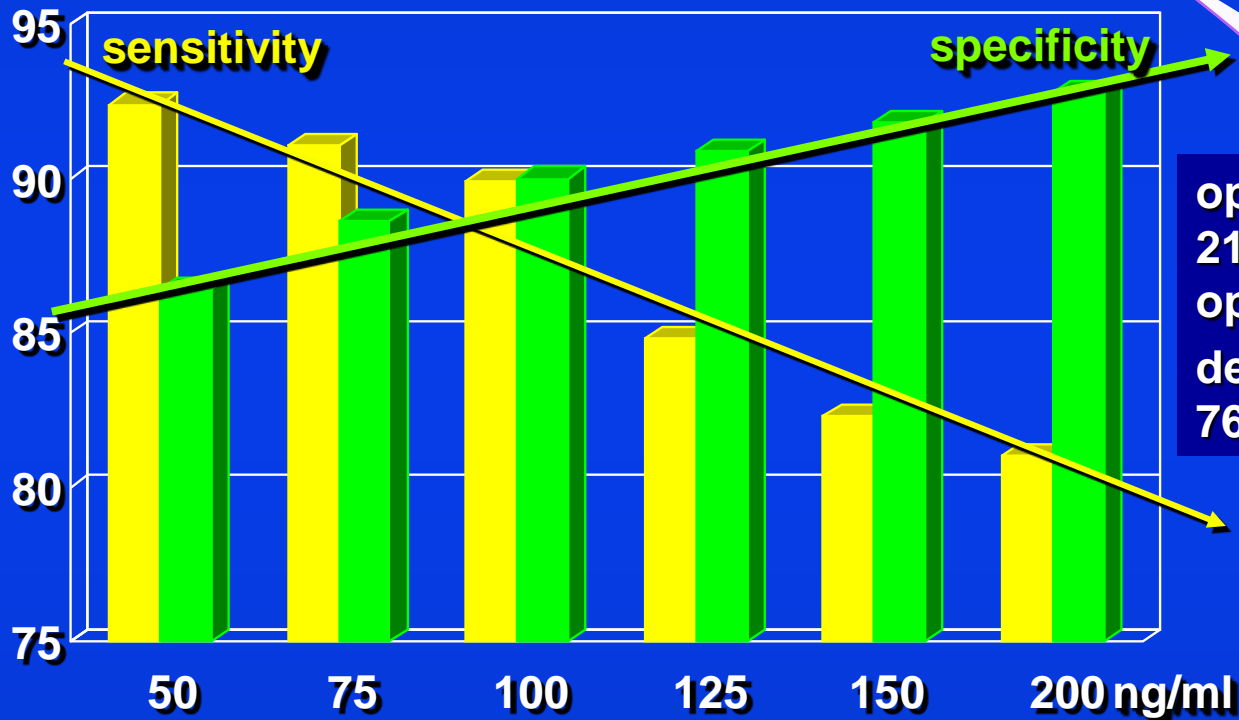
Hb cut off - ng/ml	50	75	100	125	150
Sensitivity CRC - FIT 1	88.6% (73.2 -96.7)	85.7% (69.7 - 95.1)	85.7% (69.7 - 95.1)	80.0% (63.1 - 91.5)	80.0% (63.1 - 91.5)
Sensitivity CRC - FIT 2	88.6% (73.2 -96.7)	85.7% (69.7 - 95.1)	85.7% (69.7 - 95.1)	85.7% (69.7 - 95.1)	85.7% (69.7 - 95.1)
Specificity CRC - FIT 1	87.2% (83.6 -90.2)	90.1% (86.8 - 92.8)	91.0% (87.9 - 93.6)	93.0% (90.1 - 95.2)	93.5% (90.6 - 95.6)
Specificity CRC - FIT 2	81.4% (77.3-85.0)	84.7% (80.9 - 88.1)	86.9% (83.3 - 90.0)	89.1% (85.7 - 91.9)	90.1% (86.8 - 92.8)

Recommendation of Czech pilot study - one FIT test with cut-off value 75 ng/ml

*Kovarova JT, Zavoral M, Zima T, Zak A, Kocna P. et al.
Biomed Pap 2012 Jun; 156(2): 143 - 150: Improvements in
colorectal cancer screening programmes - quantitative immunochemical
faecal occult blood testing - how to set the cut-off for a particular population.*



Cancer Epidemiol Biomarkers Prev - 2011

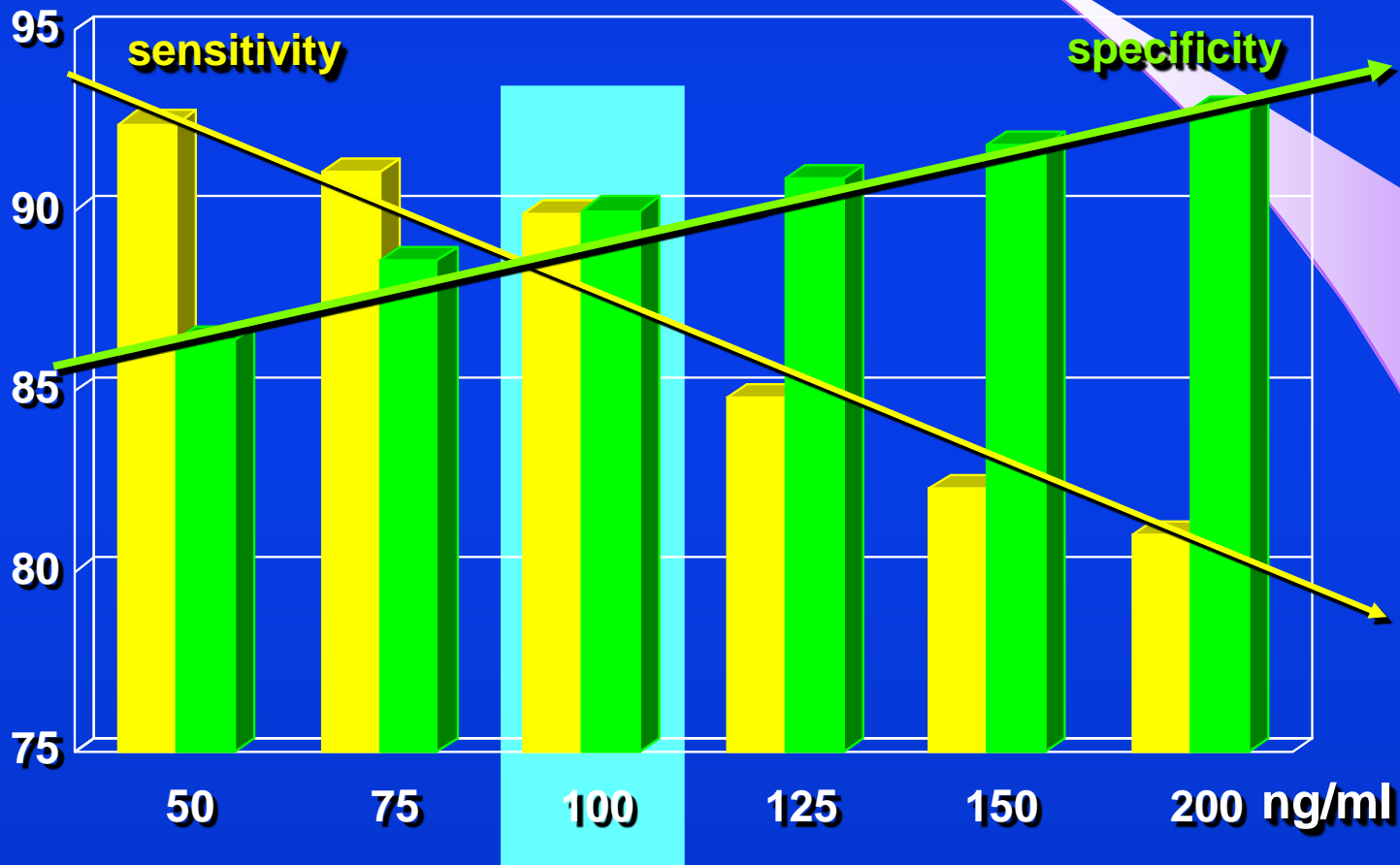


optimization FIT cut-off
2145 persons > 40 years
optimization of screening
define the minimum age
76 CRC found by colonoscopy

*Terhaar sive Droste JS, Oort FA, van der Hulst RW. et al.
Cancer Epidemiol Biomarkers Prev; 20(2) February 2011
Higher fecal immunochemical test cutoff levels: lower positivity rates
but still acceptable detection rates for early-stage colorectal cancers.*

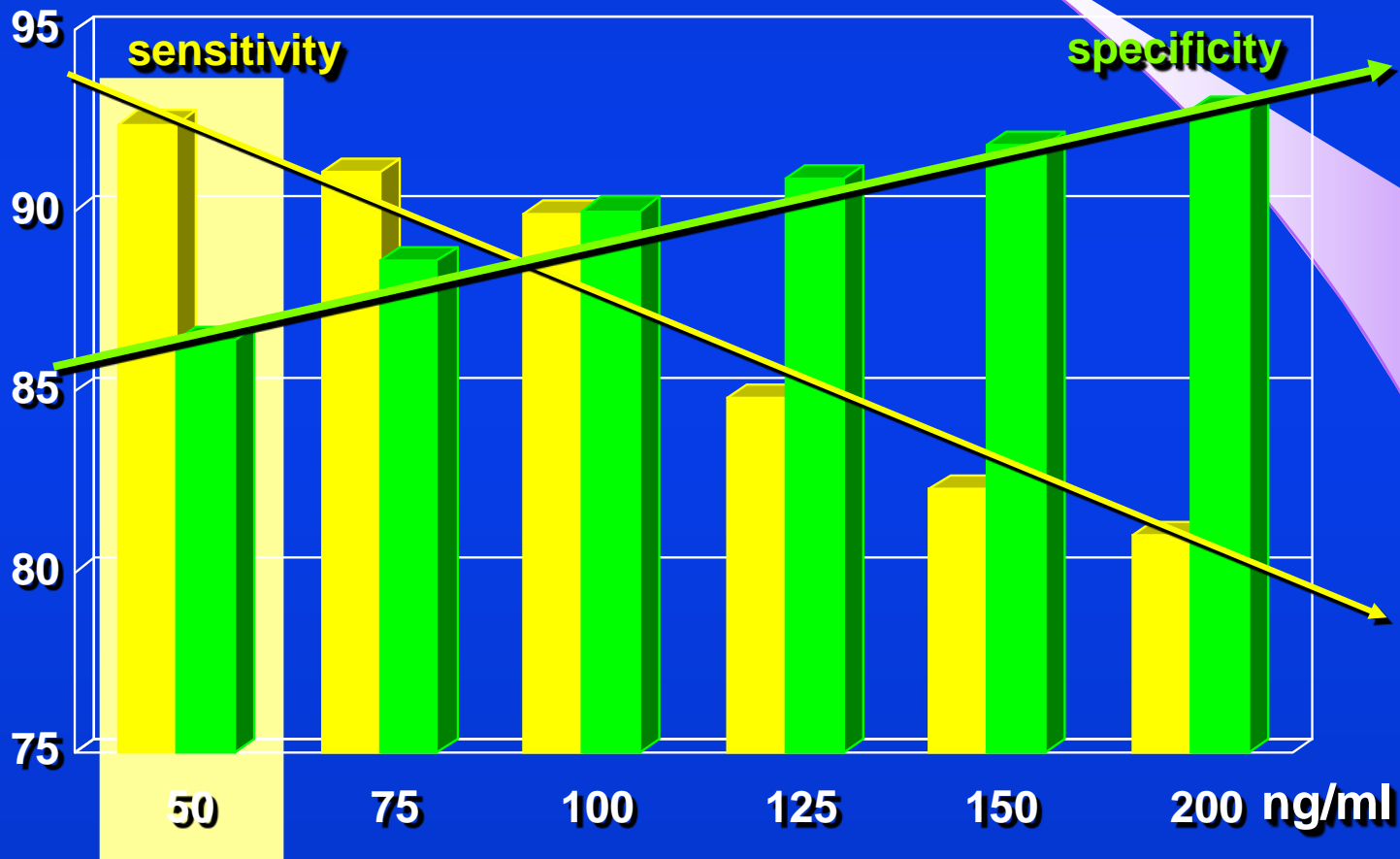


OC-Sensor Eiken recommended cut-off value **100 ng/ml**
with similar sensitivity & specificity approximately **90 %**



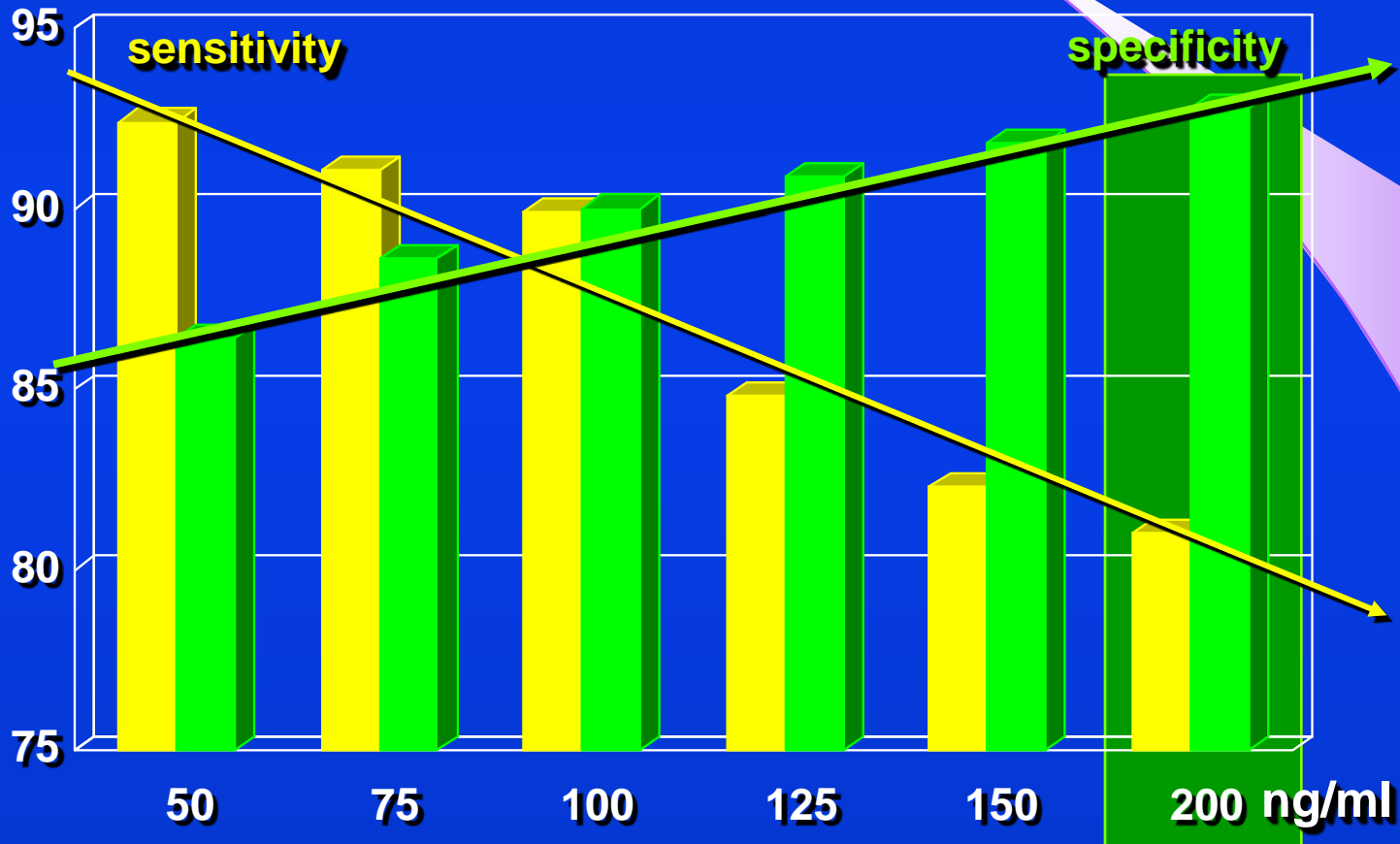


Optimizing cut-off for qiFOBT and indications for colonoscopy:
Indicate for colonoscopy, if possible, **all pathology**,
including 15% of healthy people? The **sensitivity could be 93%**.





Optimizing cut-off for qiFOBT and indications for colonoscopy:
Do **not indicate** for colonoscopy **any healthy** person,
increase **specificity to 93%** but **reduce the sensitivity by 15%**?



Increase cut-off to 200 ng/ml





FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

ANALYSE THE EUROPEAN EXPERIENCES
HIGHLIGHT QUANTITATIVE FIT
CLEARLY DEFINE CUT-OFF POSITIVITY

4. TASK

CHANGE THE Hb CONCENTRATION UNIT

UNITS & CUT-OFF VALUE (ng Hb/ml / mg Hb/g stool)

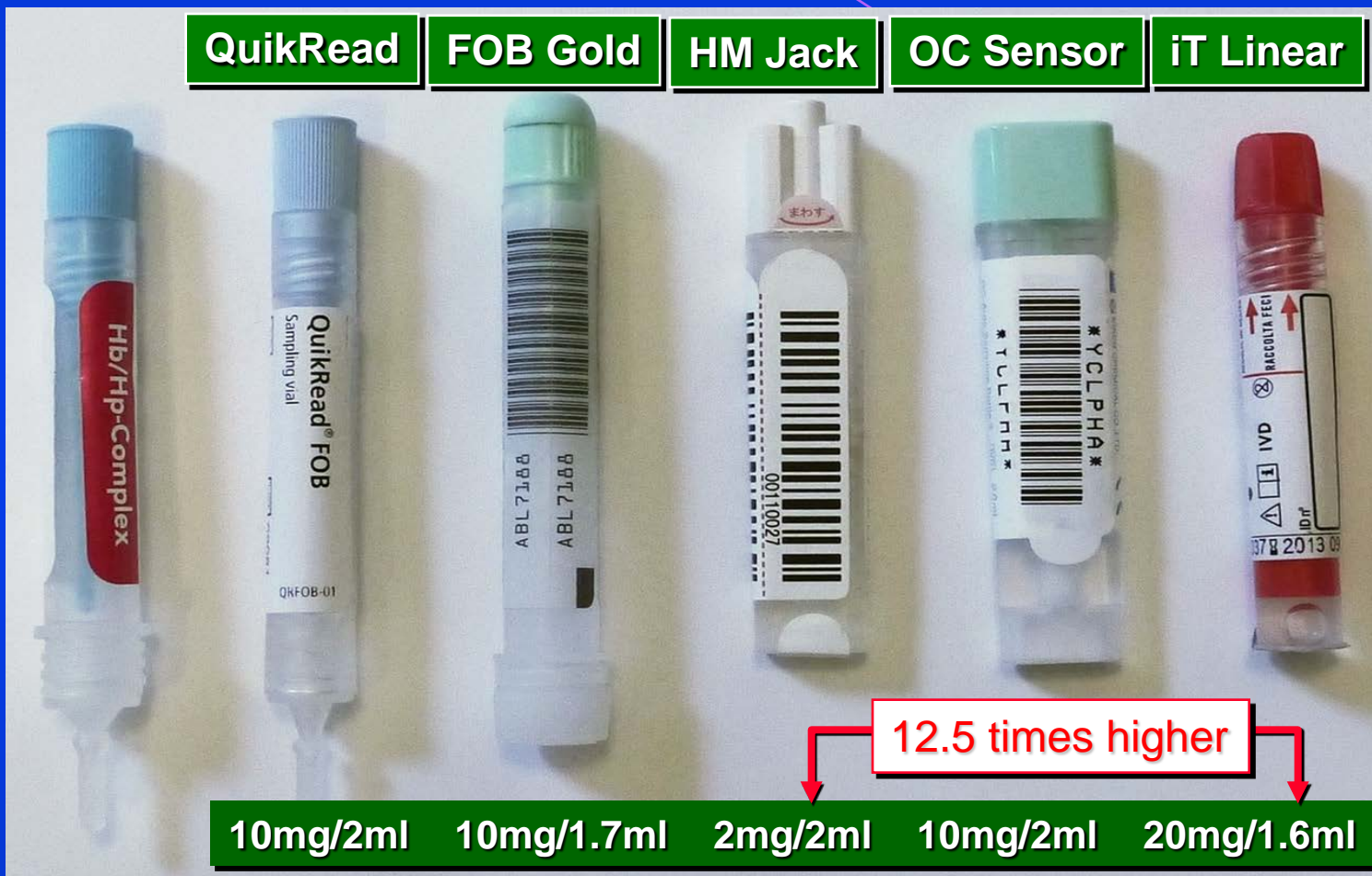
QuikRead

FOB Gold

HM Jack

OC Sensor

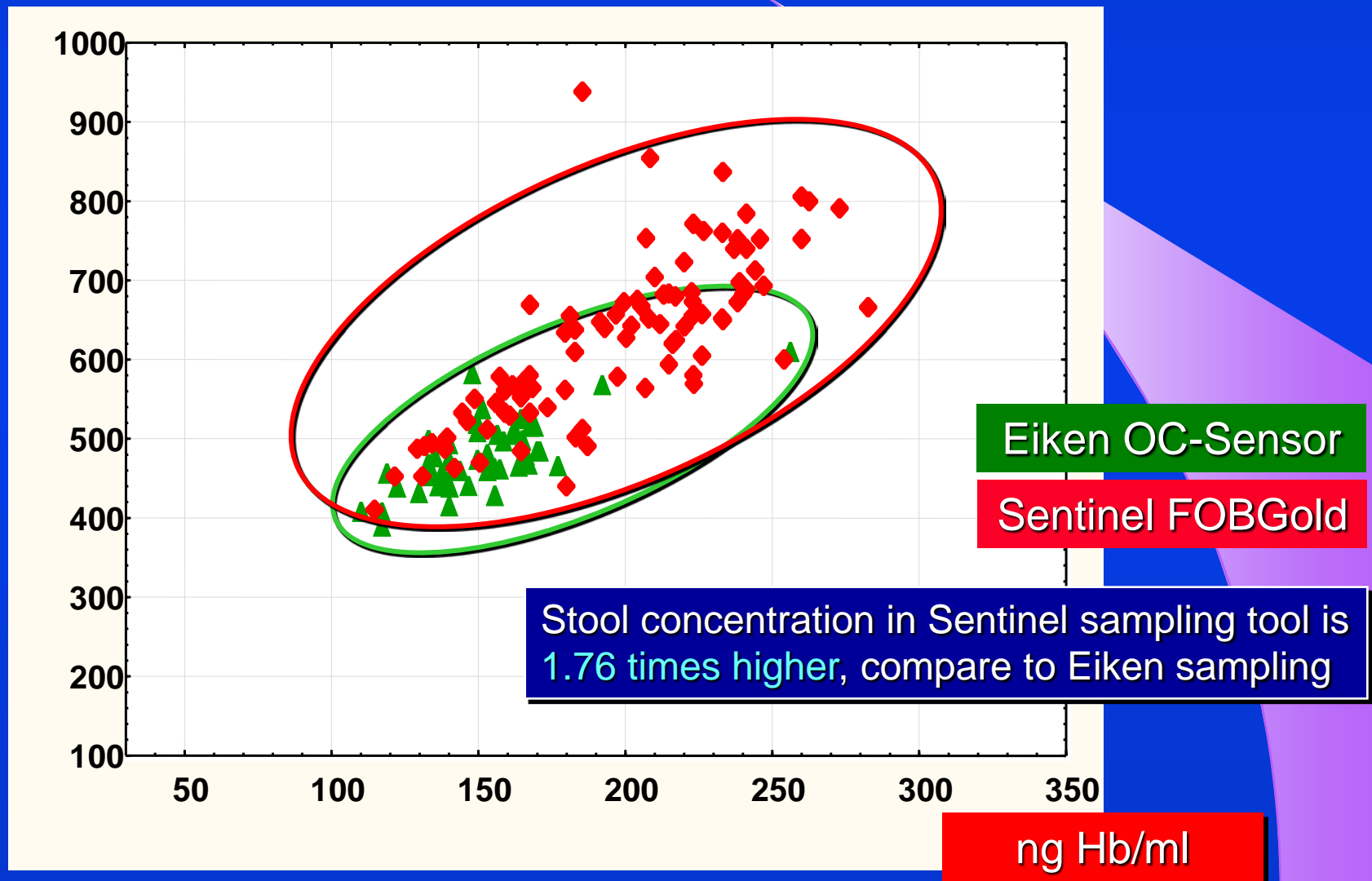
iT Linear



VARIABLE SAMPLING DEVICES FOR FIT, WITH DIFFERENT CONCENTRATION OF STOOL IN THE SAMPLING SOLUTION

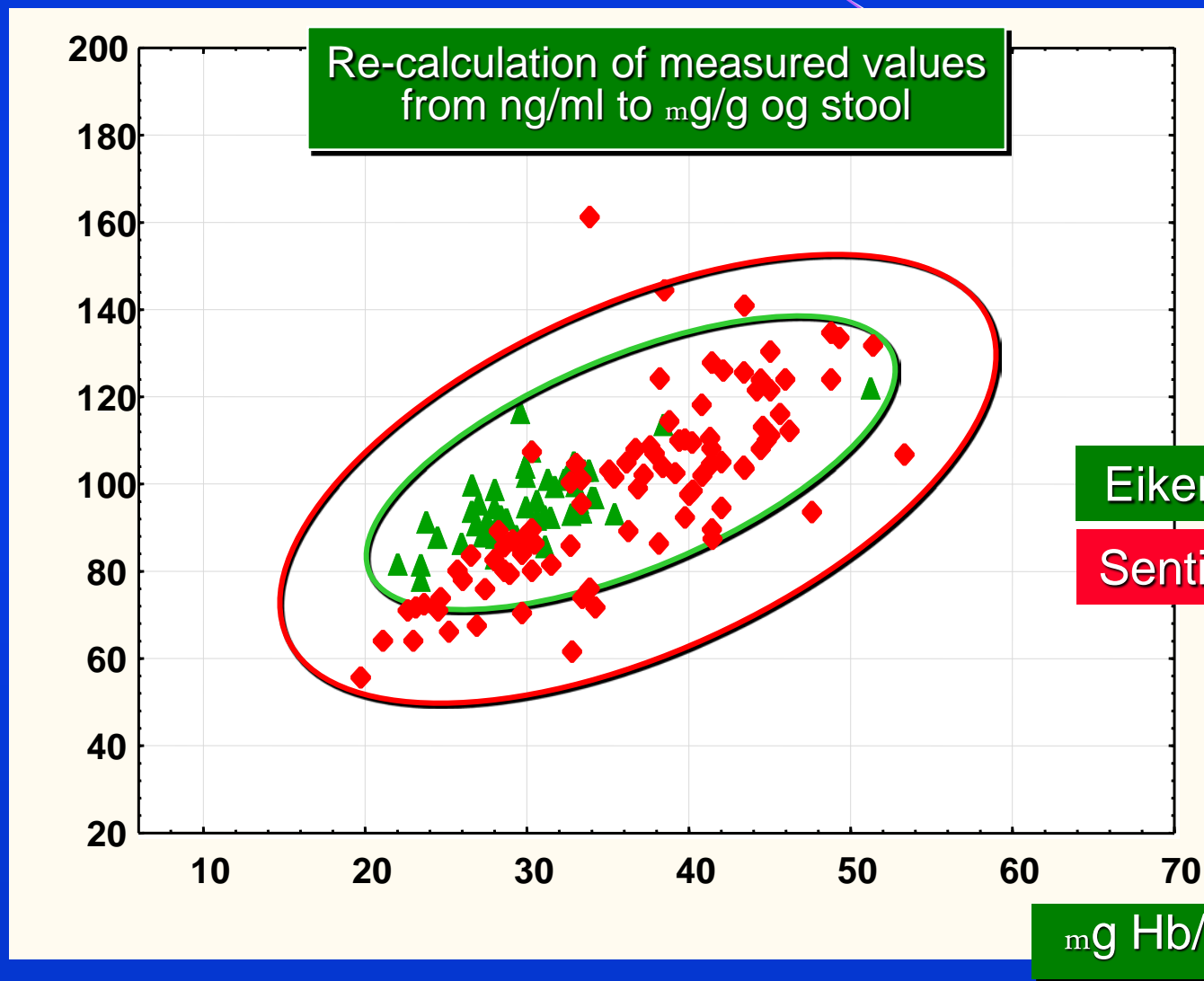


UNITS & CUT-OFF VALUE (ng Hb/ml / mg Hb/g stool)





UNITS & CUT-OFF VALUE (ng Hb/ml / mg Hb/g stool)





FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

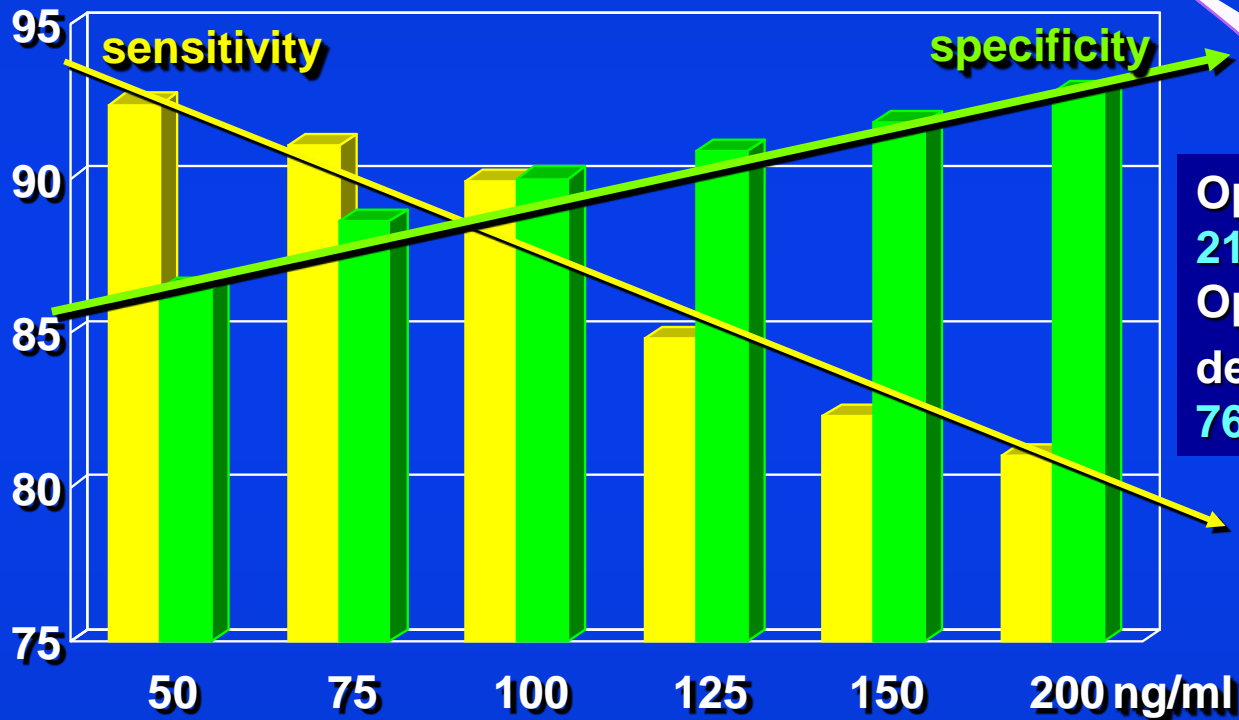
**ANALYSE THE EUROPEAN EXPERIENCES
HIGHLIGHT QUANTITATIVE FIT
CLEARLY DEFINE CUT-OFF POSITIVITY
CHANGE THE H_b CONCENTRATION UNIT**

5. TASK

MODIFY THE SCREENING RULES



Cancer Epidemiol Biomarkers Prev - 2011



Optimization FIT cut-off
2145 persons > 40 years
Optimization of screening
define the minimum age
76 CRC found by colonoscopy

*Terhaar sive Droste JS, Oort FA, van der Hulst RW. et al.
Cancer Epidemiol Biomarkers Prev; 20(2) February 2011
Higher fecal immunochemical test cutoff levels: lower positivity rates
but still acceptable detection rates for early-stage colorectal cancers.*



Clinical Gastroenterol Hepatol. - 06/2012



Local studies with 9,800 inhabitants, 3,145 aged 50-74 years
FIT test OC-Sensor, 100 ng/ml, performed 2001-2003-2006-2008
Participation in four cycles from 56% to 63%, 48.1% of all 4 cycles

Cycle	2001	2003	2006	2008
Invited	2959	2566	2056	1862
Participated	2161	1520	971	713
FIT positivity	92 (4,3%)	62 (4,1%)	33 (3,4%)	36 (5,1%)
CRC+AA detected	35	18	10	12

Local studies with 4 cycles lasting 8.5 year with the participation
of 48% of the population in all cycles
Screening - quantitative FIT with cut-off of 100 ng/ml

*Crotta S, Segnan N, Paganin S, et al. Clin Gastro.Hepato. 2012;10(6):633-638
High rate of advanced adenoma detection in 4 rounds of colorectal cancer
screening with the fecal immunochemical test.*



DETECTED COLORECTAL CANCERS

AGE 50 – 90 YEAR (n = 4145)

ng/ml	n	FIT +
75	292	7.05 %
> 1000	47	1.13 %

Patients of the Center for Preventive Care & GPs

Detected CRC – 11/64

AGE 50 – 90 YEAR (n = 6561)

ng/ml	n	FIT +
75	1287	19.62 %
> 1000	311	4.74 %

Patients specialized hospital clinics outpatient and inpatients

Detected CRC – 53/64

Kocna P., Májek O., Blaha M., Zima T., Dušek L.: Characteristics of colorectal cancer detected by quantitative faecal haemoglobin test in hospital opportunistic screening. WorldLab 2014, June, Istanbul



FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

ANALYSE THE EUROPEAN EXPERIENCES
HIGHLIGHT QUANTITATIVE FIT
CLEARLY DEFINE CUT-OFF POSITIVITY
CHANGE THE Hb CONCENTRATION UNIT

5. TASK

MODIFY THE SCREENING RULES

- could we change screening age limits **since 40 year** ?
- could we include **annually FIT test** even after colonoscopy ?
- could we increase number of FIT tested subjects including **indications from specialized hospital clinics** - diabetology, cardiology etc ?



FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

**ANALYSE THE EUROPEAN EXPERIENCES
HIGHLIGHT QUANTITATIVE FIT
CLEARLY DEFINE CUT-OFF POSITIVITY
CHANGE THE Hb CONCENTRATION UNIT
MODIFY THE SCREENING RULES**

6. TASK

INCREASE EDUCATION UNIVERSALLY

EDUCATION ON IMPORTANCE OF FIT VALUES

1/11

9.1%

1/8

12.5%

False negativity - is 15.62 %
(cut-off value 75 ng/ml recommended by the CRC Commission)
The sensitivity for CRC - is 84.38 %

The percentage of unrecognized cancers - 17.6%
for one test with cut-off 75 ng/ml

3/16

18.7%

5/29

17.2%

Kelley L, Swan N, Hughes DJ. - *Colorectal Dis.* 2013 Sep; 15(9): e512-21
An analysis of the duplicate testing strategy of an Irish immunochemical FOBT
colorectal cancer screening programme



EDUCATION ON IMPORTANCE OF FIT VALUES

Man 66 year (born 1946)

29.4.2009 - FIT: 0 ng/ml

8.8.2011 - FIT: 1355 ng/ml

NO reaction

11.7.2012 - FIT: 1854ng/ml

14.8.2012 - colonoscopy, sigmoid CRC

6.9.2012 - tumour resection, stage 3

FIT - surgery time: 12.96 months

Two cases with
FIT value 0 ng/ml and CRC

Man 72 year (born 1941)

13.5.2010 - FIT: 0 ng/ml

14.11.2012 - FIT: 741 ng/ml

NO reaction

5.3.2013 - FIT: 1637 ng/ml

10.4.2013 - colonoscopy, sigmoid CRC

13.5.2013 - tumour resection, stage 3

FIT - surgery time: 5.92 months

Kocna P., Májek O., Blaha M.: Clinical and epidemiological importance of analyzing laboratory data with the data source I-COP.

Sborník Medsoft 2014 - March 25; 110-122

on-line: <http://creativeconnections.cz/medsoft/2014.html>



EDUCATION ON IMPORTANCE OF FIT VALUES

- ✓ FIT value 0 ng/ml does not mean, that there is no cancer
- ✓ Quantitative FIT with sensitivity 85% does not recognize 15% of CRC
- ✓ Repeated FIT screening, annually, are very important
- ✓ FIT value more than 1000 ng/ml being almost reliably indicates cancer and colonoscopy should be performed as soon as possible



FOBT - THE FUTURE

PREMISE - VISIONS - SIX MAIN TASKS

- ✓ ANALYSE THE EUROPEAN EXPERIENCES
- ✓ HIGHLIGHT QUANTITATIVE FIT
- ✓ CLEARLY DEFINE CUT-OFF POSITIVITY
- ✓ CHANGE THE Hb CONCENTRATION UNIT
- ✓ MODIFY THE SCREENING RULES
- ✓ INCREASE EDUCATION UNIVERSALLY



THANK YOU FOR YOUR ATTENTION