



QUALITY IN ENDOSCOPY

ESGE / ESDO SYMPOSIUM

COLONOSCOPY &  
COLONIC NEOPLASMS

Prague, Czech Republic April 17-18, 2015

# Why is quality important in endoscopy? Key quality measures & standards

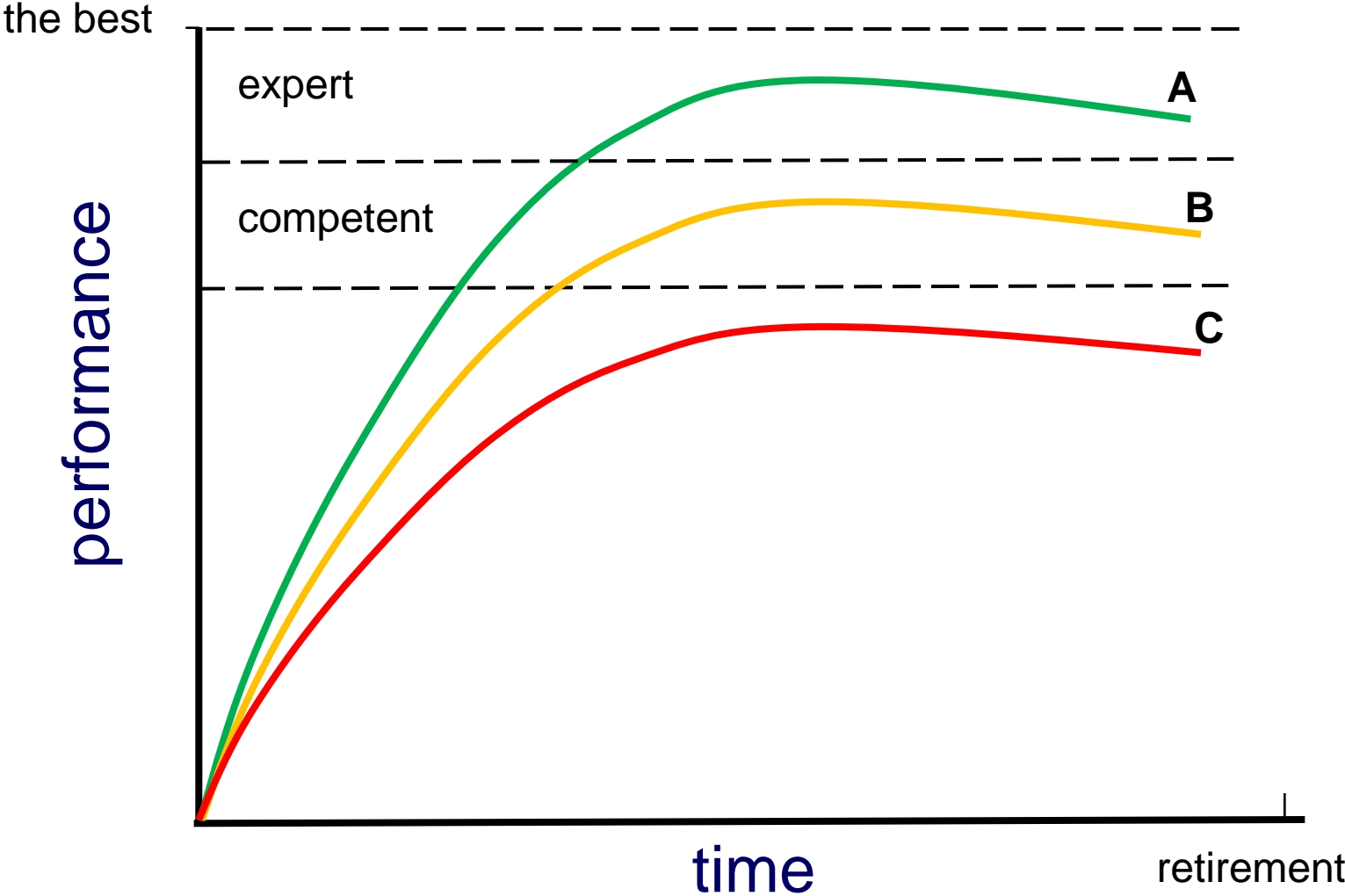
Session No.: 3

Name: Roland Valori



**Would you be prepared to  
have a colonoscopy done by a  
colonoscopist from your country  
selected at random?**

# Colonoscopy performance



# Statement 1: it is possible to define expert colonoscopy

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Statement 2: if I need a colonoscopy I will insist an expert does the procedure

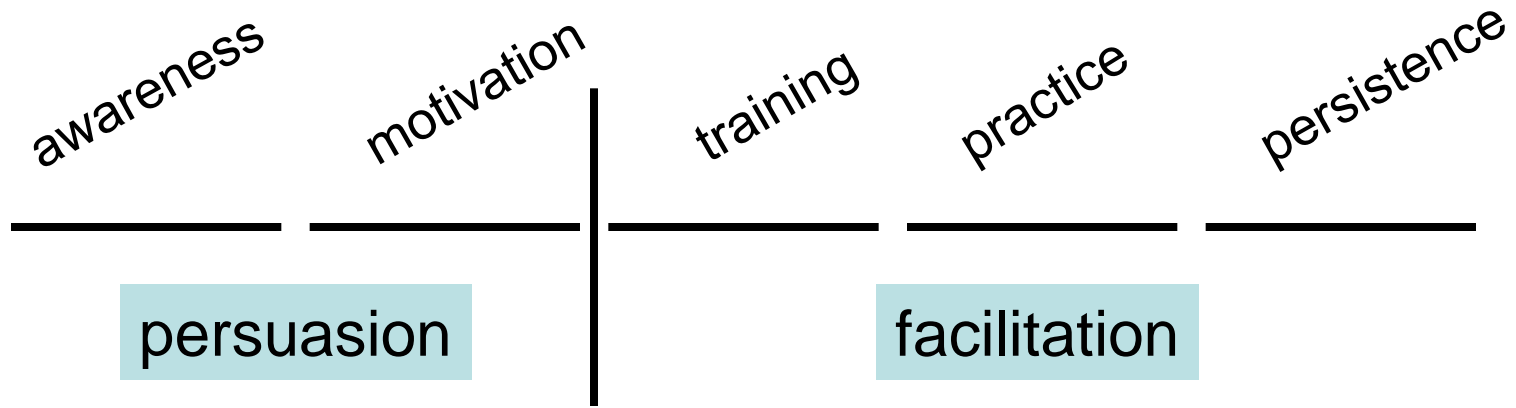
1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Statement 3: it is possible for most (90+%) colonoscopists to become expert

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

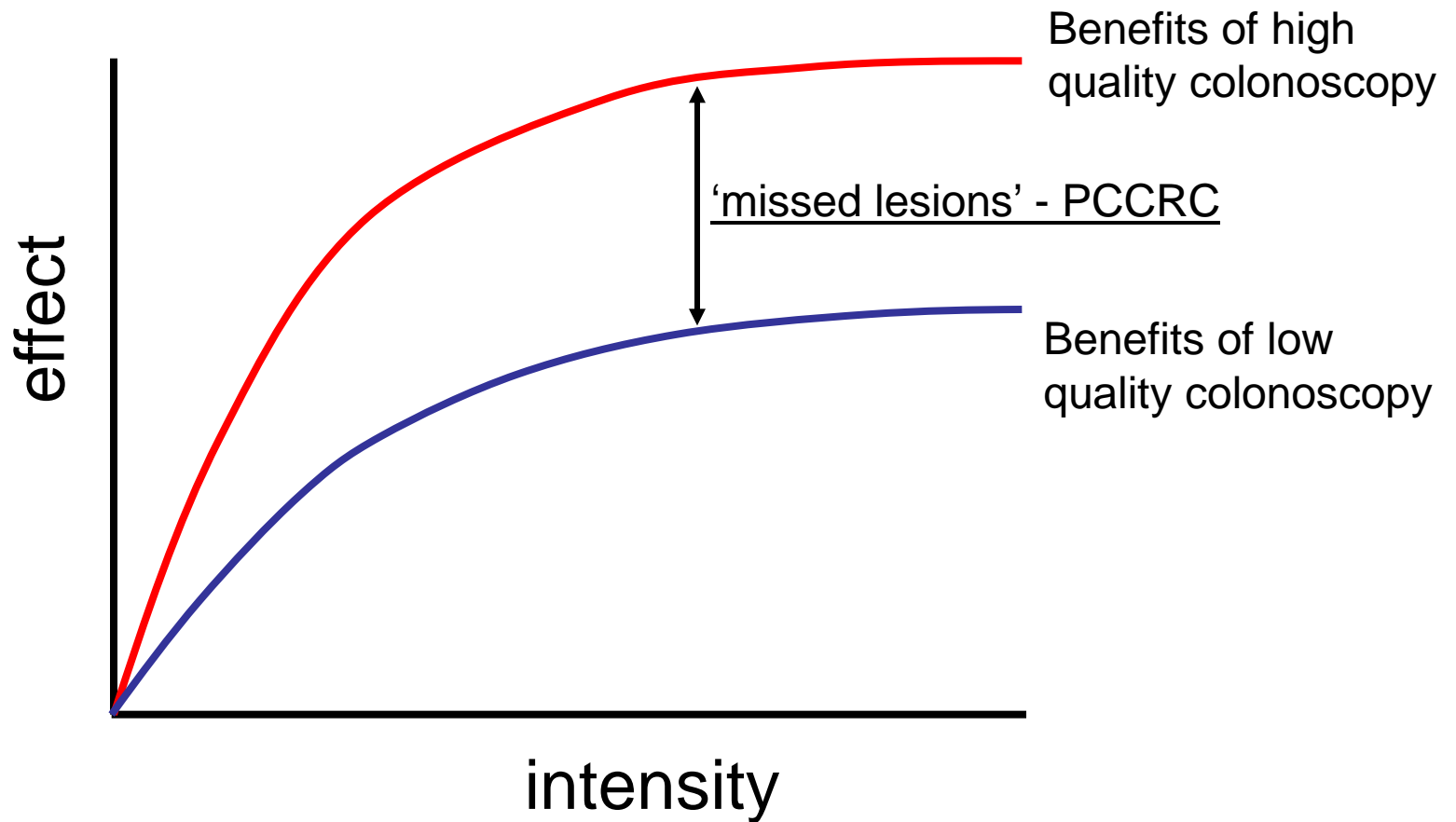
# Becoming an expert colonoscopist

unconsciously inexpert ————— consciously inexpert ————— consciously expert



*Effective Health Care 1999;5(1)*

# Benefits of high and low quality colonoscopy

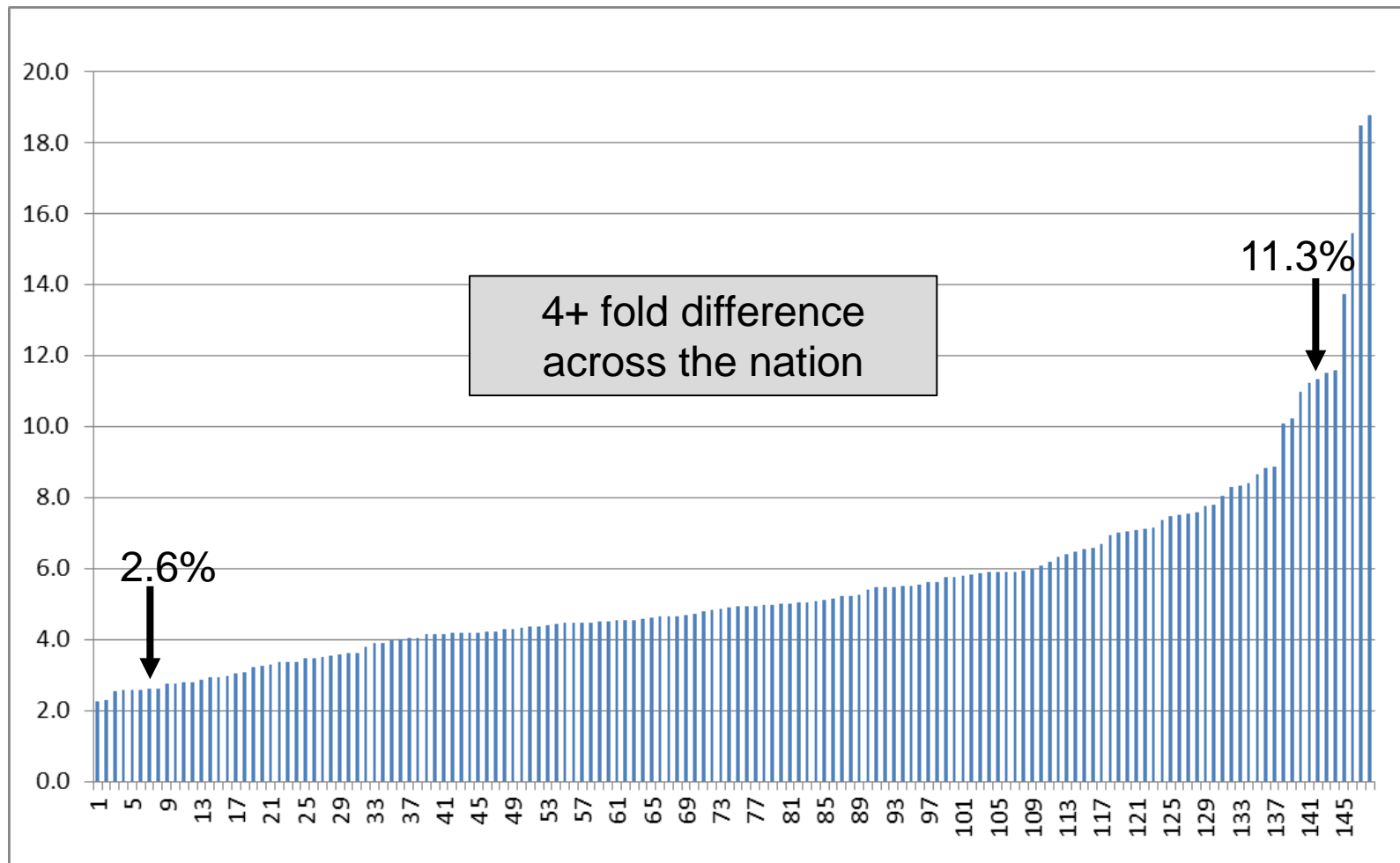




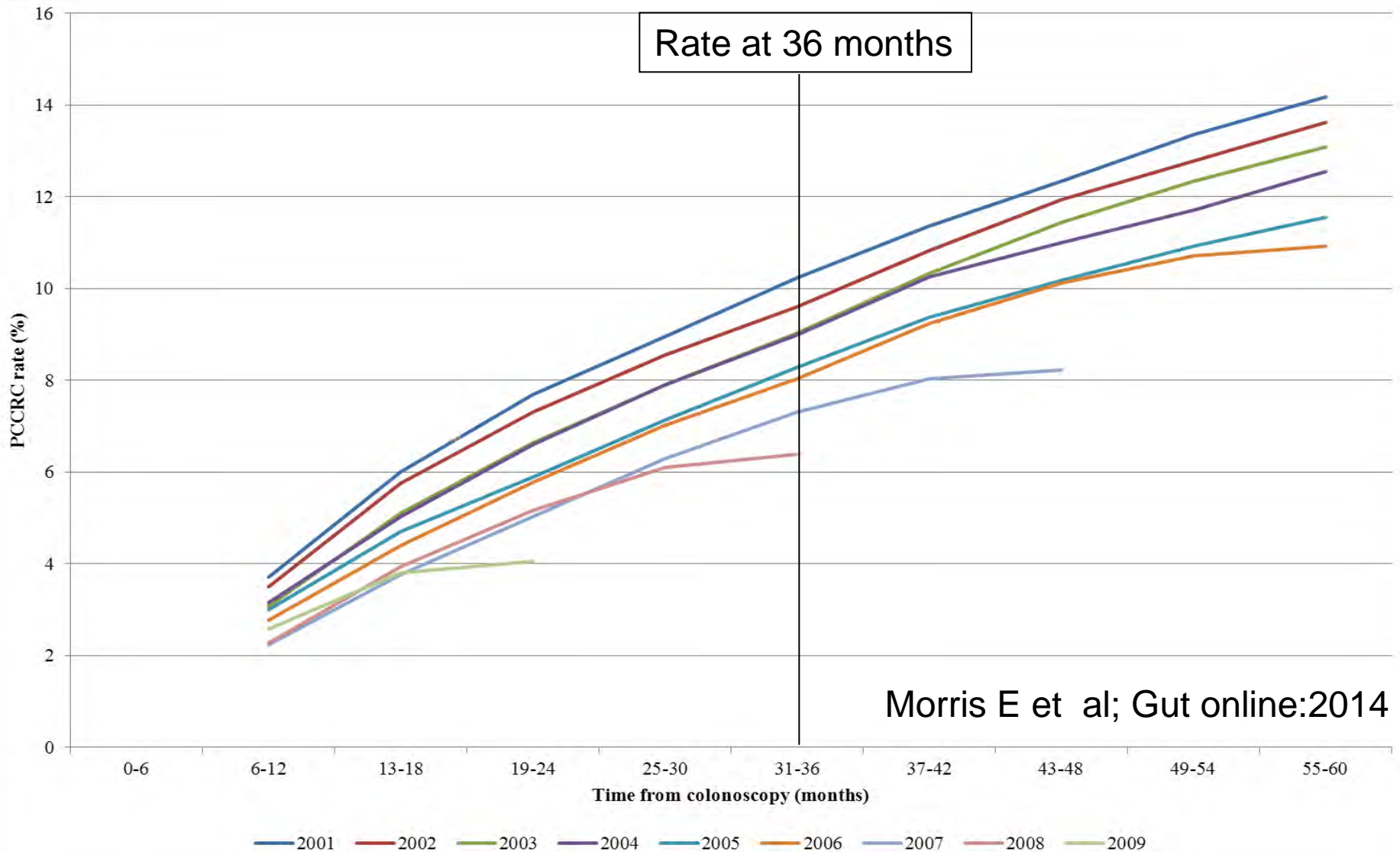
# Post Colonoscopy CRC (PCCRC)

- rates for 149 English NHS hospitals

PCCRC %  
=  $X/X+Y$



# PCCRC rates over time in the English NHS

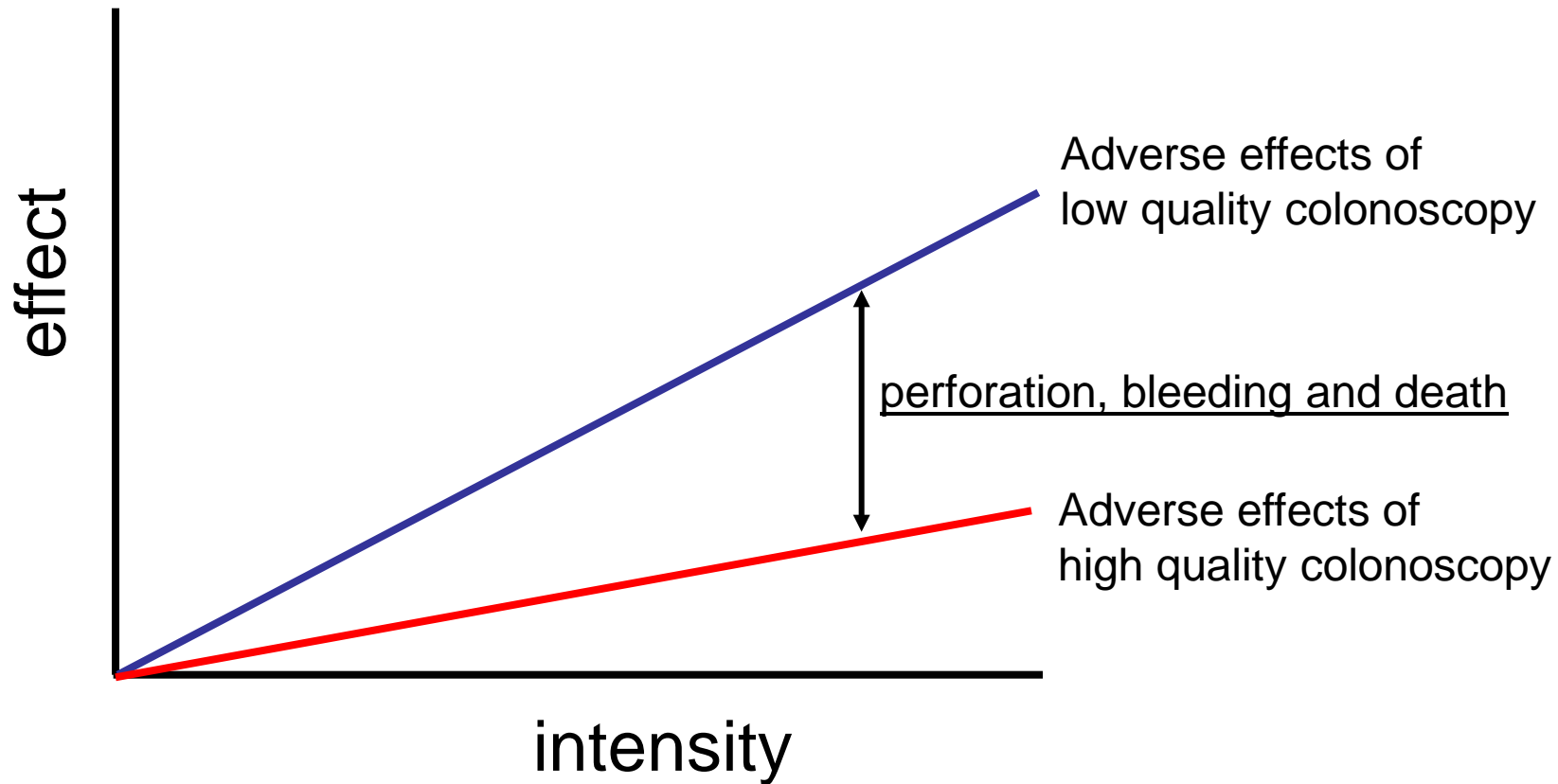


# What is different about the right colon?



- Further away
- More difficult to cleanse
- Pathology is less obvious and ?more aggressive
- Therapy is more difficult and more dangerous

# Risks of high and low quality colonoscopy



# AVOIDABLE HARM

- Pain
  - Sedation risks
  - Perforation
  - Bleeding
  - Splenic rupture
  - Death
- If none of these measures is captured there is no:
    - benchmark
    - idea of variation

*Cotton PB, Eisen GM, Aabakken L, et al. A lexicon for endoscopic adverse events: report of an ASGE workshop.*

*Gastrointestinal Endoscopy 2010;71:446–54*

*Denis B, Gendre I, Sauleau EA, Lacroute J, Perrin P. Harms of colonoscopy in a colorectal cancer screening programme with faecal occult blood test: A population-based cohort study.*

*Digestive and Liver Disease 2013;45:474–480*

# Unplanned admissions within 8 days of a colonoscopy – Gloucestershire 1/4/14 - 31/12/14

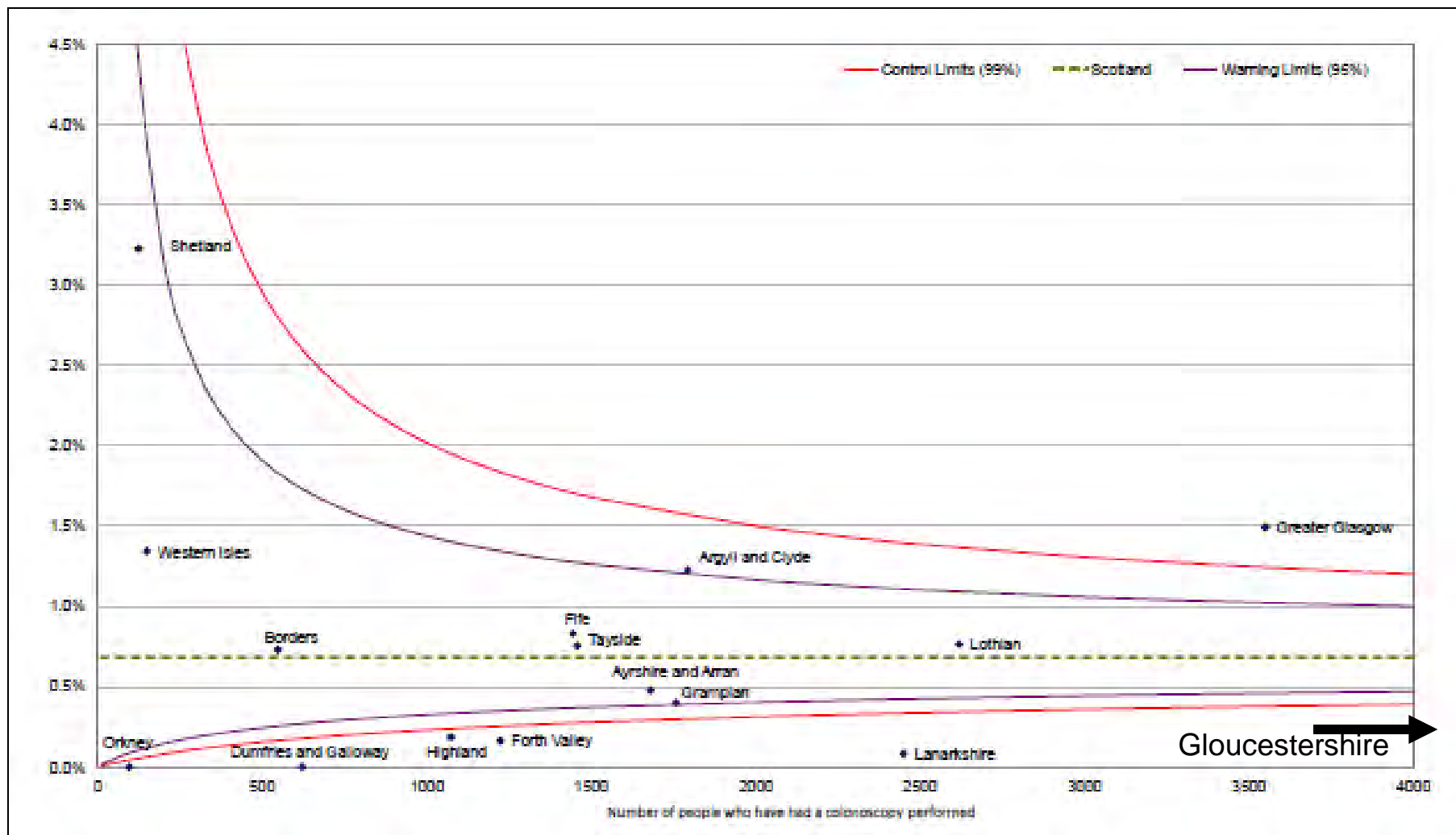
9 months n = 4648 colonoscopies	Related to procedure		
	Yes	Possibly	No
Bleeding	6*		
Pain		1	2
palpitations			1
ACS			1
Total	6	1	4

Rate of admission related to procedure =  $7/4648 = 0.15\% = 1:670$

All patients well on discharge

\*one patient had 2 unit transfusion; another repeat colonoscopy + clips

# FOBT colonoscopic complications – % of people requiring admission for complications arising directly from the colonoscopy – Scotland



# English FOBT screening – up to end 2014

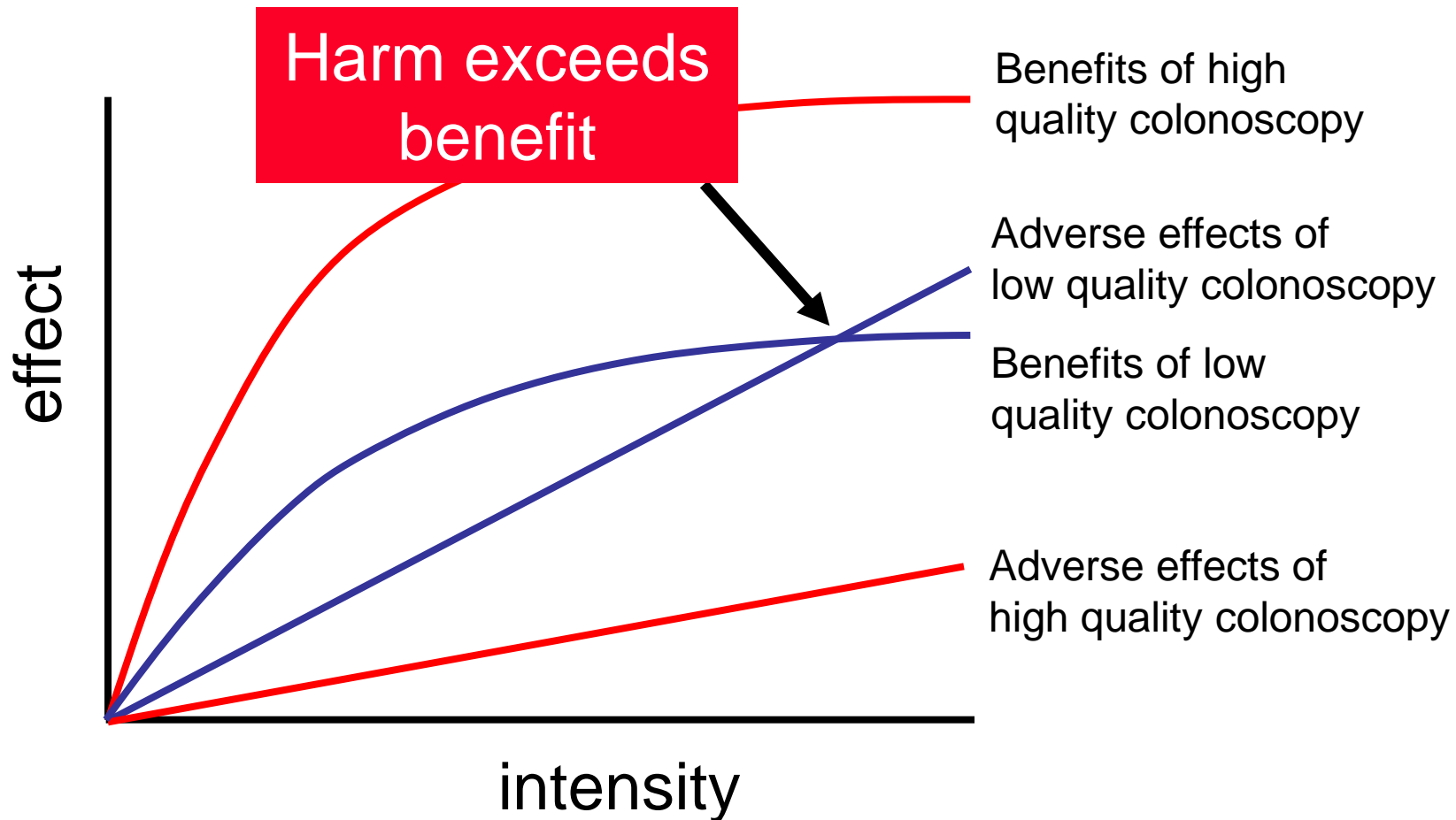
<u>Invites and Test Kits</u>	<i>All rounds</i>
Total Kits Sent	25,715,391
Total Kits Returned	14,810,665
Total Definitive Abnormal	268,227

<u>Uptake and Positivity</u>	<i>All rounds</i>
FOBt Screening Uptake	55.87%
FOBt Screening Positivity	1.99%
Colonoscopy Uptake Rate	83.31%

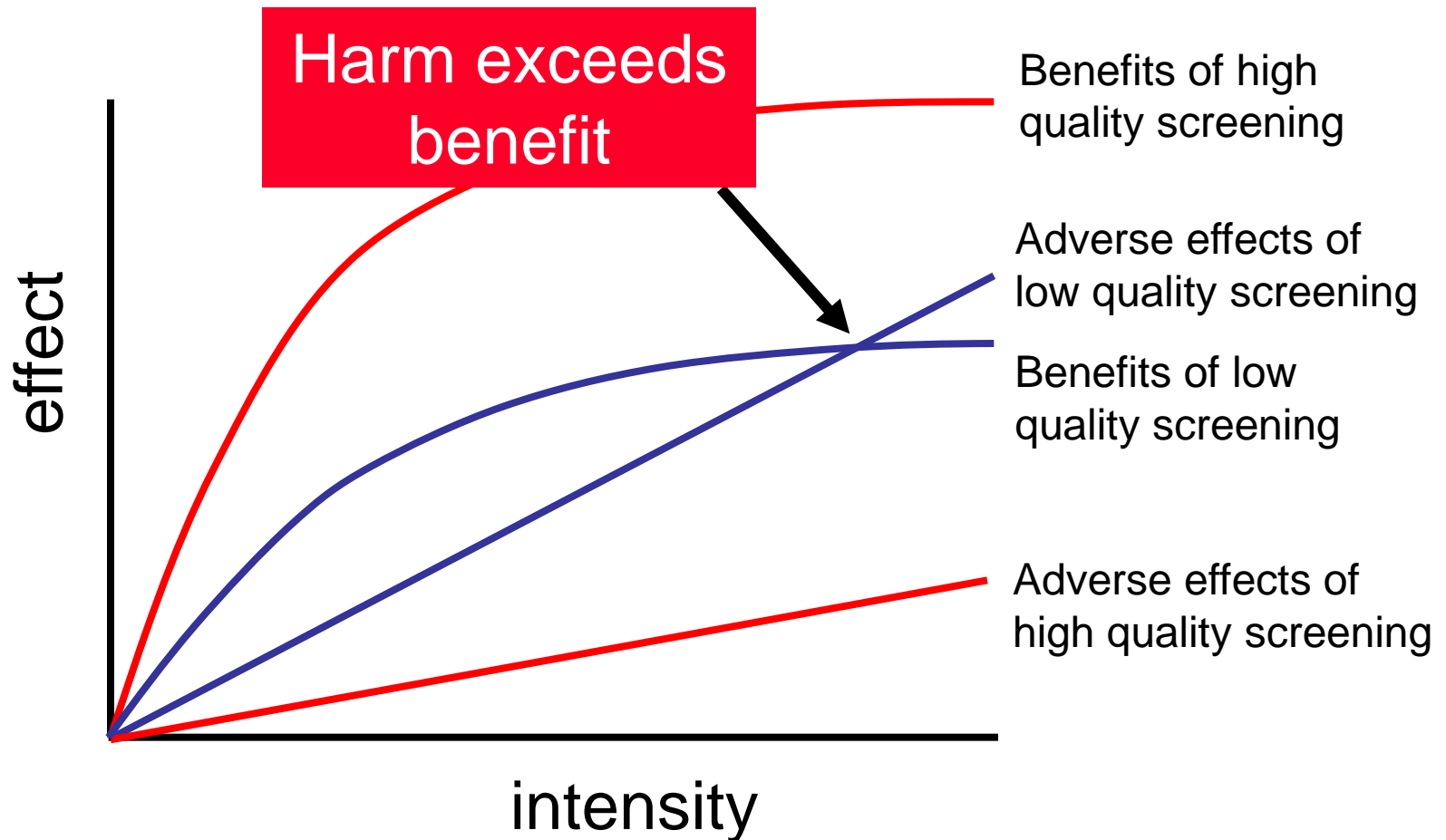
272,518 colonoscopies



# Benefits and risks of high and low quality colonoscopy



# Benefits and risks of high and low quality screening



## New patient, 62, female – seen four days ago

- Referred from out of region
- Anterior resection for rectal cancer in 1999
- Regular surveillance colonoscopies
- Extended right hemicolectomy for caecal polyp 2011
- Now has diarrhoea, urgency and incontinence

# A European guide to help us

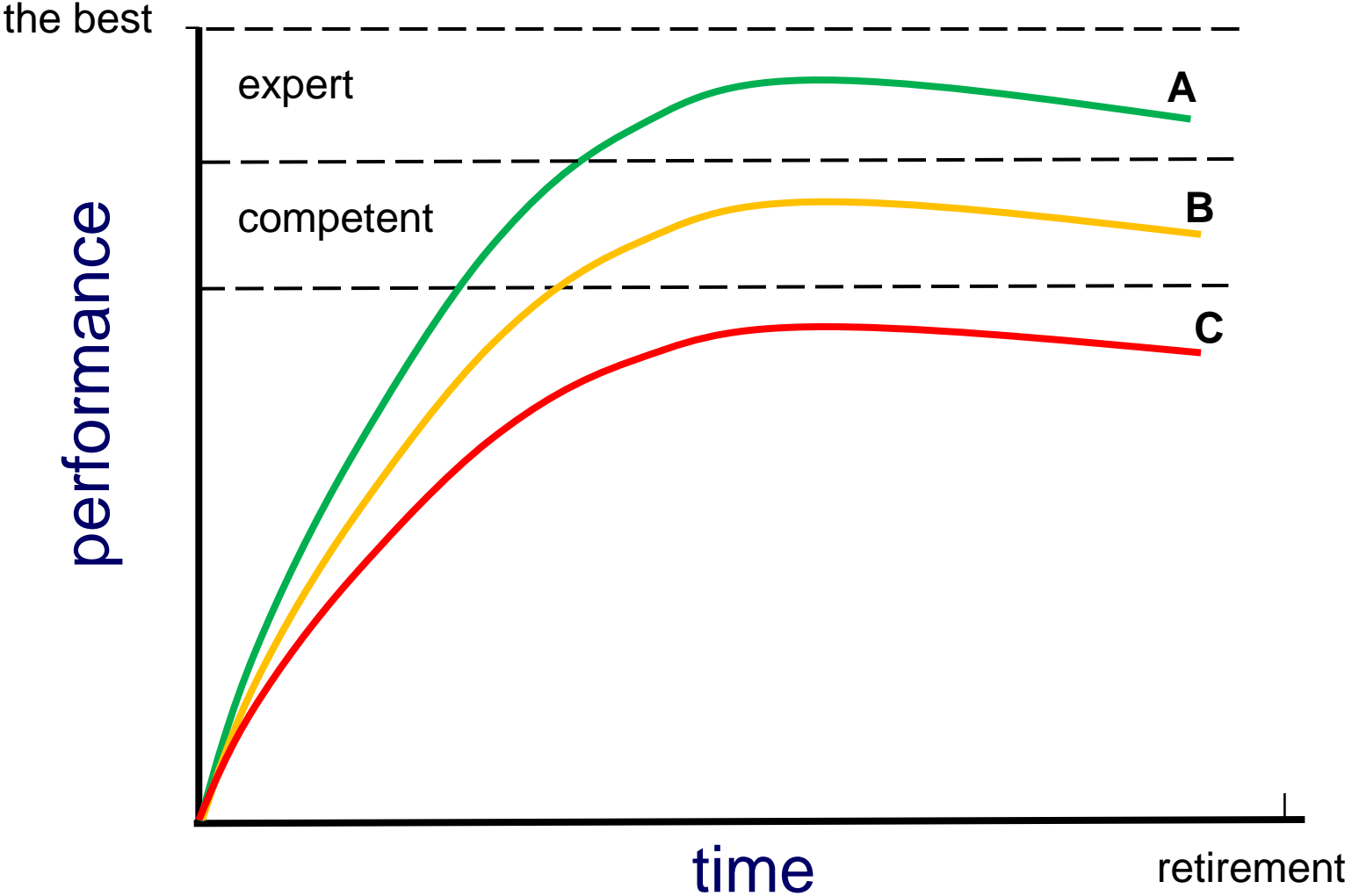
European guidelines for quality assurance in colorectal cancer screening and diagnosis. First Edition.

Quality assurance in endoscopy in colorectal cancer screening and diagnosis. *Endoscopy* 2012; 44: 1–18

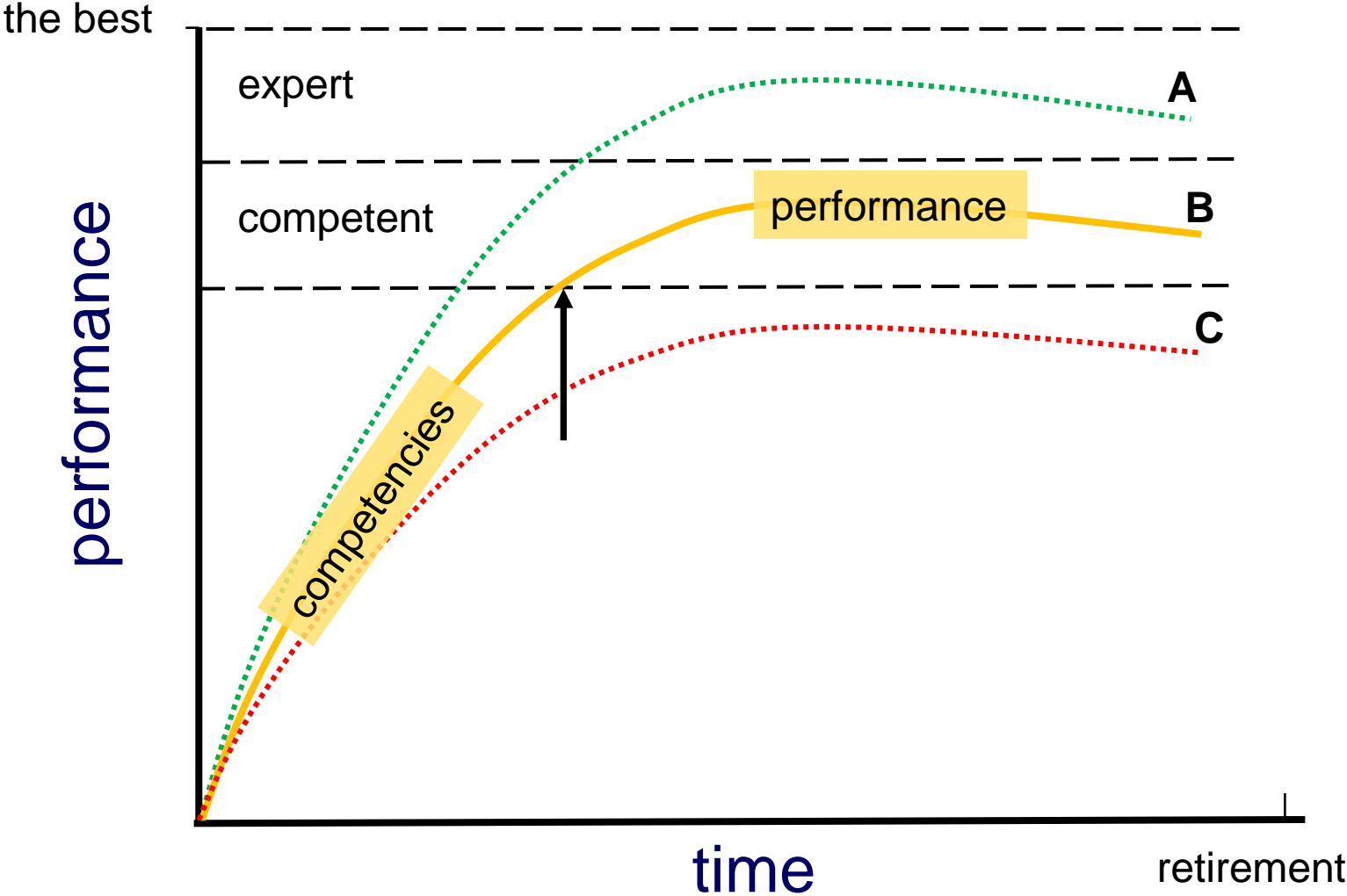
Statement 2: if I need a colonoscopy I will insist an expert does the procedure

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

# Colonoscopy performance



# Colonoscopy: competence and performance

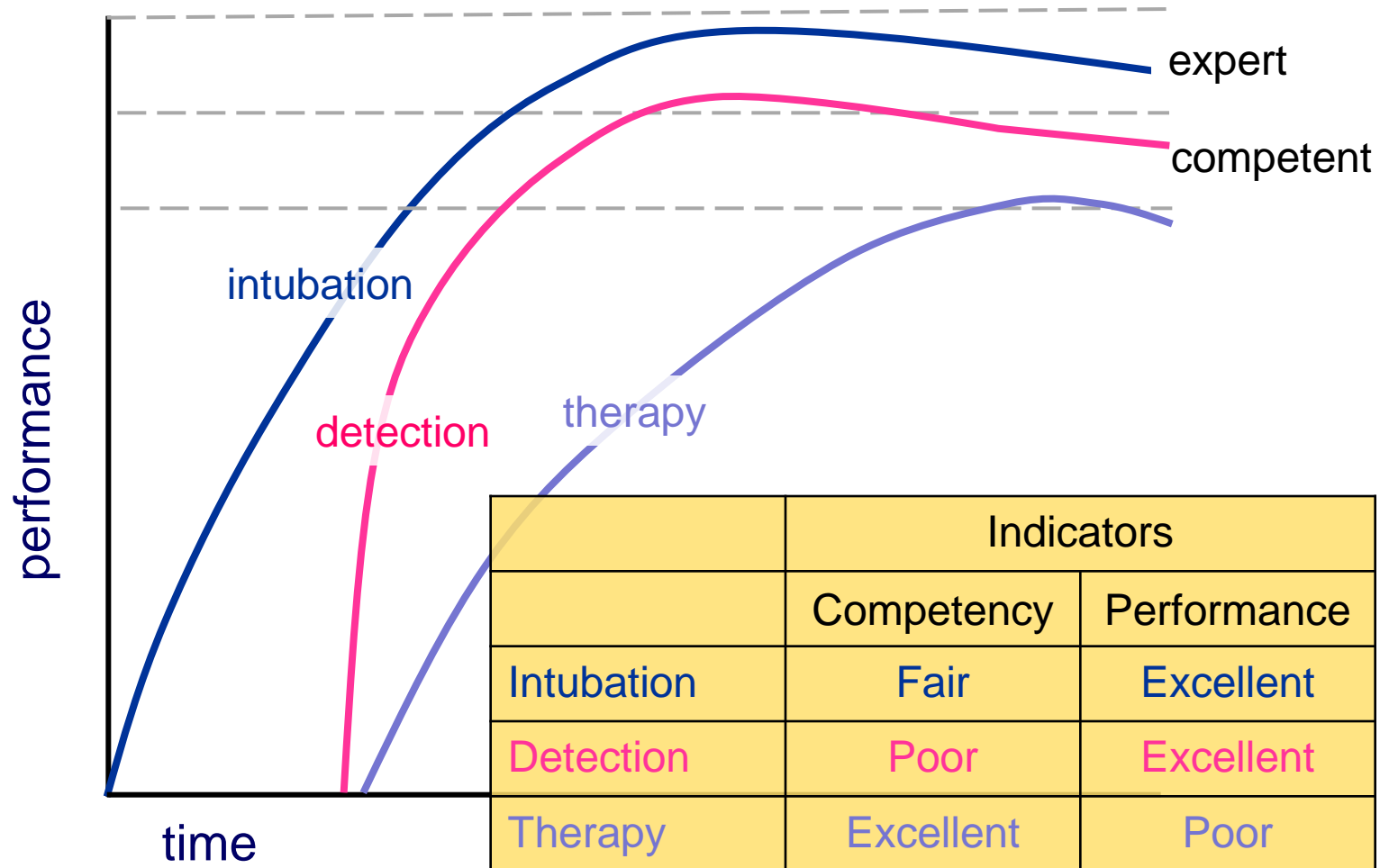


# Colonoscopy has three components

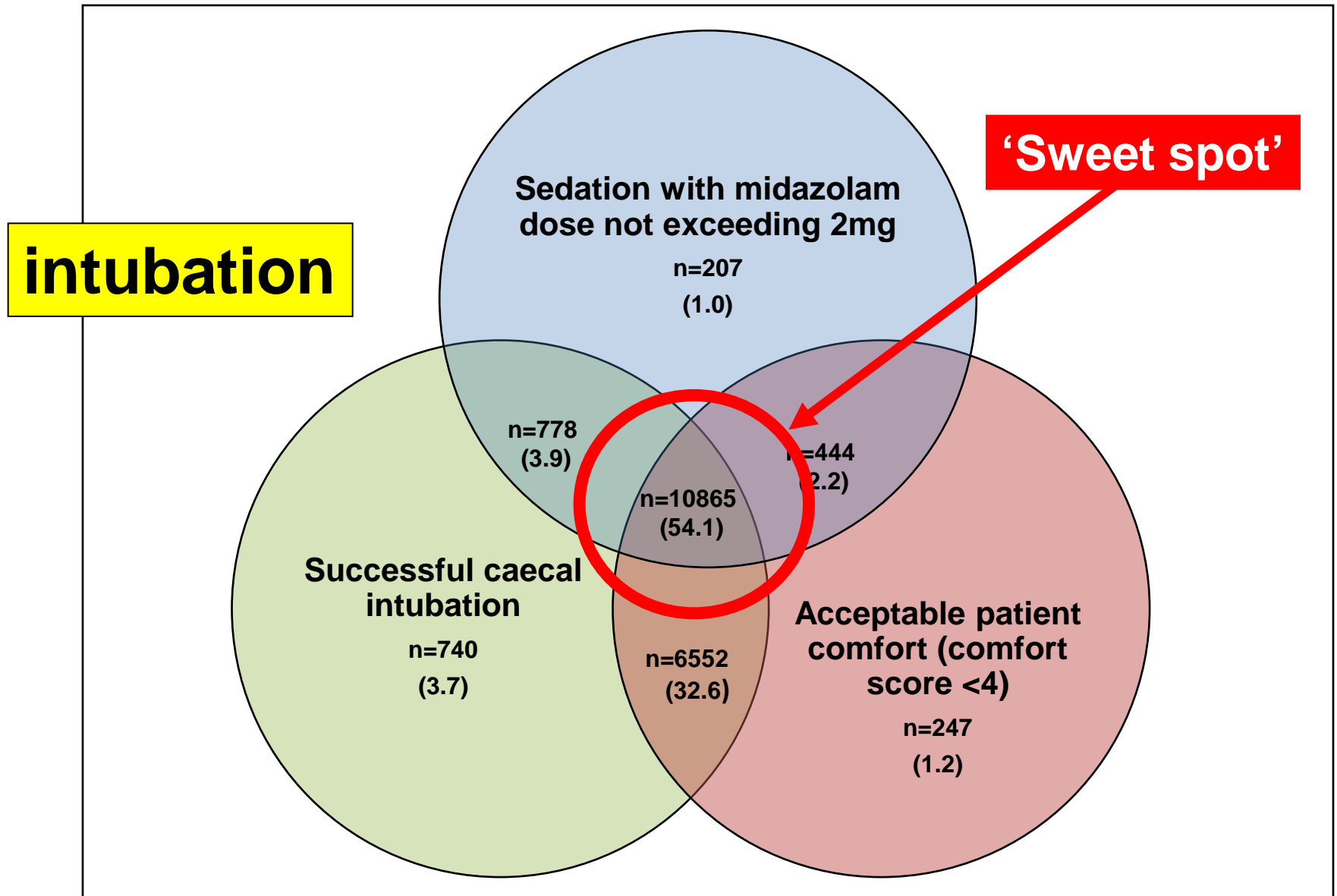
- Complete and comfortable intubation
- Detection of all pathology
- Safe and complete therapy



# Acquiring colonoscopy and polypectomy skills



# Composite measure of intubation (CIR<sup>c</sup>)



Data from UK national audit performed in 2011; NB opiate used in majority of sedated patients

# CIR<sup>C</sup> – influence of experience

		Number - CIR <sup>C</sup>	Odds ratio	p value
Number of years independent	0 to 3	1521 (54.4)	Reference	
	3 to 5	1535 (60.5)	1.06 (0.94 to 1.19)	0.363
	5 to 10	3033 (51.2)	0.70 (0.63 to 0.78)	<b>&lt;0.0001</b>
	10 to 20	3680 (55.3)	0.72 (0.65 to 0.80)	<b>&lt;0.0001</b>
	20+	970 (49.7)	0.67 (0.58 to 0.76)	<b>&lt;0.0001</b>

The experienced colonoscopists are not so great

# CIR<sup>C</sup> – influence of volume

		Number - CIR <sup>C</sup>	Odds ratio	p value
Annual number of colonoscopies	<100	1543 (49.1)	Reference	
	100 to 199	2894 (51.9)	1.00 (0.91 to 1.10)	0.969
	200 to 299	2525 (56.8)	1.14 (1.03 to 1.26)	<b>0.013</b>
	300 to 499	2677 (58.3)	1.28 (1.15 to 1.42)	<b>&lt;0.0001</b>
	500+	1226 (52.6)	1.13 (1.00 to 1.29)	0.059

Doing a lot helps.....

# CIR<sup>C</sup> – influence of highest level of training

	Number (% CIR <sup>C</sup> )	Odds ratio	p value
Never done a course	1257 (42.0)	Reference	
Done skills course (ever)	2694 (50.3)	1.16 (1.04 to 1.28)	<b>&lt;0.005</b>
Done 'train the trainers'	3062 (55.1)	1.33 (1.21 to 1.47)	<b>&lt;0.0001</b>
Faculty on course	3852 (62.3)	1.74 (1.57 to 1.92)	<b>&lt;0.0001</b>

Training makes a big difference.....

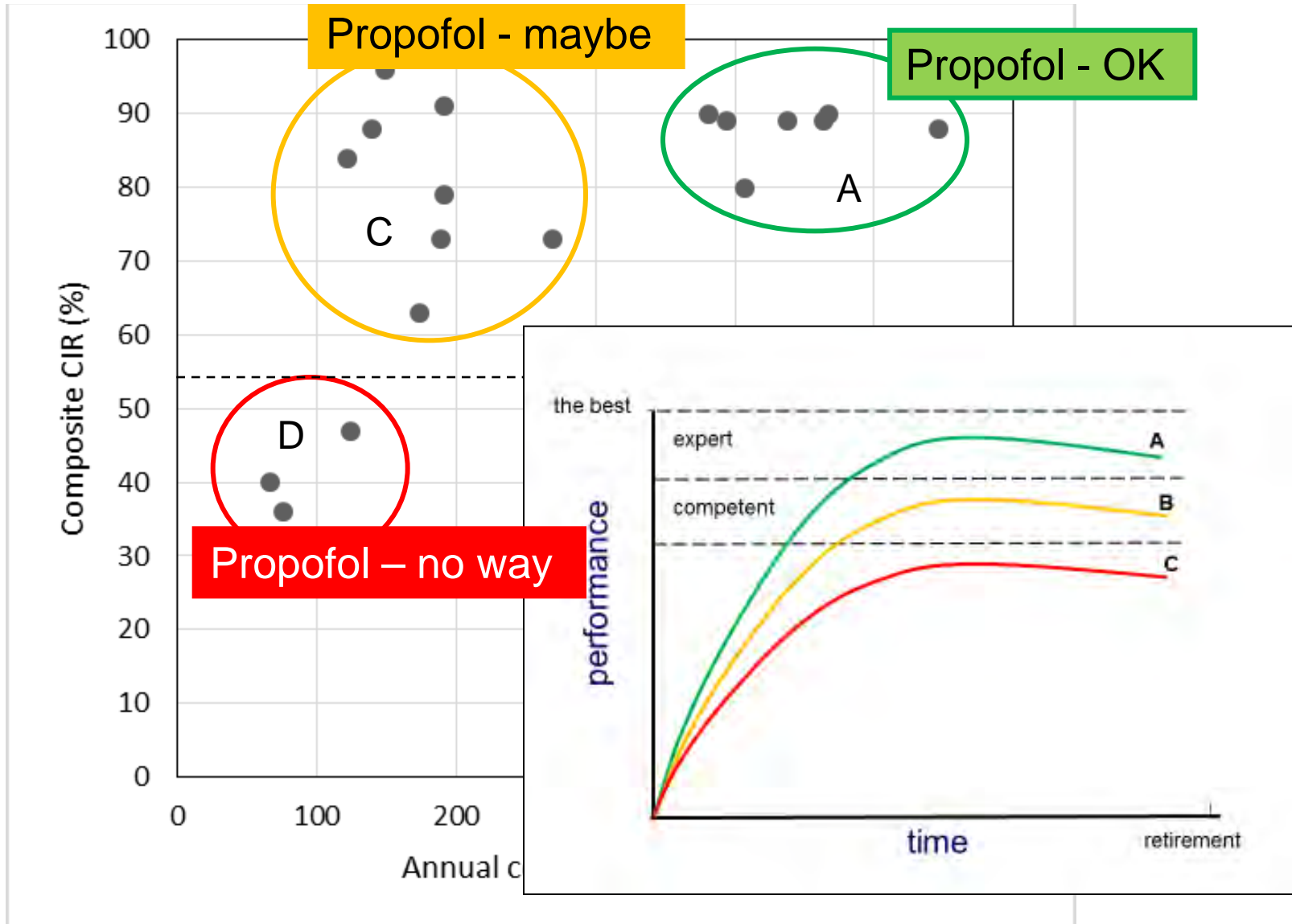
Audit identified 2681 colonoscopists

# CIR<sup>C</sup> – polyps and cancers

Factor	Multivariate odds ratio (95% CI)	P value
Polyp detection	1.12 (1.04 to 1.20)	<b>0.001</b>
Polyps >1cm	1.03 (0.94 to 1.14)	0.528
Cancer	1.14 (0.98 to 1.32)	0.101
Polyps >1cm and/or cancer	1.06 (0.97 to 1.16)	0.189

Those achieving more comfortable intubation see more pathology....

# How does propofol fit into this?



# Colon Extent, Sedation & Comfort Summary

Site: GRH

Quarters: 2014 Q3, 2014 Q2, 2014 Q1, 2013 Q4

[View Polyps](#)

Colonoscopies	Rectum %	Sigmoid %	Descending %	Splenic %	Heptic %	Caecum %	No Sedation %	Average Propidine Dose <=70 (mg)	Average Propidine Dose >70 (mg)	Average Midazolam Dose <=70 (mg)	Average Midazolam Dose >70 (mg)	Average Fentanyl/ Dose <=70 (ug)	Average Fentanyl/ Dose >70 (ug)	Polyp Detection Proc% %	Polyp Recovery Proc% %	% of Polypedomies Recovered	% of 4s & 5s in nurse discomfort	CIRC	Nurse Discomfort
352	100	99	99	99	98	<a href="#">98</a>	37	18.7	15.8	1.2	1.0	0.1	0.3	47	35	96	7	86	
166	100	100	99	99	98	<a href="#">97</a>	19	21.3	20.8	1.4	1.2	0.0	0.0	37	33	96	8	89	
387	100	100	99	99	98	<a href="#">98</a>	31	2.5	0.4	1.3	1.1	30.7	35.1	59	49	99	4	91	
70	100	100	99	99	97	<a href="#">96</a>	23	21.4	15.2	1.6	1.0	0.0	0.0	30	20	83	7	88	
417	100	100	97	97	95	<a href="#">95</a>	29	0.0	0.2	1.4	1.1	32.4	17.1	32	23	98	10	80	
333	100	100	98	97	95	<a href="#">94</a>	21	0.0	0.0	1.3	0.9	37.1	23.2	32	18	96	6	89	
136	100	99	99	99	99	<a href="#">99</a>	21	33.1	22.4	1.4	1.0	0.9	0.0	20	11	84	10	85	
156	100	100	99	99	99	<a href="#">97</a>	28	0.0	0.0	1.2	1.1	36.7	36.7	33	23	89	6	91	
230	100	100	100	99	99	<a href="#">98</a>	26	32.4	17.2	1.7	1.2	2.4	4.3	31 % of procedures with a polyp detected					
519	100	100	99	99	99	<a href="#">98</a>	35	33.1	19.1	1.3	0.8	1.2	1.4	50	37	94	4	92	
2766	100	100	99	98	98	<a href="#">97</a>	29	15.1	10.1	1.4	1.0	16.5	12.6	41	30	96	6	88	

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**BETTER FOR YOU**

Next slide shows reasons for the 2% of occasions when this colonoscopist failed to reach the caecum



# Colonoscopy Procedure List

Site: GRH      Quarters: 2014 Q3, 2014 Q2, 20

## CGH - 3 procs

Endoscopist	Hospital No	Date of Proc	Completion
6	1097628	01/09/14	Failed
6	1701785	20/02/14	Failed
6	0731482	11/02/14	Failed

Site: GRH      Quarters: 2014 Q3, 2014 Q2, 20

## GLCR - 4 procs

Endoscopist	Hospital No	Date of Proc	Completion		
6	0662616	12/08/14	Failed	transverse	malignant stricture
6	0318160	05/08/14	Failed	Sigmoid	Benign stricture
6	0593963	18/03/14	Failed	Sigmoid	Malignant stricture
6	0094032	15/11/13	Failed	Hepatic flexure	Unresolved loop

Site: GRH      Quarters: 2014 Q3, 2014 Q2, 2014 Q1, 2013 Q4

## STRG - 1 procs

Endoscopist	Hospital No	Date of Proc	Completion	Extent	Limited By
6	0581179	16/10/13	Failed	Sigmoid	Benign stricture



# Impact of monitoring on performance

	<b>Unadjusted CIR (%)</b>	<b>Nurse (%discomfort score 4/5)</b>	<b>Patient (% worse than expected)</b>	<b>Midazolam (mean)</b>	<b>PDR (%)</b>
<b>2008</b>	93.3	10.0	5.6	2.3	29.6
<b>2009</b>	93.4	7.8	4.2	2.0	27.4
<b>2010</b>	94.6	7.6	4.1	1.8	31.9
<b>2011</b>	95.9	5.8	3.7	1.7	37.7
<b>2013 (GRH)</b>	<b>97.0</b>	<b>5.0</b>		<b>1.5</b>	<b>42.0</b>

# Documentation of deep caecal intubation

- Convincing photo of appendix orifice or TI
- If photo not convincing then there should be an explanation in the report of why, and an indication of the degree of confidence of deep intubation

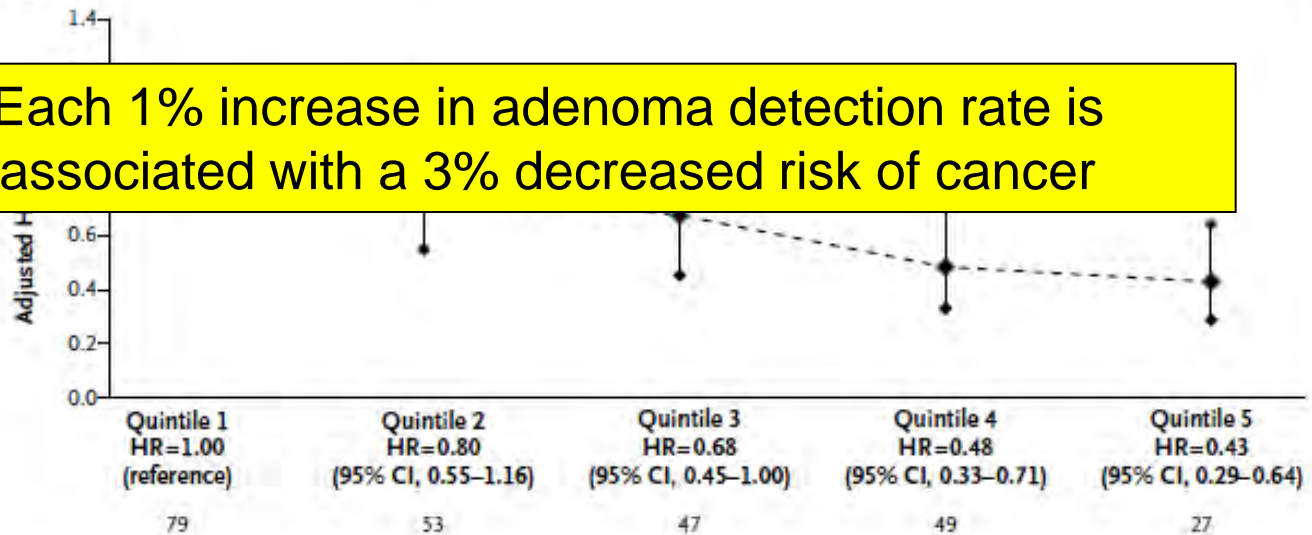
Hot tip: if you can't quite reach the caecum put the patient on their right

# Detection

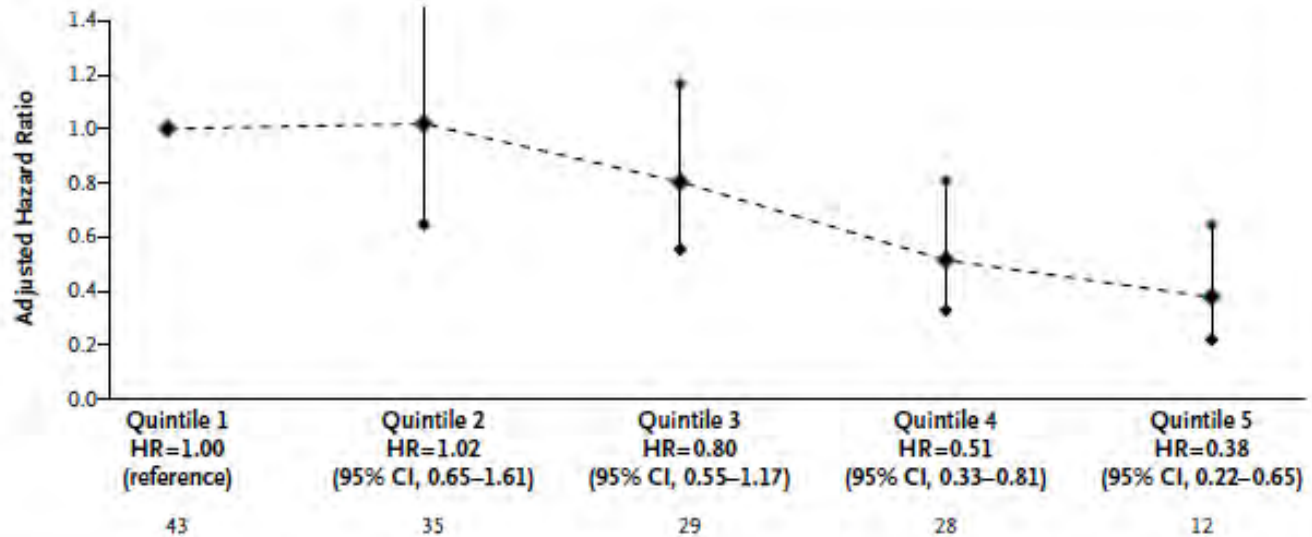
# Impact of adenoma detection on interval cancer

## B Risk of Advanced-Stage CRC

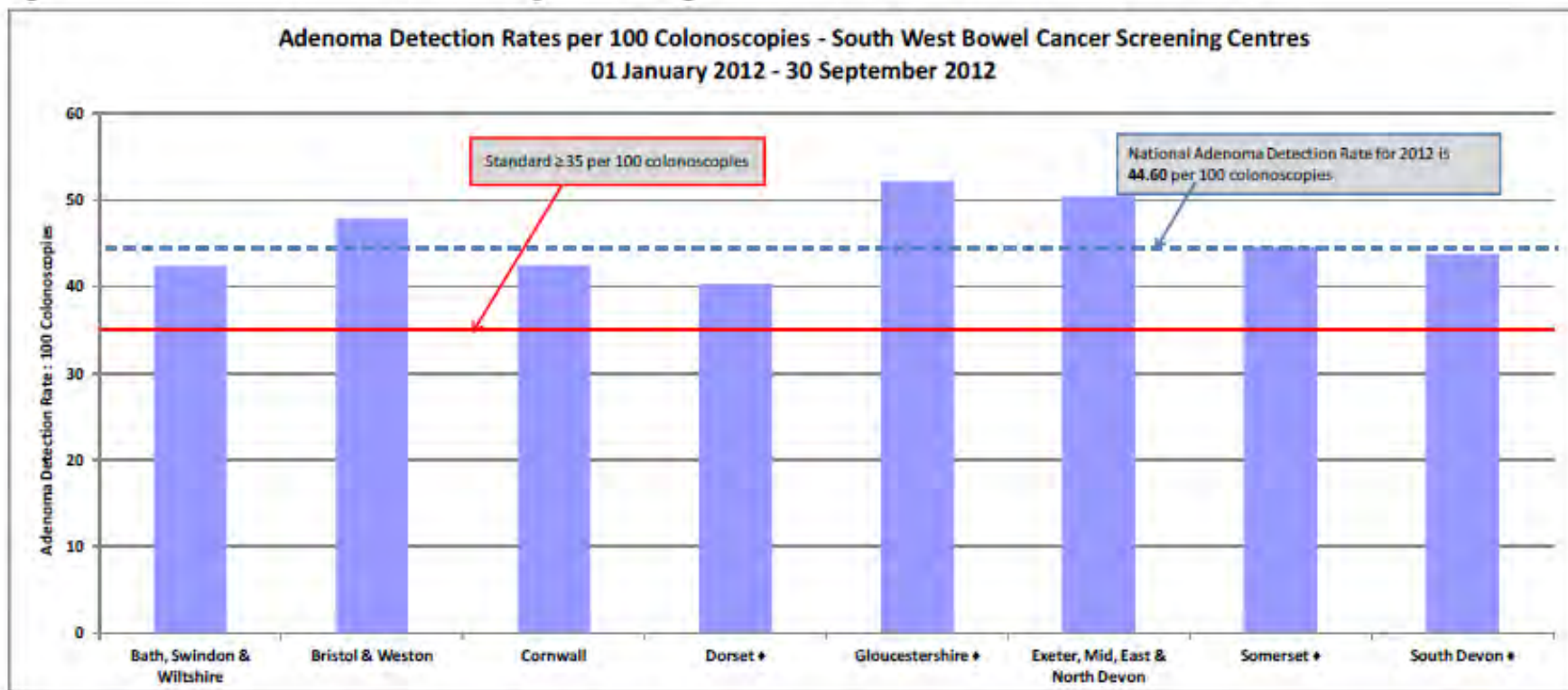
Each 1% increase in adenoma detection rate is associated with a 3% decreased risk of cancer



## C Risk of Fatal CRC



# Southwest region Adenoma Detection Rate

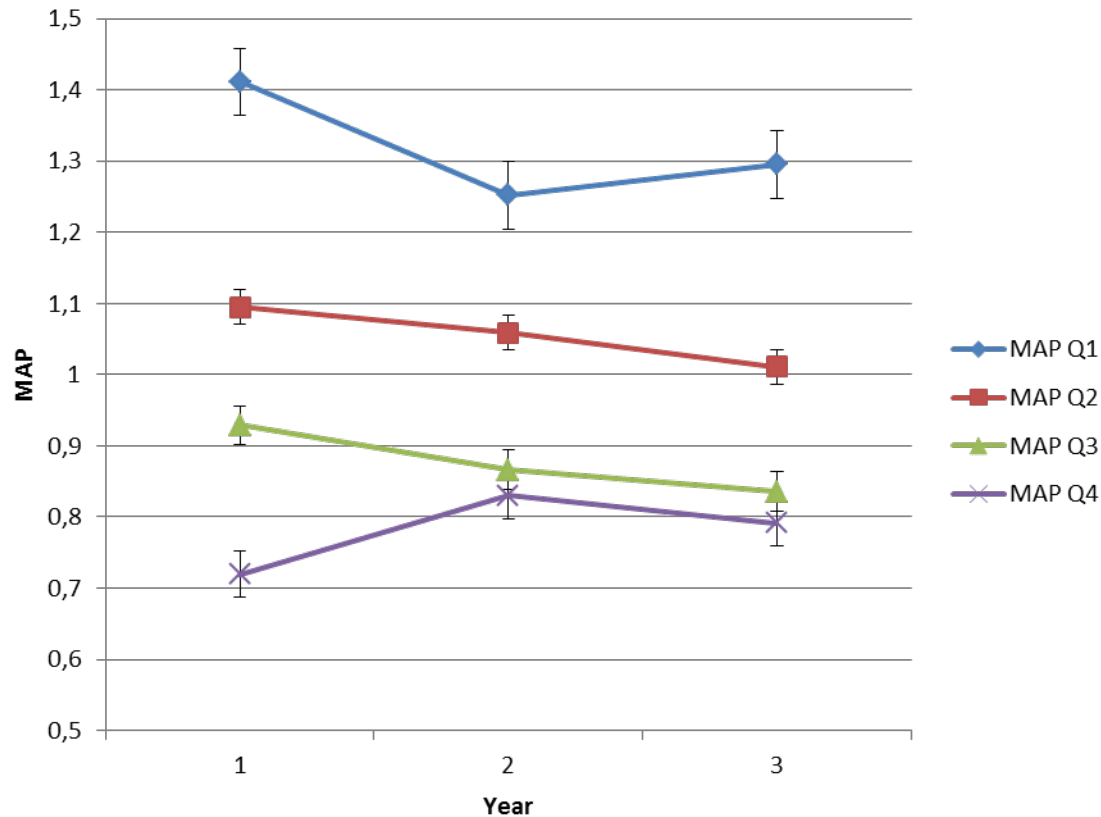


(Data Source: OBIEE Endoscopy QA Dashboard, run: 15 November 2012)

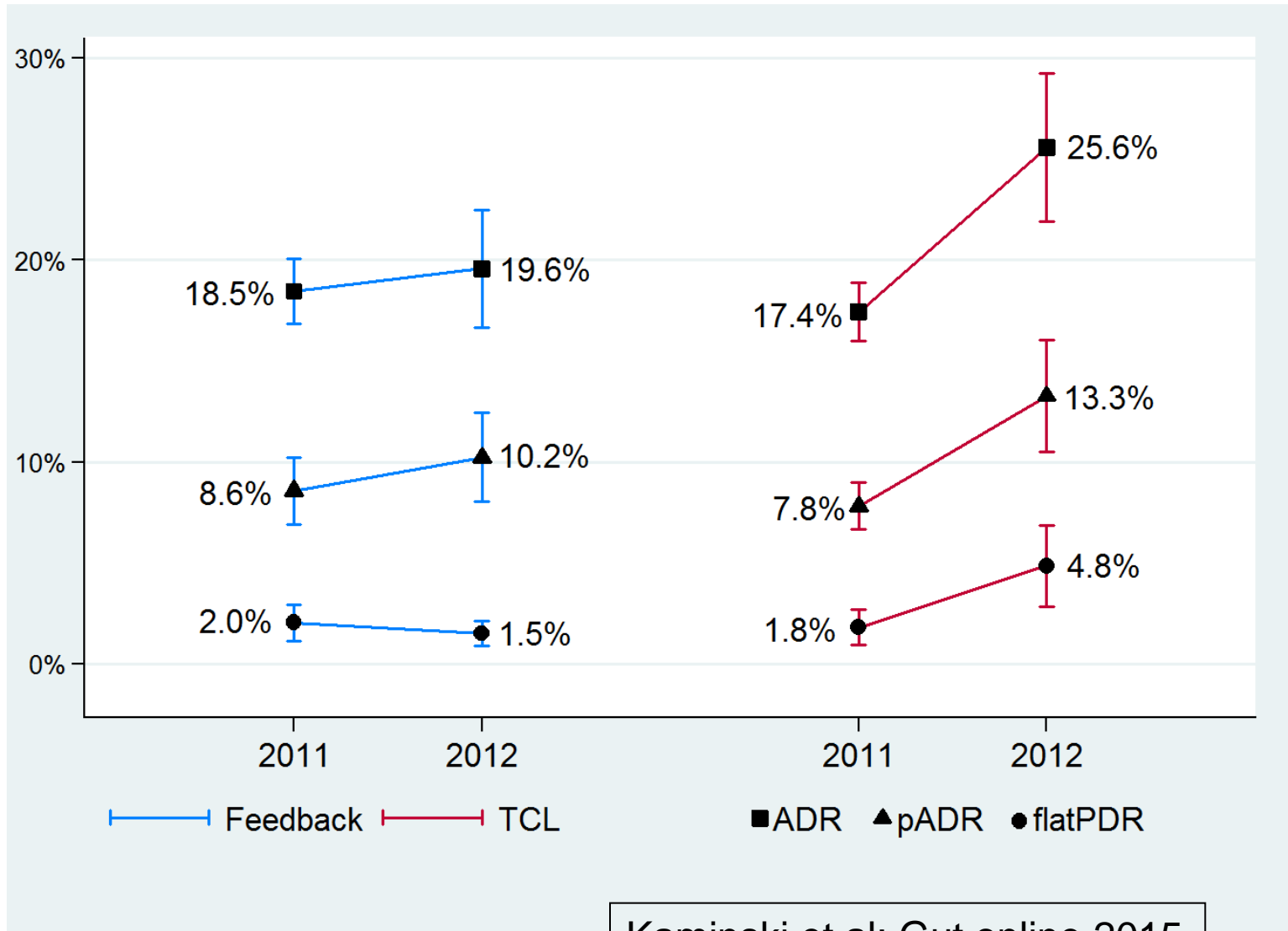
Region population: 5 million

BCSP ADR 2014: Gloucestershire 57%; SW region 47%

# Mean adenomas per patient (MAP) against time in quartiles assigned in year 1 (BCSP)



# Leadership in Training (TL) to Improve ADR in Screening Colonoscopy: a randomized trial



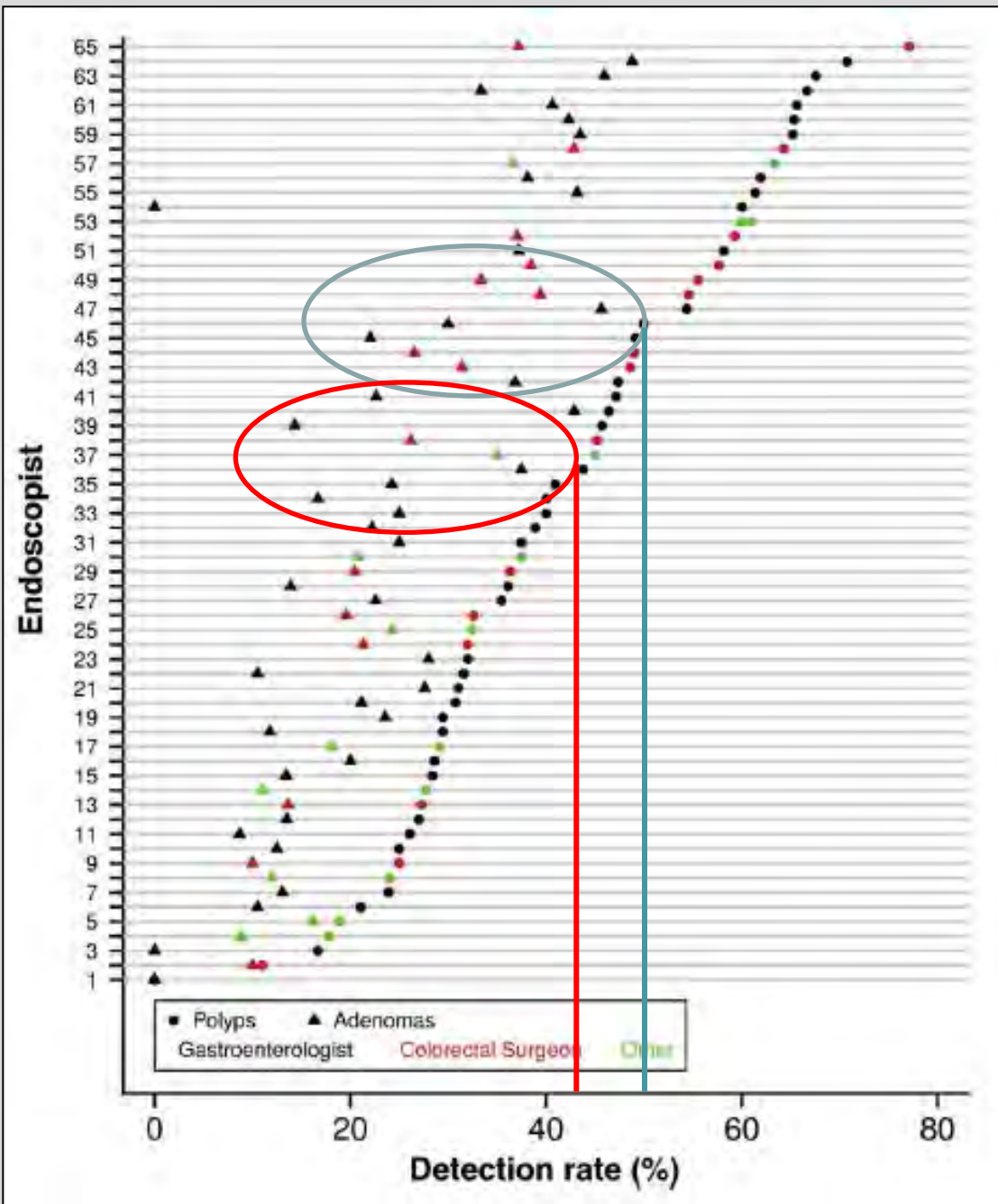
Kaminski et al; Gut online 2015



# What about withdrawal time?

- ADR is a surrogate for post colonoscopy CRC
- Withdrawal time is a surrogate of ADR

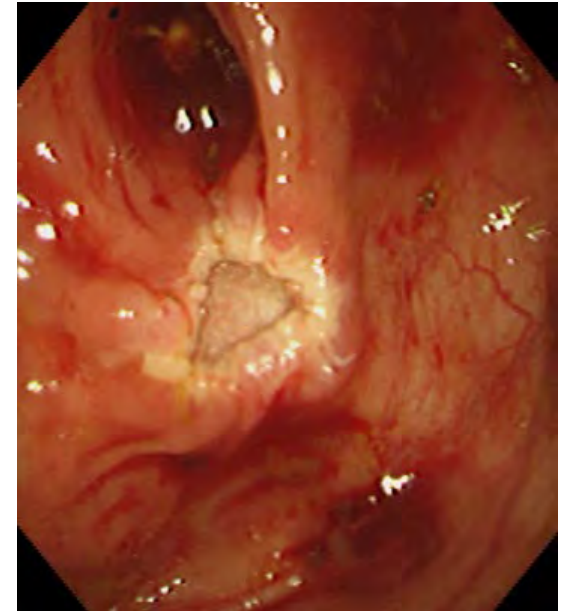
# ADR vs PDR



Gohel TD, et al. *Clin Gastroenterol Hepatol* 2014;12:1137-1142

# Polypectomy

**resection**



# Polypectomy competence framework (DOPyS)

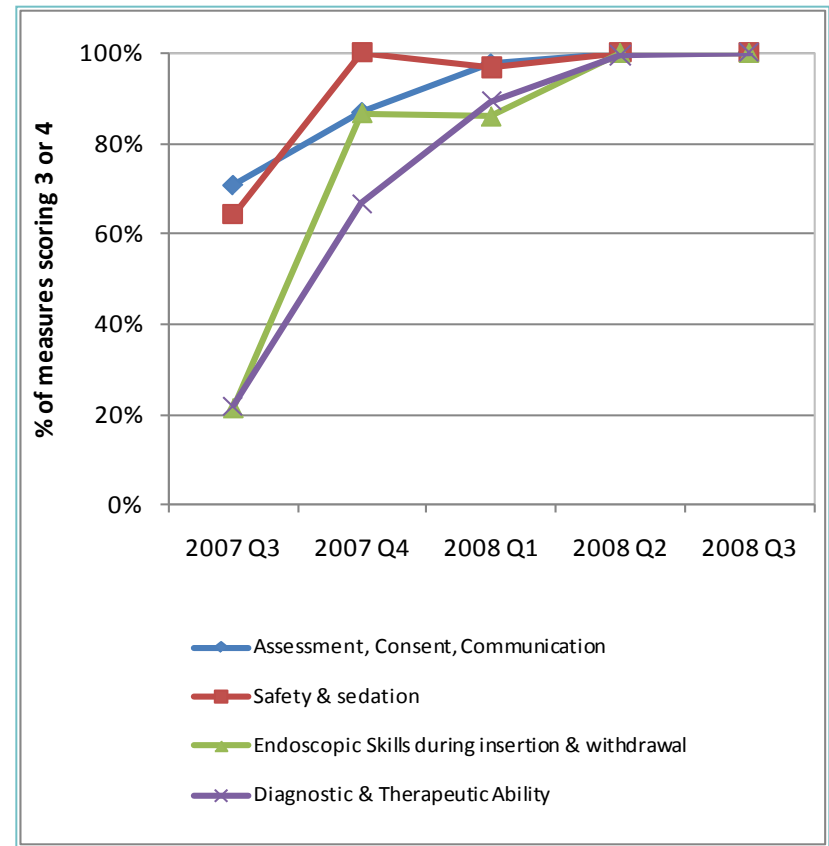
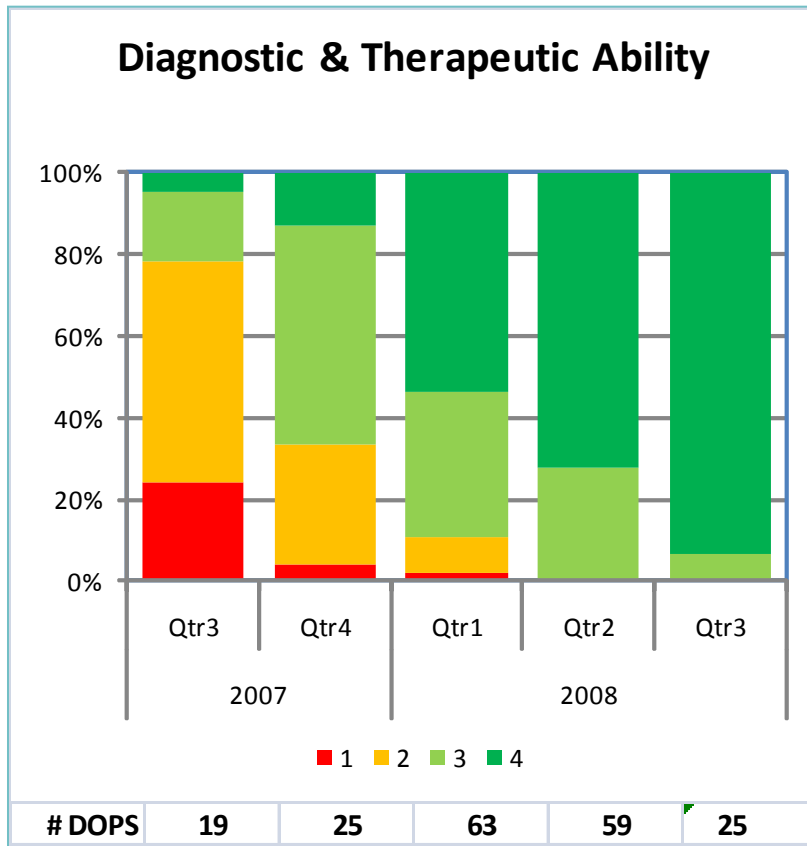
## Domains:

1. Optimising view of / access to the polyp
2. Stalked polyps
3. Small sessile lesions and EMR
4. Post polypectomy

GIE: 2011;73:1232-1239

[www.thejag.org.uk](http://www.thejag.org.uk)

# DOPS progression outputs



# Polypectomy performance indicators (proposed)

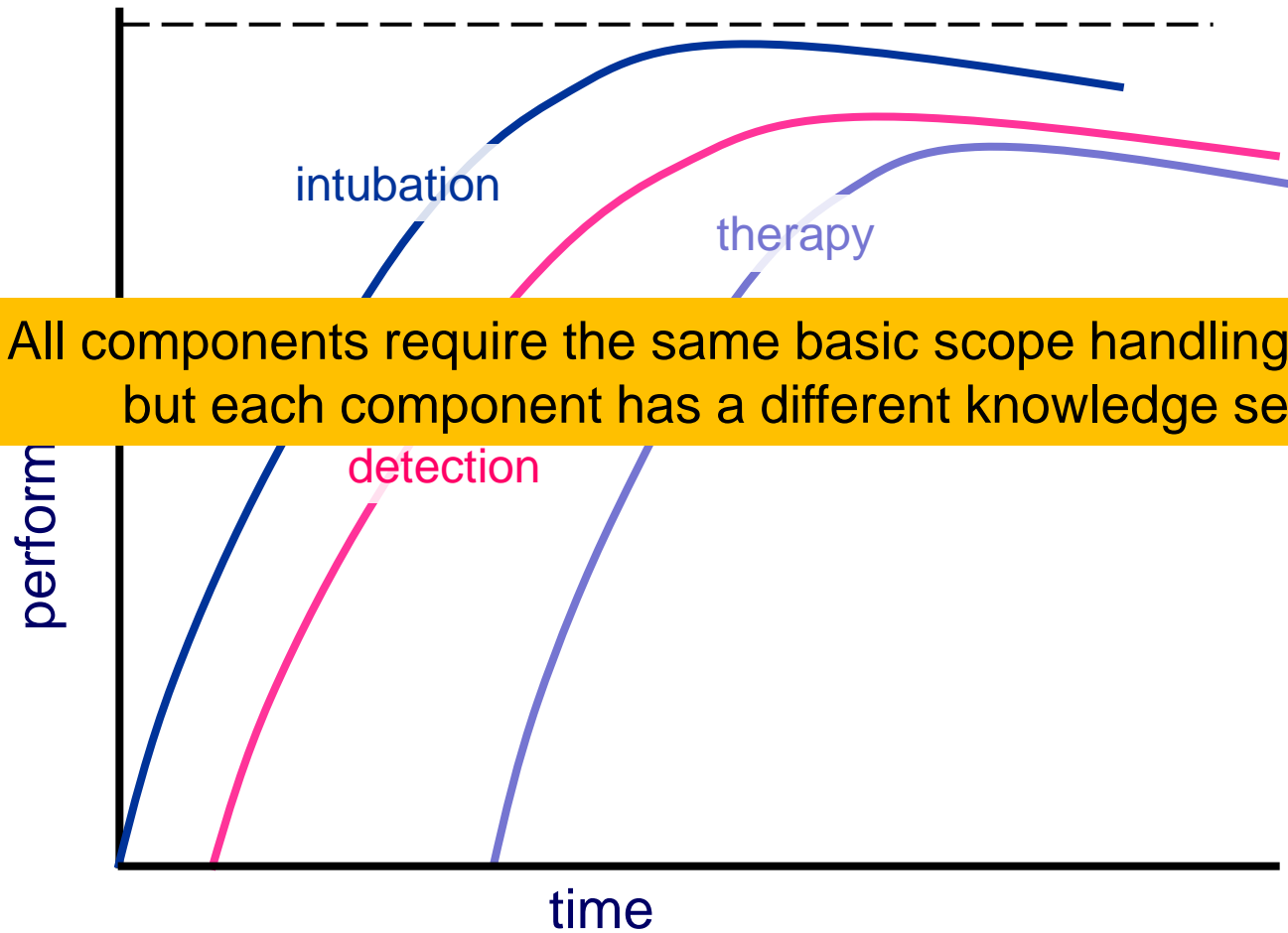
- Precise documentation +/- photography
- Completeness of excision
  - based on photography, pathology or repeat endoscopy
- Retrieval of resected polyps
- PCCRC
- Complications
- Referral rates for surgery for benign disease
- Surveillance recommendations
- Rates of malignancy
- Tattoos
  - appropriate and correctly placed

NB: all case mix adjusted

# At what level should performance be monitored?

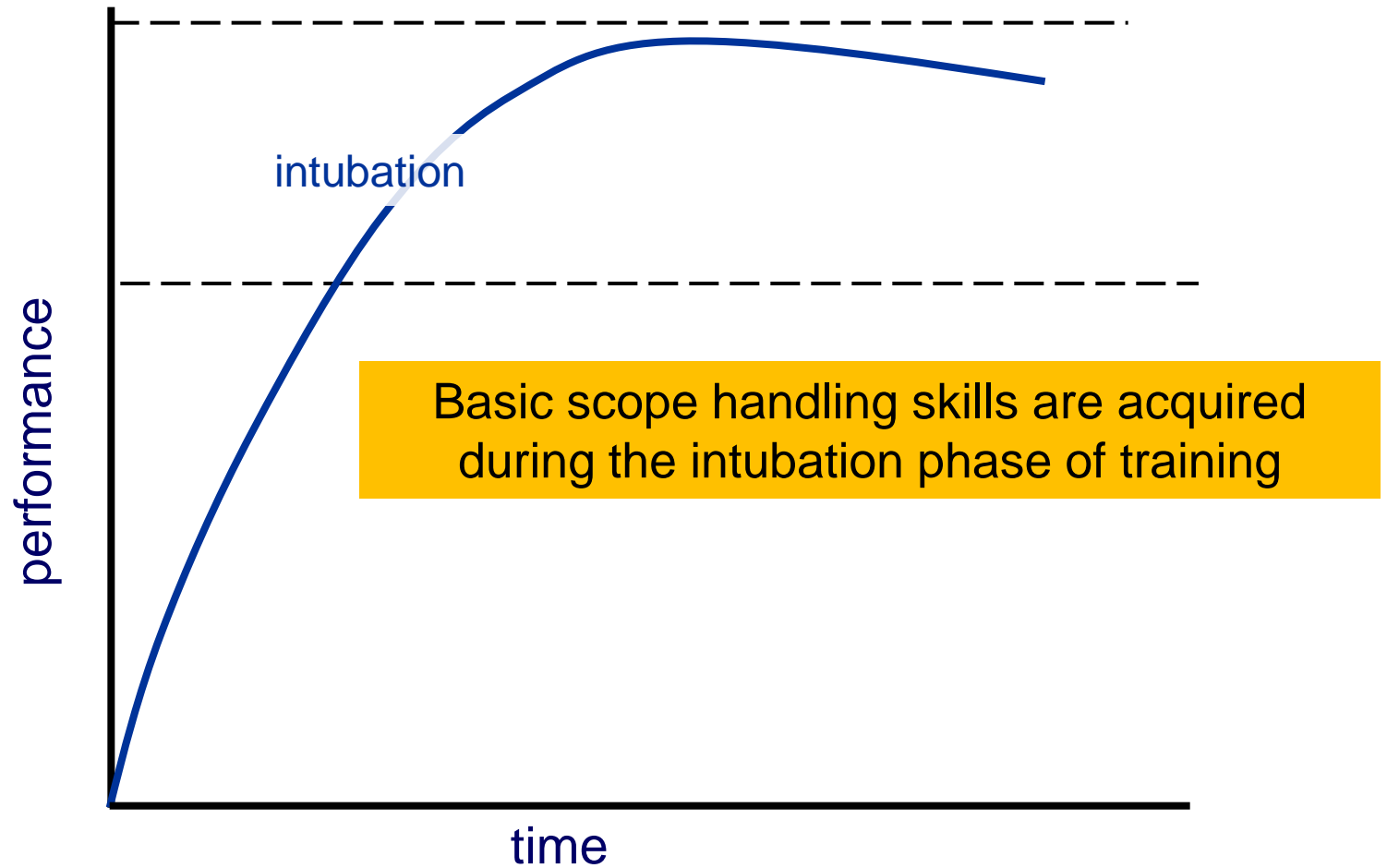
	<b>Rate</b>	<b>Freq</b>	<b>Individual</b>	<b>Service</b>	<b>Programme</b>
CIR <sup>c</sup>	80-90%	Hi	++++	++	++
Withdrawal time	6+	Hi	++++	-	-
Adenoma detection	20%	Hi	++++	++	++
Incomplete excision	5%	Lo	+++	+	-
Complications	0.5%	Lo	+	+++	++
Missed cancer	1-5%	V. Lo	+/-	+++	++++

# Acquiring colonoscopy and polypectomy skills





# Acquiring colonoscopy and polypectomy skills



# Becoming an expert colonoscopist

