Bowel Screening:
Scottish Bowel Screening Programme

Quality in Faecal Immunochemical Testing – What to monitor, what to control

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Measurement of variation within an analytical system

► **Pre-analytical** – must be cognisant of and monitor
► Biological
► Sampling
► Handling of sample by participant and at specimen reception

► **Analytical** – we can control and improve
► Reagent preparation
► Calibration and control
► External quality assessment

Pre-analytical variation: developmental stage of lesion, morphological characteristics

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Pre-analytical variation: transit time, stool consistency and volume of sample

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Pre-analytical variation: time taken to test and ambient temperature

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Analytical variation: reagent preparation

Analytical variation: calibration and control

Date start	Date finish	Lot	OC	n	Mean ng/ml	SD ng/ml	CV %	n	mean ng/ml	SD ng/ml	CV %
06/07	27/08	01001	1	38	154.7	8.35	5.41	38	637.1	31.81	4.99
30/08	29/10	01001	1	74	150.7	5.87	3.90	74	620.9	23.06	3.71
01/11	08/11	08001	1	10	147.9	2.47	1.67	10	642.3	19.32	3.01
13/11	01/12	08001	1	22	153.6	5.23	3.41	21	640.9	20.73	3.23
03/12	23/12	08001	1	23	146.0	5.01	3.43	23	598.8	22.29	3.72
24/12	30/12	09013	1	5	162.2	5.85	3.61	5	682.8	13.21	1.94
06/01	11/01	09013	1	7	155.7	3.15	2.02	8	676.0	24.17	3.58
12/01	12/04	09013	1	53	158.8	13.43	8.46	54	672.1	35.61	5.33
12/07	27/08	01001	2	61	153.0	15.21	9.94	61	622.3	27.49	4.42
31/08	29/10	01001	2	72	153.2	4.73	3.09	72	614.5	20.36	3.31
01/11	08/11	08001	2	9	151.2	3.53	2.33	9	610.8	24.49	4.01
09/11	26/11	08001	2	21	155.8	4.83	3.01	20	619.4	21.90	3.54
03/12	23/12	08001	2	26	152.0	5.36	3.53	26	636.7	37.33	5.86
24/12	30/12	09013	2	3	155.7	19.63	12.31	3	658.3	70.50	10.51
06/01	11/01	09013	2	7	160.7	3.95	2.46	7	702.6	11.90	1.56
12/01	11/04	09013	2	59	158.7	15.95	9.98	59	653.8	25.99	3.89

Analytical variation: calibration and control

Date start	Date finish	Lot	OC	n	Mean ng/ml	SD ng/ml	CV %	n	mean ng/ml	SD ng/ml	CV %
06/07	29/10	01001	1	106	152.4	6.5	4.3	106	627.7	25.9	4.1
01/11	23/12	08001	1	48	150.7	5.6	3.7	47	630.9	26.2	4.2
24/12	12/04	09013	1	52	160.5	5.1	3.2	62	672.5	24.4	3.6
12/07	29/10	01001	2	130	152.4	4.6	3.0	130	617.9	20.0	3.2
01/11	23/12	08001	2	54	153.6	4.8	3.2	54	625.5	27.5	4.4
24/12	11/04	09013	2	54	162.6	6.0	3.7	53	697.3	20.8	3.0
Assigned		01001			156	6			627	27	
Assigned		08001			154	5			626	25	
Assigned		09013			161	7			685	20	
Overall (weighted)			1	206			3.9	215			4.0
Overall (weighted)			2	238			3.2	237			3.5
Overall (weighted)			1+2	444			3.5	452			3.8

Analytical variation: external quality assessment

2010 EQCS-OC

Thank you for taking part in this year's quality assessment programme.
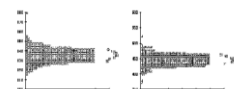Your results are detailed below.
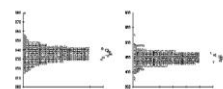
Sample A		Sample B	
No of facility	805	No of facility	805
Mean value	135.5	Mean value	445.5
SD	5.7	SD	14.2
Max value	114	Max value	370
Min value	180	Min value	521

Analyser: SN N000417 (OC Diana 1)
Sample A: 131
Sample B: 421

2010 EQCS-OC

Thank you for taking part in this year's quality assessment programme.
Your results are detailed below.

Sample A		Sample B	
No of facility	805	No of facility	805
Mean value	135.5	Mean value	445.5
SD	5.7	SD	14.2
Max value	114	Max value	370
Min value	180	Min value	521

Analyser: SN N000279 (OC Diana 2)
Sample A: 138
Sample B: 434

Conclusions

► **Pre-analytical variation** – no control of these areas, awareness and inclusion in setting analytical performance goals

► **Analytical variation** – can be measured, reviewed and manipulated to reduce bias within the system

► Overall control of the system requires multifaceted approach to ensure each component part operates within set analytical quality specifications

► This is evidenced by satisfactory performance in External Quality Assessment Scheme