Patient Based EQA

Birmingham Quality

NHS

We are, and always have been, part of the NHS

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Quality Management of Algorithmic Tests

- Adjusted / Corrected Calcium
  - *Adjusted Calcium = Measured Calcium + 0.02(40 – Albumin)*
- eGFR (estimated Glomerular Filtration Rate)
  - *4V MDRD or 2009 CKD-EPI or 2021 CKD-EPI equations*
- AKI (Acute Kidney Injury)
  - *NHS England Algorithm*

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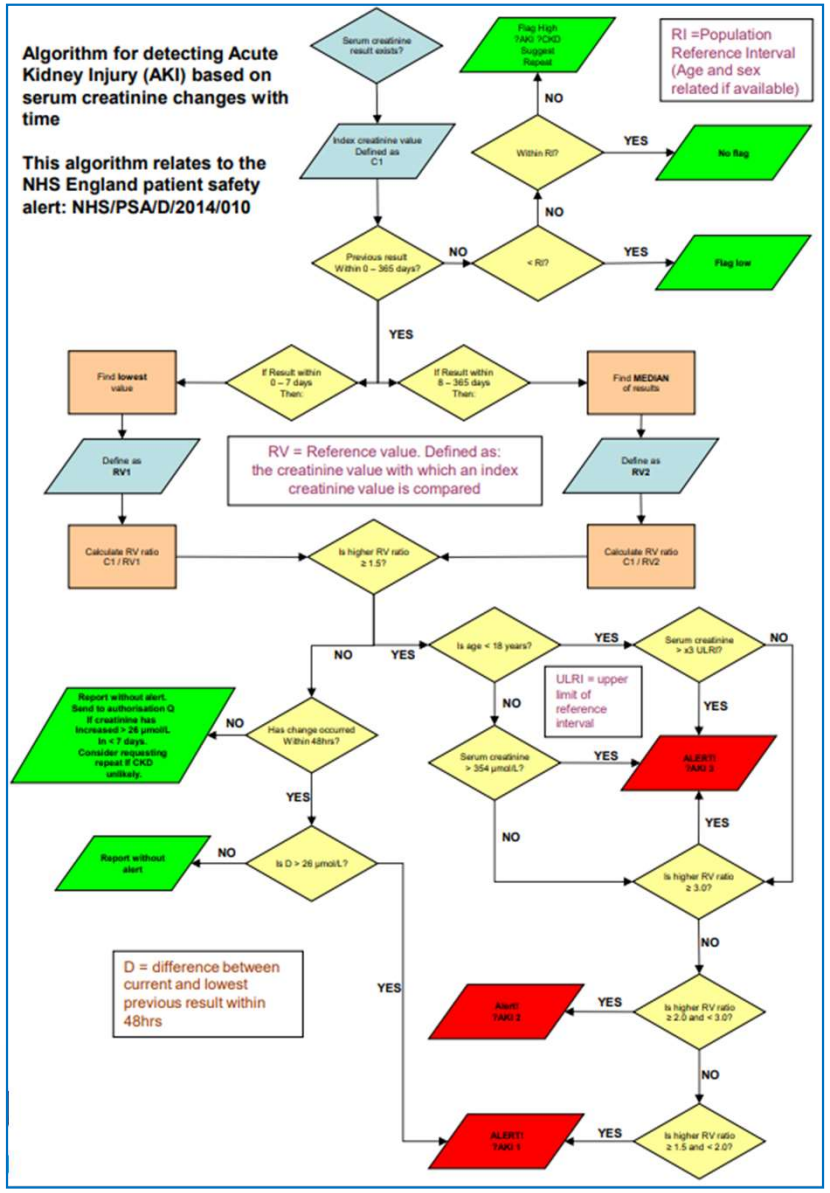

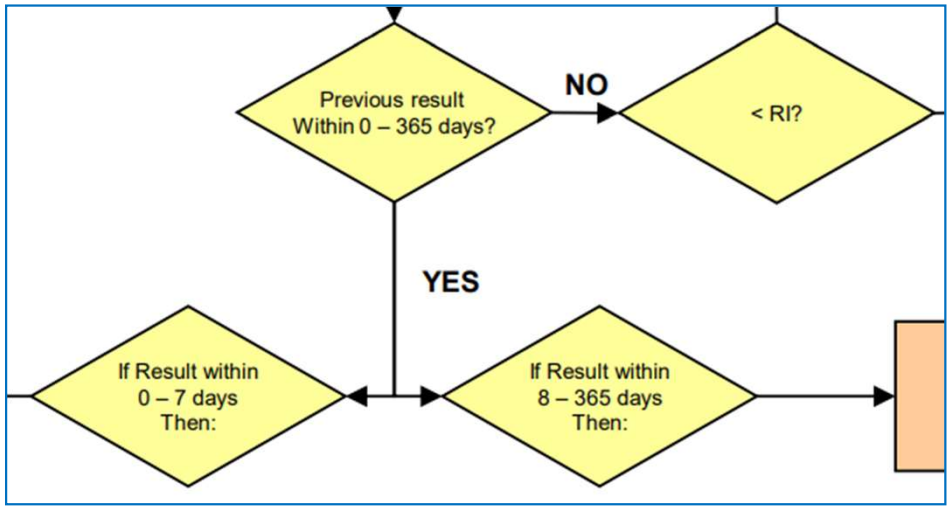

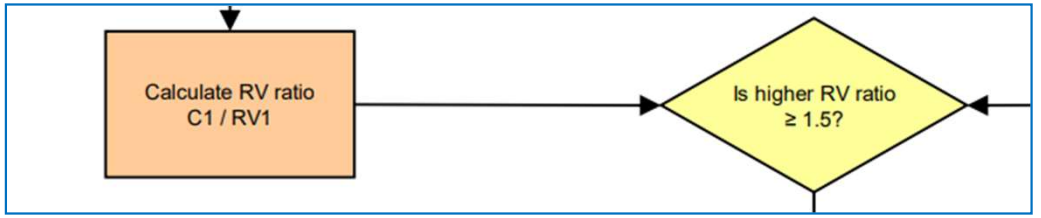

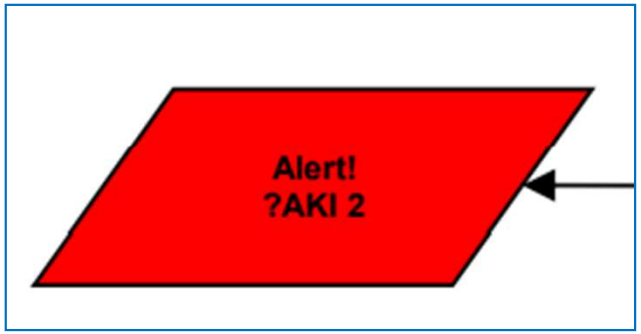

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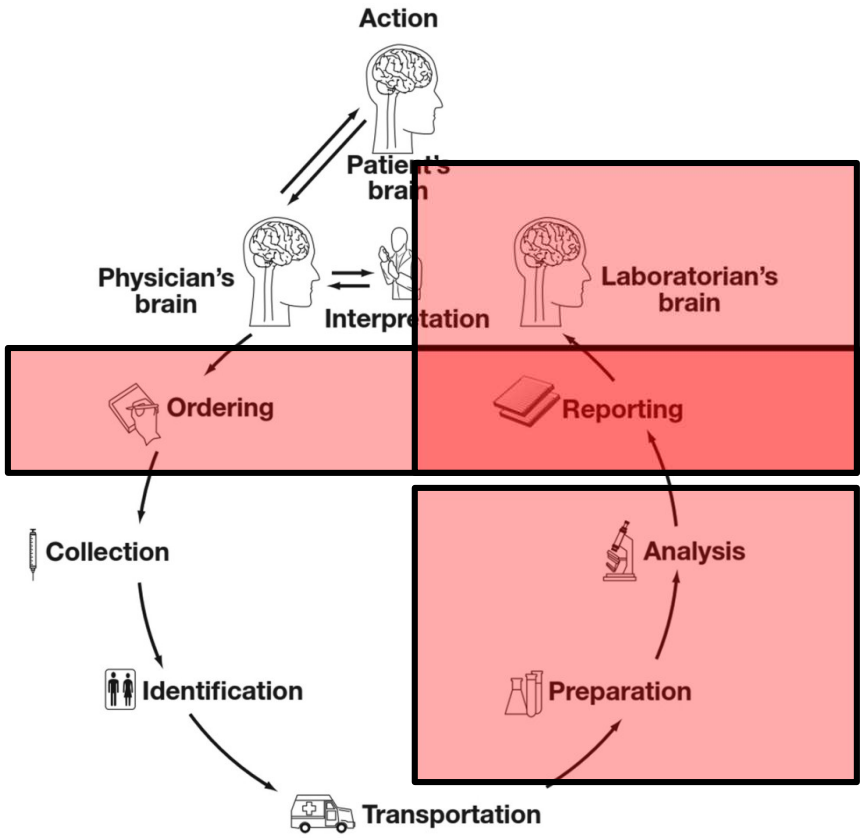
EQA of AKI

EQA at the specimen level – Result

EQA with a clinical scenario – Result and Interpretation

EQA with patient demographics – Result based on demographics

EQA with patient demographics over time – Result based on demographics over time



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AKI Analyte

- Participants receive three specimens for Creatinine analysis
- The participant needs to set up the AKI patient in the laboratory LIMS
- Patient demographics and specimen collection details are provided
- Participant reports the Creatinine and the AKI stage

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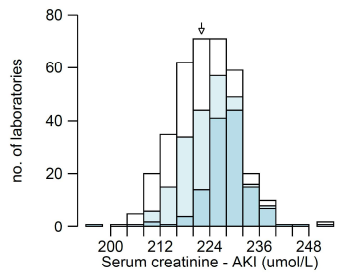
Spec.	Pool	Pool description / Treatments / Additions
183A	290	FATIMA AKIEQA Episode 1 Day -6
183B	293	FATIMA AKIEQA Episode 1 Day -3
183C	294	FATIMA AKIEQA Episode 1 Day 0

Specimen : 183A

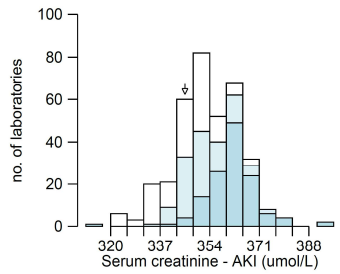
	n	Mean	SD	CV(%)
All methods [ALTM]	359	223.4	7.4	3.3
Compensated Kinetic Jaffe [10]	122	219.9	7.4	3.4
Abbott Alinity [10AB20]	15	220.2	5.7	2.6
Abbott Architect [10AB]	13	221.2	5.2	2.3
Beckman AU [10OL]	13	214.2	5.6	2.6
Roche Cobas [10BO]	70	221.8	7.7	3.5
Enzymatic [9]	234	225.2	6.7	3.0
Abbott Alinity [9AB20]	39	217.8	4.3	2.0
Abbott Architect [9AB]	24	218.9	3.5	1.6
Beckman AU [9OL]	15	227.4	4.1	1.8
Roche Cobas [9BO]	131	228.6	4.6	2.0
Siemens ADVIA [9TE]	15	221.8	4.2	1.9



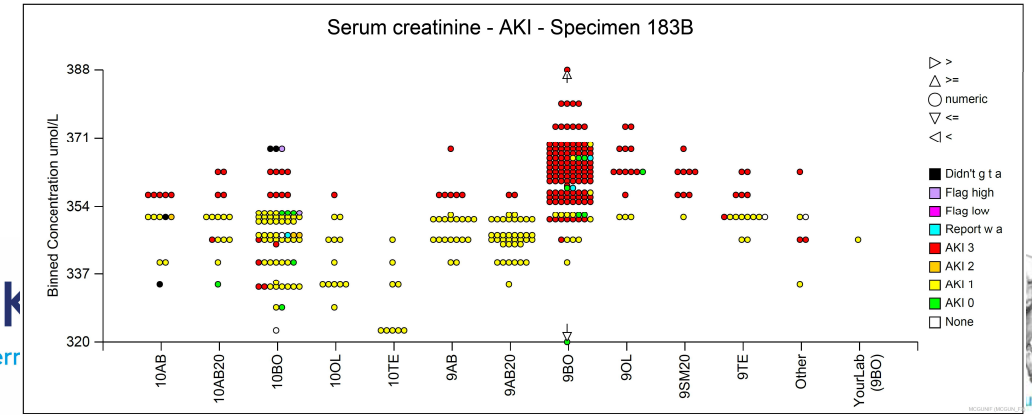
Your result	222
Target value (Enzymatic [9])	225.2
Your Interpretation	6
Target	0
Standard Uncertainty	0.6
Your specimen: %bias	-1.4
Accuracy Index	
Method mean (Roche Cobas [9BO])	228.6

Specimen : 183B

	n	Mean	SD	CV(%)
All methods [ALTM]	359	353.8	10.9	3.1
Compensated Kinetic Jaffe [10]	122	346.3	10.0	2.9
Abbott Alinity [10AB20]	15	350.6	7.2	2.0
Abbott Architect [10AB]	13	350.6	7.0	2.0
Beckman AU [10OL]	13	340.5	10.1	3.0
Roche Cobas [10BO]	70	347.6	9.4	2.7
Enzymatic [9]	234	357.6	9.4	2.6
Abbott Alinity [9AB20]	39	346.7	4.3	1.2
Abbott Architect [9AB]	24	350.9	5.7	1.6
Beckman AU [9OL]	15	361.8	7.4	2.0
Roche Cobas [9BO]	131	362.1	7.2	2.0
Siemens ADVIA [9TE]	15	353.6	5.0	1.4



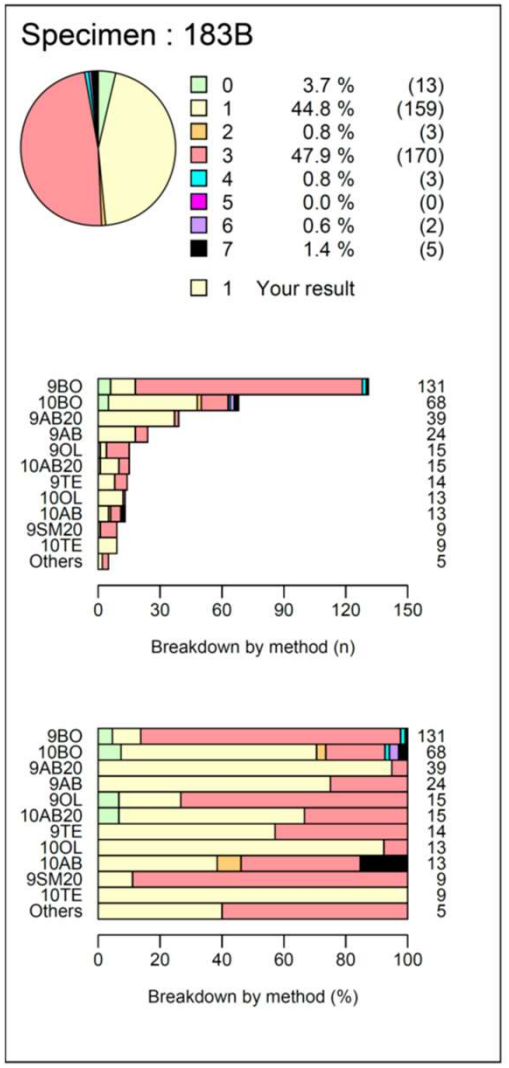
Your result	348
Target value (Enzymatic [9])	357.6
Your Interpretation	1
Target	
Standard Uncertainty	0.8
Your specimen: %bias	-2.7
Accuracy Index	
Method mean (Roche Cobas [9BO])	362.1



RV = 357.6 / 225.2

RV = 1.59

AKI Stage 1



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AKI Warning Stage Test Result Confirm or refute automated AKI Test Result by comparing patient's current creatinine against patient's baseline creatinine	Clinical Context Within Which Blood Test Taken	
	LOW Pre-test Probability of AKI Stable Clinical Context	**HIGH Pre-test Probability of AKI** Context of Acute Illness
AKI Warning Stage 1 Current creatinine> 1.5 x baseline level (*or* creatinine rise >26 µmol/L ≤ 48 hrs)	**Consider clinical review ≤ 72 hours of e-alert** **If AKI confirmed**→ manage as per table 2	**Consider clinical review ≤ 24 hours of e-alert** **Likely Stage 1 AKI**→ manage as per table 2
AKI Warning Stage 2 Current creatinine> 2 x baseline level	**Consider clinical review ≤ 24 hours of e-alert** **If AKI confirmed**→ manage as per table 2	**Consider clinical review ≤ 6 hours of e-alert** **Likely Stage 2 AKI**→ manage as per table 2
AKI Warning Stage 3 Current creatinine> 3 x baseline level (*or* creatinine> 1.5 x baseline and > 354 µmol/L)	**Consider clinical review ≤ 6 hours of e-alert** **If AKI confirmed**→ consider admission	**Consider Immediate Admission** Likely Stage 3 AKI

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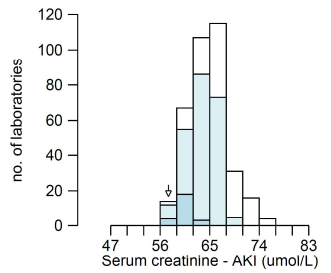
Spec.	Pool	Pool description / Treatments / Additions
185A	285	Fatima AKIEQA Episode 3 Day -1 at 09:00
185B	286	Fatima AKIEQA Episode 3 Day 0 at 05:00
185C	287	Fatima AKIEQA Episode 3 Day 0 at 11:00

Specimen : 185A

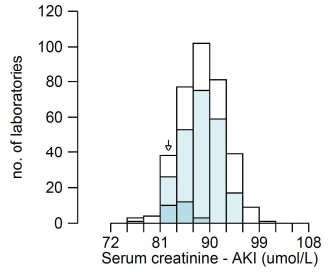
	n	Mean	SD	CV(%)
All methods [ALTM]	354	65.2	3.3	5.1
Compensated Kinetic Jaffe [10]	120	67.4	3.8	5.7
Abbott Alinity [10AB20]	16	64.1	2.6	4.0
Abbott Architect [10AB]	13	66.9	1.5	2.3
Beckman AU [10OL]	13	64.4	3.2	5.0
Roche Cobas [10BO]	66	69.5	3.5	5.0
Enzymatic [9]	231	64.2	2.8	4.4
Abbott Alinity [9AB20]	41	61.7	1.5	2.4
Abbott Architect [9AB]	25	61.2	1.4	2.2
Beckman AU [9OL]	15	64.8	1.9	2.9
Roche Cobas [9BO]	128	65.7	1.8	2.7
Siemens ADVIA [9TE]	13	60.3	1.6	2.6



Your result	59
Target value (Enzymatic [9])	64.2
Your Interpretation	4
Target	0
Standard Uncertainty	0.2
Your specimen: %bias	-8.1
Accuracy Index	
Method mean (Abbott Architect [9AB])	61.2

Specimen : 185B

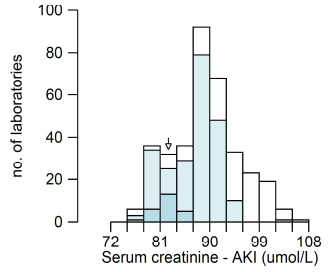
	n	Mean	SD	CV(%)
All methods [ALTM]	354	89.1	4.0	4.5
Compensated Kinetic Jaffe [10]	120	89.8	5.1	5.7
Abbott Alinity [10AB20]	16	82.9	3.9	4.7
Abbott Architect [10AB]	13	86.8	2.0	2.3
Beckman AU [10OL]	13	87.5	3.4	3.8
Roche Cobas [10BO]	66	92.8	4.1	4.5
Enzymatic [9]	231	88.8	3.6	4.1
Abbott Alinity [9AB20]	41	85.5	1.8	2.1
Abbott Architect [9AB]	25	85.0	2.0	2.3
Beckman AU [9OL]	15	88.8	1.9	2.1
Roche Cobas [9BO]	128	90.9	2.2	2.4
Siemens ADVIA [9TE]	13	84.5	2.2	2.6



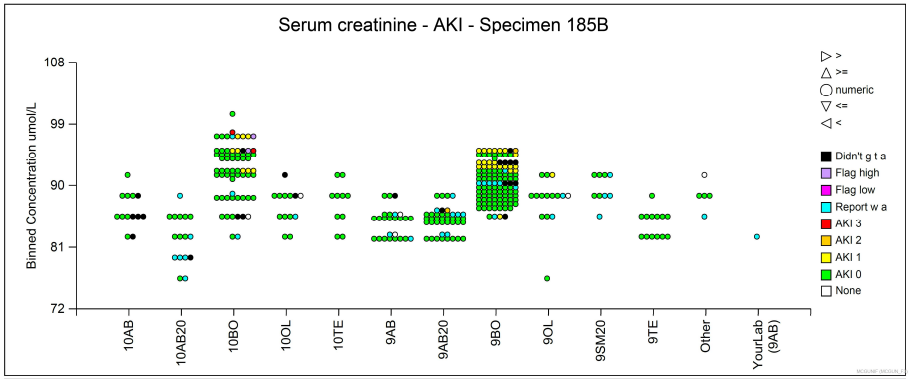
Your result	83
Target value (Enzymatic [9])	88.8
Your Interpretation	4
Target	0
Standard Uncertainty	0.3
Your specimen: %bias	-6.5
Accuracy Index	
Method mean (Abbott Architect [9AB])	85.0

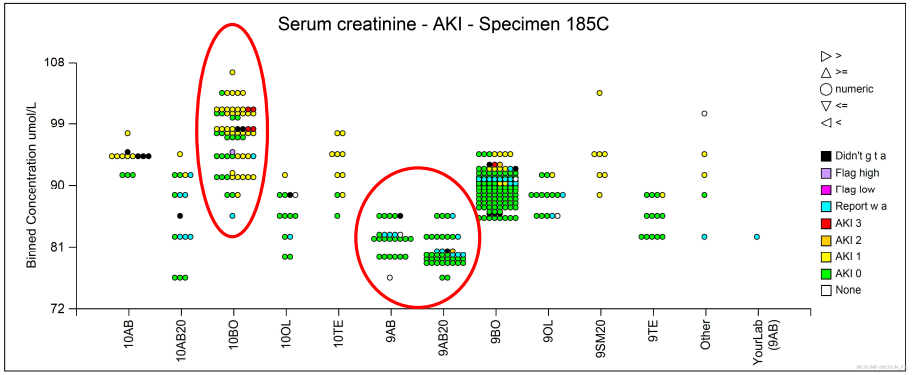
Specimen : 185C

	n	Mean	SD	CV(%)
All methods [ALTM]	352	89.6	6.2	6.9
Compensated Kinetic Jaffe [10]	120	94.3	6.2	6.5
Abbott Alinity [10AB20]	16	86.2	6.5	7.5
Abbott Architect [10AB]	13	94.4	1.6	1.7
Beckman AU [10OL]	13	86.1	4.6	5.3
Roche Cobas [10BO]	66	97.7	4.4	4.5
Enzymatic [9]	229	87.5	4.8	5.5
Abbott Alinity [9AB20]	41	80.7	1.8	2.2
Abbott Architect [9AB]	25	82.8	2.4	2.8
Beckman AU [9OL]	15	88.6	2.9	3.3
Roche Cobas [9BO]	128	90.1	2.0	2.2
Siemens ADVIA [9TE]	13	85.5	2.7	3.1



Your result	84
Target value (Enzymatic [9])	87.5
Your Interpretation	4
Target	0
Standard Uncertainty	0.4
Your specimen: %bias	-4.0
Accuracy Index	
Method mean (Abbott Architect [9AB])	82.8





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Conclusion

- Technically challenging for laboratory to process the EQA and also for us, the EQA provider

- Well received and makes EQA a bit more fun!

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