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Supplementary Figures

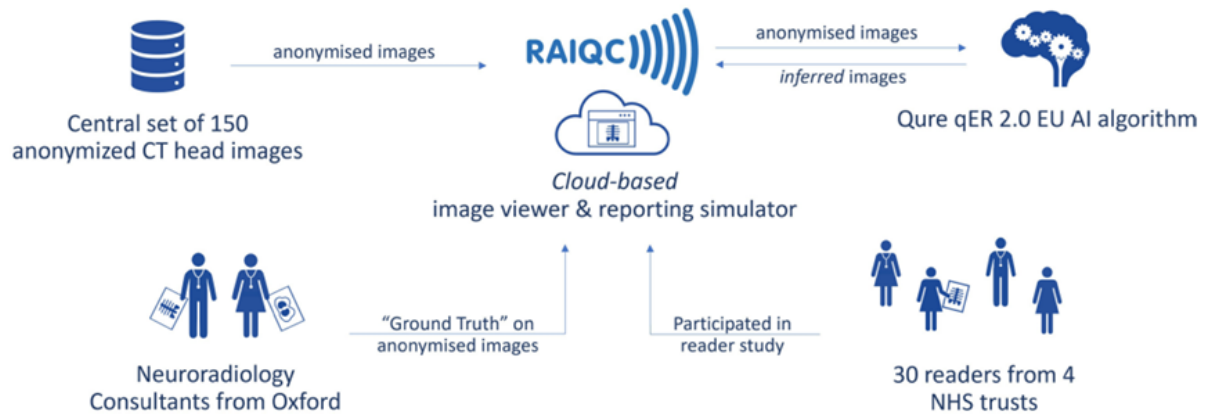


Figure S1. AI-REACT dataflow diagram. Scans selected for the study were anonymised in accordance with Oxford University Hospitals NHS Foundation Trust information governance protocol using the Insignia Insight Anonymisation tool and uploaded to the secure image viewing platform (www.raiqc.com). Access to the scans was controlled via the study platform using separate user accounts for each reader. The anonymised images were sent securely to Qure servers for inferencing, and outputs transferred back to RAIQC. Data about the readers' seniority level and professional group was retained to allow group comparisons.

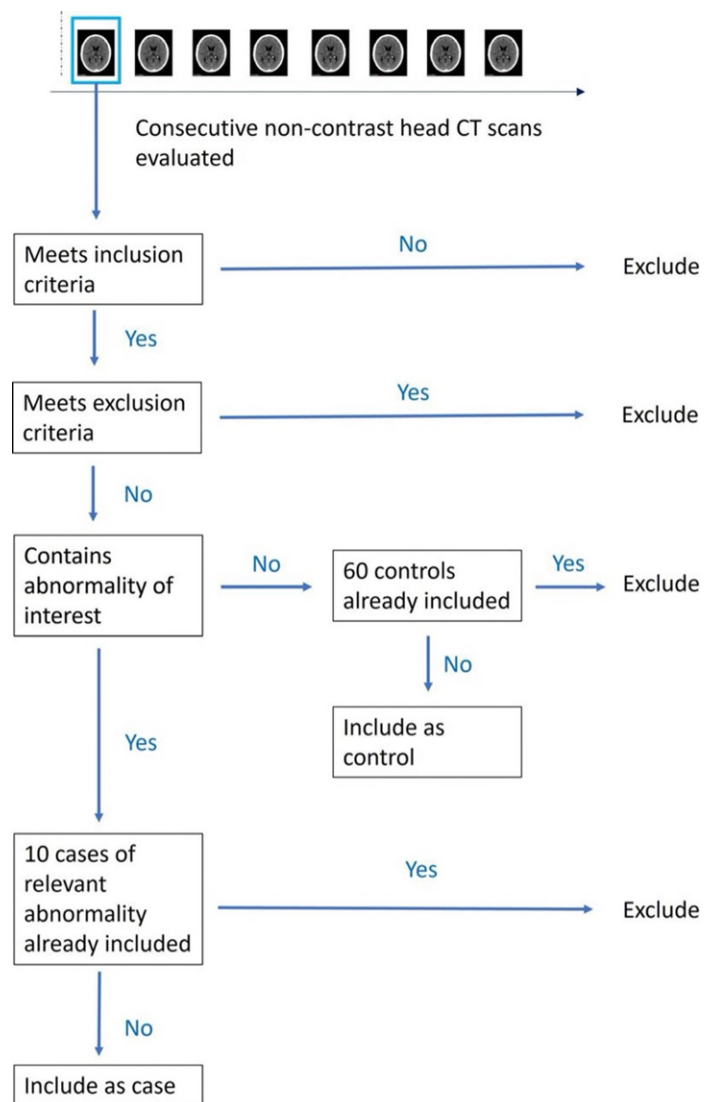


Figure S2. Flow diagram showing AI-REACT Case selection.

Supplementary Tables

Pathological Finding	Number in dataset (n =)
No Critical Abnormality	52
Critical Abnormality	98
- Intracranial Haemorrhage	71
o Subdural Haemorrhage	34
o Subarachnoid Haemorrhage	41
o Extradural Haemorrhage	13
o Intraparenchymal Haemorrhage	33
o Intraventricular Haemorrhage	20
- Infarct	27
- Mass Effect	48
- Midline Shift	17
- Skull Fracture	22

Table S1. Baseline characteristics of dataset following expert radiology panel review (ground truth)

Abnormality	AUC (95% CI)	Sensitivity (95% CI) %	Specificity (95% CI) %
Intracranial Haemorrhage	0.969 (0.946 - 0.993)	94.4 (89.8 - 97.7)	81.0 (74.2 - 87.2)
Extradural Haemorrhage	0.976 (0.954 - 0.999)	69.2 (61.3 – 76.6)	96.4 (92.4 – 98.9)
Subarachnoid Haemorrhage	0.931 (0.877 - 0.985)	90.2 (84.0 – 94.3)	84.4 (77.9 – 90.0)

Abnormality	AUC (95% CI)	Sensitivity (95% CI) %	Specificity (95% CI) %
Subdural Haemorrhage	0.895 (0.817 - 0.974)	82.4 (75.6 – 88.4)	93.1 (88.1 – 96.8)
Intraparenchymal Haemorrhage	0.821 (0.740 - 0.903)	57.6 (49.0 – 65.4)	91.5 (85.6 – 95.3)
Intraventricular Haemorrhage	0.872 (0.768 - 0.976)	65.0 (57.1 – 72.9)	98.5 (95.3 – 99.8)
Infarct	0.916 (0.863 - 0.969)	88.9 (82.5 – 93.3)	69.9 (62.0 – 77.2)
Mass Effect	0.604 (0.435 - 0.774)	28.6 (21.6 – 36.6)	72.7 (64.8 – 79.6)
Midline Shift	0.986 (0.969 - 1.000)	94.1 (88.9 – 97.2)	91.7 (86.4 – 95.8)
Fracture	0.942 (0.889 - 0.996)	72.7 (64.8 – 79.6)	98.4 (95.3 – 99.8)

Table S2. Summary of diagnostic performance characteristics for the qER 2.0 EU algorithm compared against the reference standard

Analysis	Without AI (95% CI)	With AI (95% CI)	Difference (95% CI)	p value
Critical Abnormality				
AUC	0.883 (0.847, 0.918)	0.904 (0.872, 0.935)	+0.021 (-0.006, 0.05)	0.13
Sensitivity (%)	82.8 (77.1, 88.5)	89.8 (85.7, 93.9)	+7.0 (3.3, 10.6)	<0.001
Specificity (%)	84.5 (79.5, 89.4)	78.9 (71.9, 85.9)	-5.5 (-11.0, -0.09)	0.046
Intracranial Haemorrhage				
AUC	0.853 (0.808, 0.898)	0.956 (0.933, 0.980)	+0.104 (0.060, 0.147)	<0.001
Sensitivity (%)	84.6 (78.3, 91.0)	91.6 (87.1, 96.2)	+7.0 (3.2, 10.9)	<0.001
Specificity (%)	94.6 (92.3, 96.9)	93.1 (89.4, 96.7)	-1.5 (1.2, -4.1)	0.27
Infarct				

Analysis	Without AI (95% CI)	With AI (95% CI)	Difference (95% CI)	p value
AUC	0.782 (0.716, 0.849)	0.846 (0.790, 0.902)	+0.0636 (0.0211, 0.106)	0.0035
Sensitivity (%)	60.1 (47.9, 72.4)	74.5 (64.1, 85.0)	+14.4 (6.5, 22.3)	<0.001
Specificity (%)	89.6 (85.8, 93.5)	84.5 (79.2, 89.7)	-5.1 (-1.9, -8.4)	0.0024
Mass Effect				
AUC	0.818 (0.766, 0.870)	0.848 (0.798, 0.897)	+0.0299 (-0.00111, 0.0609,)	0.059
Sensitivity (%)	63.0 (52.0, 73.9)	69.6 (59.3, 79.8)	+6.6 (0.96, 12.2)	0.023
Specificity (%)	93.5 (90.6, 96.4)	92.7 (89.0, 96.4)	-0.8 (-2.9, 1.2)	0.43
Midline Shift				
AUC	0.933 (0.885, 0.981)	0.950 (0.908, 0.992)	0.0171 (0.0501, -0.0159)	0.31
Sensitivity	83.3 (71.2, 95.5)	91.2 (82.2, 100)	+7.8 (0.4, 15.2)	0.038
Specificity	97.4 (95.8, 99.0)	94.2 (91.1, 97.2)	-3.2 (-0.94, -5.5)	0.006
Skull Fracture				
AUC	0.845 (0.790, 0.899)	0.902 (0.847, 0.956)	+0.0571 (0.0162, 0.098)	0.007
Sensitivity (%)	57.0 (43.5, 70.4)	69.8 (56.1, 83.6)	+12.9 (4.25, 21.51)	0.0039
Specificity (%)	97.6 (96.4, 98.7)	98.3 (97.0, 99.6)	+0.76 (-0.23,1.739)	0.13

Table S3. Pooled reader analyses for pathological subgroups including Area Under the Receiver Operator Curve (AUC), Sensitivity and Specificity.

Reader Subgroup	Without AI (95% CI)	With AI (95% CI)	Difference (95% CI)	p value
ED Clinicians				
AUC	0.871 (0.830, 0.912)	0.896 (0.859, 0.934)	+0.0255 (-0.014, 0.065)	0.2
Sensitivity (%)	81.0 (75.3, 86.8)	88.0 (82.8, 93.2)	+0.07 (2.8, 11.1)	0.001

Reader Subgroup	Without AI (95% CI)	With AI (95% CI)	Difference (95% CI)	p value
Specificity (%)	79.2 (72.0, 86.5)	75.2 (65.2, 85.2)	-0.04 (-12.0, 4.0)	0.31
General Radiologists				
AUC	0.914 (0.877, 0.951)	0.923 (0.892, 0.955)	+0.0093 (0.0348, -0.0162)	0.44
Sensitivity (%)	89.1 (82.5, 95.6)	92.5 (87.7, 97.2)	+3.4 (-0.4, 7.2)	0.077
Specificity (%)	90.6 (85.2, 95.9)	87.0 (80.8, 93.1)	-3.6 (2.0, -9.2)	0.18
Radiographers				
AUC	0.856 (0.778, 0.934)	0.887 (0.833, 0.940)	+0.0306 (0.1014, -0.0402)	0.34
Sensitivity (%)	75.7 (58.5, 92.9)	89.9 (84.2, 95.6)	+14.2 (30.2, -1.7)	0.07
Specificity (%)	87.9 (81.5, 94.3)	74.0 (64.0, 83.9)	-14.0 (-0.61, -27.3)	0.043
Senior Readers				
AUC	0.886 (0.851, 0.920)	0.898 (0.862, 0.934)	+0.0123 (-0.0259, 0.0505)	0.5
Sensitivity (%)	83.3 (76.2, 90.4)	90.5 (85.5, 95.5)	+7.2 (2.3, 12.1)	0.007
Specificity (%)	86.0 (78.3, 93.8)	80.9 (72.4, 89.5)	-5.1 (-10.8, 0.61)	0.078
Middle Grade Readers				
AUC	0.896 (0.845, 0.946)	0.912 (0.876, 0.948)	+0.0165 (0.0561, -0.0232)	0.39
Sensitivity (%)	86.9 (80.6, 93.2)	90.5 (84.7, 96.4)	+3.6 (-0.17, 7.4)	0.06
Specificity (%)	82.8 (72.6, 93.1)	79.4 (66.0, 92.9)	-3.4 (7.6, -14.4)	0.5

Table S4 Detection of critical abnormality by specialty and seniority reader subgroup

Analysis	Without AI (95% CI)	With AI (95% CI)	Difference (95% CI)	p value
Extradural				
AUC	0.854 (0.773, 0.935)	0.881 (0.816, 0.945)	0.0269 (0.0748, -0.0211)	0.27
Sensitivity	0.638 (0.480, 0.797)	0.685 (0.534, 0.835)	0.0462 (0.127, -0.0346)	0.26
Specificity	0.972 (0.954, 0.989)	0.975 (0.956, 0.995)	0.00389 (0.0117, -0.0039)	0.33
Subdural				
AUC	0.777 (0.718, 0.835)	0.868 (0.819, 0.917)	0.0913 (0.138, 0.0444)	<0.001
Sensitivity	0.481 (0.365, 0.596)	0.678 (0.571, 0.786)	0.198 (0.277, 0.118)	<0.001
Specificity	0.969 (0.954, 0.984)	0.959 (0.937, 0.982)	-0.00948 (0.00762, -0.0266)	0.28
Subarachnoid				
AUC	0.809 (0.751, 0.868)	0.920 (0.889, 0.952)	0.111 (0.156, 0.0663)	<0.001
Sensitivity	0.575 (0.454, 0.696)	0.844 (0.778, 0.909)	0.268 (0.356, 0.181)	<0.001
Specificity	0.948 (0.927, 0.969)	0.904 (0.866, 0.943)	-0.0438 (-0.0179, -0.0698)	0.001
Intraparenchymal				
AUC	0.828 (0.768, 0.889)	0.841 (0.781, 0.900)	0.0124 (0.0546, -0.0297)	0.56
Sensitivity	0.681 (0.570, 0.792)	0.652 (0.530, 0.775)	-0.0286 (0.0507, -0.108)	0.48
Specificity	0.932 (0.902, 0.962)	0.952 (0.927, 0.977)	0.0197 (0.0459, -0.00651)	0.14
Intraventricular				
AUC	0.803 (0.729, 0.877)	0.828 (0.749, 0.907)	0.0247 (0.0722, -0.0229)	0.31
Sensitivity	0.550 (0.394, 0.706)	0.597 (0.432, 0.761)	0.0467 (0.119, -0.0257)	0.21
Specificity	0.987 (0.980, 0.994)	0.984 (0.970, 0.997)	-0.00333 (0.00672, -0.01338)	0.51

Table S5 Pooled reader performance for intracranial haemorrhage subtypes

Analysis	Without AI (95% CI)	With AI (95% CI)	Difference (95% CI)	p value
Abnormality				
AUC	0.914 (0.877, 0.951)	0.923 (0.892, 0.955)	0.0093 (0.0348, -0.0162)	0.439
Sensitivity	0.891 (0.825, 0.956)	0.925 (0.877, 0.972)	0.034 (0.0724, -0.00438)	0.0769
Specificity	0.906 (0.852, 0.959)	0.870 (0.808, 0.931)	-0.0358 (0.0201, -0.0918)	0.181
Intracranial Haemorrhage				
AUC	0.842 (0.751, 0.932)	0.978 (0.960, 0.996)	0.136 (0.2268, 0.0455)	0.007
Sensitivity	0.939 (0.899, 0.980)	0.954 (0.917, 0.990)	0.0141 (0.027275, 0.000894)	0.038
Specificity	0.973 (0.949, 0.997)	0.978 (0.958, 0.999)	0.00506 (0.01569, -0.00557)	0.309
Extradural				
AUC	0.921 (0.853, 0.988)	0.926 (0.886, 0.966)	0.00547 (0.0472, -0.0362)	0.791
Sensitivity	0.738 (0.558, 0.919)	0.831 (0.739, 0.923)	0.0923 (0.2146, -0.0299)	0.128
Specificity	0.981 (0.965, 0.997)	0.976 (0.953, 0.999)	-0.00511 (0.00584, -0.01606)	0.341
Subdural				
AUC	0.875 (0.810, 0.939)	0.889 (0.827, 0.951)	0.0143 (0.0597, -0.0312)	0.496
Sensitivity	0.698 (0.576, 0.819)	0.724 (0.592, 0.855)	0.0259 (0.0878, -0.036)	0.386
Specificity	0.955 (0.929, 0.982)	0.963 (0.938, 0.987)	0.00778 (0.0218, -0.00624)	0.251
Subarachnoid				
AUC	0.950 (0.915, 0.984)	0.964 (0.938, 0.990)	0.0146 (0.03053, -0.00128)	0.0692
Sensitivity	0.885 (0.806, 0.963)	0.933 (0.873, 0.994)	0.0487 (0.09082, 0.00662)	0.0254
Specificity	0.967 (0.942, 0.992)	0.953 (0.922, 0.984)	-0.0135 (0.00994, -0.03697)	0.238
Intraparenchymal				
AUC	0.907 (0.858, 0.957)	0.873 (0.813, 0.933)	-0.0342 (0.00122, -0.06972)	0.0576
Sensitivity	0.817 (0.715, 0.919)	0.723 (0.601, 0.844)	-0.0943 (-0.0465, -0.1421)	<0.001
Specificity	0.958 (0.927, 0.990)	0.968 (0.947, 0.989)	0.00957 (0.0315, -0.0124)	0.371
Intraventricular				
AUC	0.905 (0.841, 0.970)	0.876 (0.799, 0.953)	-0.0292 (0.0287, -0.0871)	0.316
Sensitivity	0.760 (0.620, 0.900)	0.735 (0.582, 0.888)	-0.025 (0.0745, -0.1245)	0.618
Specificity	0.992 (0.983, 1.000)	0.992 (0.984, 1.000)	0.000769 (0.01067, -0.00913)	0.871
Infarct				
AUC	0.850 (0.765, 0.936)	0.874 (0.812, 0.936)	0.0234 (0.0732, -0.0264)	0.316
Sensitivity	0.720 (0.568, 0.872)	0.792 (0.674, 0.910)	0.072 (0.1541, -0.0101)	0.0806
Specificity	0.948 (0.921, 0.975)	0.934 (0.897, 0.970)	-0.0144 (0.0184, -0.0472)	0.349

Analysis	Without AI (95% CI)	With AI (95% CI)	Difference (95% CI)	p value
Mass Effect				
AUC	0.888 (0.846, 0.930)	0.875 (0.820, 0.929)	-0.0135 (0.017, -0.044)	0.344
Sensitivity	0.827 (0.731, 0.923)	0.812 (0.689, 0.936)	-0.0146 (0.0385, -0.0676)	0.55
Specificity	0.891 (0.827, 0.955)	0.881 (0.809, 0.954)	-0.0098 (0.027, -0.0466)	0.562
Midline Shift				
AUC	0.953 (0.908, 0.999)	0.951 (0.907, 0.994)	-0.00265 (0.0234, -0.0287)	0.823
Sensitivity	0.900 (0.790, 1.000)	0.912 (0.829, 0.995)	0.0118 (0.077, -0.0534)	0.693
Specificity	0.973 (0.953, 0.993)	0.962 (0.935, 0.989)	-0.0113 (0.00444, -0.027)	0.146
Skull Fracture				
AUC	0.933 (0.884, 0.981)	0.929 (0.879, 0.978)	-0.00391 (0.0199, -0.0277)	0.73
Sensitivity	0.832 (0.717, 0.947)	0.836 (0.723, 0.950)	0.00455 (0.0369, -0.0278)	0.758
Specificity	0.979 (0.962, 0.995)	0.981 (0.963, 1.000)	0.00234 (0.01255, -0.00786)	0.626

Table S6: General Radiology subgroup

Analysis	Without_AI	With_AI	Difference	p value
Abnormality AUC	0.871 (0.830, 0.912)	0.896 (0.859, 0.934)	0.0255 (0.065, -0.014)	0.199
Abnormality Sens	0.81 (0.753, 0.868)	0.88 (0.828, 0.932)	0.0694 (0.1107, 0.0282)	0.00132
Abnormality Spec	0.792 (0.720, 0.865)	0.752 (0.652, 0.852)	-0.0403 (0.0398, -0.1203)	0.31
ICH AUC	0.880 (0.836, 0.923)	0.948 (0.921, 0.976)	0.0686 (0.1073, 0.0299)	<0.001
ICH Sens	0.805 (0.731, 0.878)	0.894 (0.838, 0.949)	0.0892 (0.1398, 0.0386)	<0.001
ICH Spec	0.934 (0.900, 0.968)	0.917 (0.869, 0.966)	-0.0169 (0.0238, -0.0575)	0.406
EDH AUC	0.827 (0.725, 0.928)	0.851 (0.761, 0.941)	0.0242 (0.089, -0.0406)	0.461
EDH Sens	0.605 (0.422, 0.788)	0.595 (0.389, 0.801)	-0.0103 (0.104, -0.124)	0.859
EDH Spec	0.975 (0.957, 0.992)	0.980 (0.962, 0.998)	0.00535 (0.01424, -0.00353)	0.228
SDH AUC	0.741 (0.672, 0.811)	0.858 (0.796, 0.920)	0.116 (0.1775, 0.0554)	<0.001
SDH Sens	0.375 (0.246, 0.503)	0.655 (0.527, 0.783)	0.28 (0.379, 0.182)	<0.001
SDH Spec	0.984 (0.974, 0.995)	0.962 (0.939, 0.985)	-0.0224 (-0.000112, -0.044716)	0.0489
SAH AUC	0.762 (0.695, 0.829)	0.898 (0.861, 0.935)	0.136 (0.1947, 0.0775)	<0.001
SAH Sens	0.436 (0.299, 0.572)	0.783 (0.697, 0.868)	0.347 (0.452, 0.242)	<0.001
SAH Spec	0.936 (0.907, 0.966)	0.883 (0.832, 0.935)	-0.0529 (-0.0191, -0.0866)	0.0025
IPH AUC	0.816 (0.747, 0.885)	0.845 (0.783, 0.906)	0.0287 (0.0876, -0.0302)	0.337
IPH Sens	0.663 (0.541, 0.785)	0.640 (0.508, 0.772)	-0.0229 (0.0853, -0.131)	0.674
IPH Spec	0.907 (0.869, 0.946)	0.941 (0.908, 0.974)	0.0336 (0.07306, -0.00581)	0.0928
IVH AUC	0.759 (0.670, 0.848)	0.803 (0.713, 0.894)	0.0443 (0.1158, -0.0272)	0.22
IVH Sens	0.447 (0.271, 0.623)	0.520 (0.339, 0.701)	0.0733 (0.15636, -0.00969)	0.0823
IVH Spec	0.985 (0.973, 0.996)	0.982 (0.966, 0.998)	-0.00256 (0.00917, -0.0143)	0.666
Infarct AUC	0.760 (0.683, 0.836)	0.835 (0.768, 0.902)	0.0751 (0.1399, 0.0104)	0.0234
Infarct Sens	0.549 (0.412, 0.687)	0.704 (0.571, 0.837)	0.155 (0.2644, 0.0449)	0.00629
Infarct Spec	0.877 (0.825, 0.929)	0.817 (0.748, 0.885)	-0.0608 (-0.0204, -0.1012)	0.00423
ME AUC	0.810 (0.752, 0.868)	0.847 (0.791, 0.903)	0.0372 (0.07935, -0.00491)	0.0814
ME Sens	0.590 (0.474, 0.706)	0.657 (0.543, 0.771)	0.0667 (0.1323, 0.00103)	0.0468
ME Spec	0.950 (0.927, 0.974)	0.946 (0.913, 0.978)	-0.00458 (0.0241, -0.0333)	0.753

Analysis	Without_AI	With_AI	Difference	p value
MLS AUC	0.934 (0.883, 0.985)	0.962 (0.926, 0.997)	0.0279 (0.0669, -0.011)	0.157
MLS Sens	0.831 (0.697, 0.965)	0.929 (0.831, 1.000)	0.098 (0.19294, 0.00314)	0.043
MLS Spec	0.978 (0.962, 0.994)	0.937 (0.903, 0.972)	-0.0411 (-0.0132, -0.069)	0.00422
Fracture AUC	0.811 (0.745, 0.877)	0.887 (0.824, 0.949)	0.0758 (0.1398, 0.0118)	0.0218
Fracture Sens	0.455 (0.300, 0.609)	0.615 (0.458, 0.772)	0.161 (0.2767, 0.0445)	0.00792
Fracture Spec	0.971 (0.955, 0.986)	0.982 (0.967, 0.997)	0.0109 (0.0257, -0.00383)	0.146

Table S7: ED subgroup

Analysis	Without_AI	With_AI	Difference	p value
Abnormality AUC	0.856 (0.778, 0.934)	0.887 (0.833, 0.940)	0.0306 (0.1014, -0.0402)	0.342
Abnormality Sens	0.757 (0.585, 0.929)	0.899 (0.842, 0.956)	0.142 (0.3015, -0.0169)	0.0697
Abnormality Spec	0.879 (0.815, 0.943)	0.740 (0.640, 0.839)	-0.14 (-0.00613, -0.27312)	0.0426
ICH AUC	0.793 (0.715, 0.871)	0.936 (0.903, 0.969)	0.143 (0.2256, 0.0602)	0.00305
ICH Sens	0.783 (0.594, 0.972)	0.910 (0.851, 0.969)	0.127 (0.283, -0.0295)	0.089
ICH Spec	0.924 (0.891, 0.957)	0.876 (0.789, 0.963)	-0.0481 (0.0298, -0.126)	0.186
EDH AUC	0.802 (0.732, 0.872)	0.880 (0.792, 0.967)	0.0775 (0.1723, -0.0172)	0.0955
EDH Sens	0.538 (0.357, 0.720)	0.662 (0.466, 0.857)	0.123 (0.321, -0.075)	0.16
EDH Spec	0.943 (0.905, 0.981)	0.961 (0.923, 0.998)	0.0175 (0.03479, 0.000247)	0.0469
SDH AUC	0.685 (0.532, 0.839)	0.855 (0.779, 0.932)	0.17 (0.3122, 0.0283)	0.0267
SDH Sens	0.365 (0.168, 0.562)	0.659 (0.516, 0.801)	0.294 (0.459, 0.13)	0.00235
SDH Spec	0.950 (0.892, 1.000)	0.945 (0.911, 0.979)	-0.00517 (0.0287, -0.0391)	0.746
SAH AUC	0.671 (0.503, 0.838)	0.900 (0.841, 0.958)	0.229 (0.3602, 0.0972)	0.00838
SAH Sens	0.374 (0.064, 0.685)	0.846 (0.720, 0.973)	0.472 (0.713, 0.231)	0.00444
SAH Spec	0.946 (0.890, 1.000)	0.868 (0.803, 0.934)	-0.0775 (-0.0156, -0.1394)	0.0187
IPH AUC	0.707 (0.592, 0.821)	0.764 (0.687, 0.840)	0.0571 (0.1445, -0.0304)	0.175
IPH Sens	0.463 (0.184, 0.741)	0.549 (0.411, 0.686)	0.0857 (0.31, -0.139)	0.377
IPH Spec	0.955 (0.915, 0.995)	0.953 (0.921, 0.985)	-0.00174 (0.0537, -0.0572)	0.942
IVH AUC	0.732 (0.614, 0.851)	0.806 (0.703, 0.909)	0.0736 (0.15149, -0.00433)	0.0605
IVH Sens	0.44 (0.250, 0.630)	0.55 (0.348, 0.752)	0.11 (0.2793, -0.0593)	0.17
IVH Spec	0.985 (0.973, 0.996)	0.971 (0.933, 1.000)	-0.0138 (0.026, -0.0537)	0.416
Infarct AUC	0.713 (0.579, 0.848)	0.823 (0.708, 0.937)	0.11 (0.1598, 0.0593)	<0.001
Infarct Sens	0.520 (0.308, 0.732)	0.776 (0.610, 0.942)	0.256 (0.5044, 0.0076)	0.0452
Infarct Spec	0.850 (0.685, 1.000)	0.752 (0.619, 0.885)	-0.0976 (0.0328, -0.228)	0.112
ME AUC	0.701 (0.596, 0.806)	0.796 (0.722, 0.870)	0.0947 (0.1743, 0.0151)	0.0264

Analysis	Without_AI	With_AI	Difference	p value
ME Sens	0.354 (0.131, 0.577)	0.579 (0.451, 0.708)	0.225 (0.4343, 0.0157)	0.0389
ME Spec	0.978 (0.932, 1.000)	0.963 (0.931, 0.995)	-0.0157 (0.0268, -0.0582)	0.393
MLS AUC	0.891 (0.809, 0.973)	0.915 (0.790, 1.000)	0.0239 (0.159, -0.111)	0.684
MLS Sens	0.706 (0.472, 0.940)	0.859 (0.665, 1.000)	0.153 (0.437, -0.131)	0.242
MLS Spec	0.962 (0.874, 1.000)	0.914 (0.868, 0.961)	-0.0481 (0.0104, -0.1067)	0.0962
Fracture AUC	0.769 (0.621, 0.917)	0.892 (0.815, 0.969)	0.123 (0.24559, -0.00021)	0.0503
Fracture Sens	0.391 (0.0481, 0.7337)	0.673 (0.5048, 0.8407)	0.282 (0.6064, -0.0427)	0.0767
Fracture Spec	0.983 (0.967, 0.999)	0.991 (0.980, 1.000)	0.00781 (0.01945, -0.00382)	0.156

Table S8: Radiographer subgroup

Analysis	Without_AI	With_AI	Difference	p value
Abnormality AUC	0.886 (0.851, 0.920)	0.898 (0.862, 0.934)	0.0123 (0.0505, -0.0259)	0.5
Abnormality Sens	0.833 (0.762, 0.904)	0.905 (0.855, 0.955)	0.0722 (0.1209, 0.0234)	0.00674
Abnormality Spec	0.860 (0.783, 0.938)	0.809 (0.724, 0.895)	-0.0509 (0.00609, -0.10798)	0.0775
ICH AUC	0.832 (0.750, 0.914)	0.955 (0.928, 0.982)	0.123 (0.2063, 0.0403)	0.00724
ICH Sens	0.858 (0.774, 0.941)	0.927 (0.879, 0.974)	0.069 (0.13304, 0.00498)	0.0368
ICH Spec	0.965 (0.940, 0.989)	0.947 (0.911, 0.983)	-0.0177 (0.01, -0.0455)	0.2
EDH AUC	0.842 (0.730, 0.954)	0.876 (0.798, 0.953)	0.0339 (0.1025, -0.0348)	0.32
EDH Sens	0.608 (0.409, 0.807)	0.700 (0.523, 0.877)	0.0923 (0.2199, -0.0353)	0.148
EDH Spec	0.980 (0.965, 0.996)	0.975 (0.954, 0.997)	-0.00511 (0.00493, -0.01515)	0.297
SDH AUC	0.788 (0.707, 0.869)	0.855 (0.794, 0.916)	0.0669 (0.14364, -0.00977)	0.0829
SDH Sens	0.521 (0.353, 0.688)	0.688 (0.561, 0.816)	0.168 (0.321, 0.0143)	0.0346
SDH Spec	0.972 (0.951, 0.992)	0.959 (0.936, 0.983)	-0.0121 (0.01, -0.0341)	0.262
SAH AUC	0.846 (0.767, 0.924)	0.912 (0.867, 0.957)	0.0665 (0.1213, 0.0116)	0.0225
SAH Sens	0.633 (0.432, 0.834)	0.826 (0.715, 0.936)	0.192 (0.3429, 0.0417)	0.0174
SAH Spec	0.959 (0.936, 0.981)	0.919 (0.875, 0.963)	-0.0396 (-0.0123, -0.067)	0.00626
IPH AUC	0.852 (0.784, 0.919)	0.861 (0.803, 0.919)	0.00914 (0.0594, -0.0411)	0.709
IPH Sens	0.737 (0.613, 0.861)	0.711 (0.583, 0.839)	-0.0257 (0.0697, -0.1211)	0.581
IPH Spec	0.940 (0.902, 0.978)	0.943 (0.905, 0.980)	0.00261 (0.0436, -0.0383)	0.893
IVH AUC	0.825 (0.742, 0.908)	0.857 (0.782, 0.932)	0.0322 (0.0832, -0.0188)	0.214
IVH Sens	0.615 (0.438, 0.792)	0.680 (0.523, 0.837)	0.065 (0.1642, -0.0342)	0.195
IVH Spec	0.987 (0.977, 0.997)	0.985 (0.970, 1.000)	-0.00154 (0.0114, -0.0145)	0.806
Infarct AUC	0.797 (0.730, 0.864)	0.846 (0.787, 0.906)	0.0495 (0.09039, 0.00865)	0.0195
Infarct Sens	0.624 (0.491, 0.757)	0.732 (0.597, 0.867)	0.108 (0.1797, 0.0363)	0.00563
Infarct Spec	0.904 (0.851, 0.957)	0.876 (0.812, 0.940)	-0.028 (0.00411, -0.06011)	0.0827
ME AUC	0.839 (0.784, 0.895)	0.844 (0.791, 0.896)	0.00413 (0.0452, -0.037)	0.828

Analysis	Without_AI	With_AI	Difference	p value
ME Sens	0.706 (0.569, 0.843)	0.723 (0.589, 0.857)	0.0167 (0.0829, -0.0496)	0.583
ME Spec	0.922 (0.872, 0.971)	0.912 (0.853, 0.971)	-0.0098 (0.0251, -0.0447)	0.559
MLS AUC	0.934 (0.871, 0.997)	0.945 (0.901, 0.988)	0.0108 (0.0606, -0.039)	0.651
MLS Sens	0.859 (0.722, 0.996)	0.900 (0.791, 1.000)	0.0412 (0.1352, -0.0529)	0.359
MLS Spec	0.974 (0.955, 0.992)	0.944 (0.911, 0.978)	-0.0293 (-0.00388, -0.05477)	0.025
Fracture AUC	0.858 (0.769, 0.947)	0.904 (0.846, 0.962)	0.0459 (0.1244, -0.0327)	0.225
Fracture Sens	0.600 (0.392, 0.808)	0.745 (0.603, 0.888)	0.145 (0.2606, 0.0303)	0.0186
Fracture Spec	0.972 (0.956, 0.988)	0.981 (0.964, 0.998)	0.00937 (0.02394, -0.00519)	0.196

Table S9: Senior subgroup

Analysis	Without_AI	With_AI	Difference	p value
Abnormality AUC	0.896 (0.845, 0.946)	0.912 (0.876, 0.948)	0.0165 (0.0561, -0.0232)	0.385
Abnormality Sens	0.869 (0.806, 0.932)	0.905 (0.847, 0.964)	0.0361 (0.0739, -0.0017)	0.0597
Abnormality Spec	0.828 (0.726, 0.931)	0.794 (0.660, 0.929)	-0.034 (0.0756, -0.1435)	0.504
ICH AUC	0.885 (0.831, 0.939)	0.969 (0.947, 0.991)	0.0837 (0.142, 0.0254)	0.00752
ICH Sens	0.885 (0.817, 0.952)	0.930 (0.877, 0.982)	0.0451 (0.08198, 0.00816)	0.018
ICH Spec	0.966 (0.940, 0.991)	0.951 (0.895, 1.000)	-0.0152 (0.0273, -0.0577)	0.444
EDH AUC	0.908 (0.842, 0.974)	0.913 (0.853, 0.973)	0.005 (0.0249, -0.0149)	0.586
EDH Sens	0.777 (0.634, 0.920)	0.785 (0.631, 0.938)	0.00769 (0.108, -0.0926)	0.868
EDH Spec	0.975 (0.956, 0.994)	0.980 (0.959, 1.000)	0.00438 (0.01332, -0.00456)	0.297
SDH AUC	0.824 (0.739, 0.908)	0.905 (0.861, 0.949)	0.0812 (0.1467, 0.0158)	0.0183
SDH Sens	0.536 (0.359, 0.712)	0.729 (0.615, 0.844)	0.194 (0.309, 0.0781)	0.00267
SDH Spec	0.973 (0.953, 0.994)	0.960 (0.933, 0.988)	-0.0129 (0.0109, -0.0368)	0.278
SAH AUC	0.891 (0.807, 0.976)	0.951 (0.922, 0.980)	0.0597 (0.13, -0.0107)	0.0883
SAH Sens	0.744 (0.560, 0.927)	0.908 (0.835, 0.980)	0.164 (0.3028, 0.0254)	0.0251
SAH Spec	0.945 (0.906, 0.984)	0.913 (0.848, 0.977)	-0.0324 (0.00645, -0.07131)	0.0955
IPH AUC	0.885 (0.825, 0.945)	0.858 (0.795, 0.922)	-0.0265 (0.0246, -0.0776)	0.303
IPH Sens	0.783 (0.680, 0.885)	0.671 (0.540, 0.803)	-0.111 (-0.0227, -0.2002)	0.0143
IPH Spec	0.924 (0.882, 0.966)	0.956 (0.925, 0.986)	0.0313 (0.06466, -0.00205)	0.0646
IVH AUC	0.862 (0.787, 0.937)	0.828 (0.736, 0.920)	-0.0345 (0.0298, -0.0987)	0.283
IVH Sens	0.625 (0.448, 0.802)	0.610 (0.425, 0.795)	-0.015 (0.0727, -0.1027)	0.724
IVH Spec	0.988 (0.972, 1.000)	0.986 (0.970, 1.000)	-0.00154 (0.00767, -0.01075)	0.732
Infarct AUC	0.828 (0.738, 0.918)	0.860 (0.796, 0.924)	0.0319 (0.0883, -0.0246)	0.244
Infarct Sens	0.668 (0.498, 0.838)	0.768 (0.642, 0.894)	0.1 (0.20365, -0.00365)	0.0572
Infarct Spec	0.903 (0.837, 0.969)	0.853 (0.751, 0.954)	-0.0504 (0.00911, -0.10991)	0.0894
ME AUC	0.863 (0.809, 0.916)	0.884 (0.831, 0.937)	0.0213 (0.0574, -0.0149)	0.239

Analysis	Without_AI	With_AI	Difference	p value
ME Sens	0.738 (0.615, 0.860)	0.775 (0.662, 0.888)	0.0375 (0.1074, -0.0324)	0.267
ME Spec	0.908 (0.859, 0.957)	0.906 (0.846, 0.966)	-0.00196 (0.0303, -0.0342)	0.9
MLS AUC	0.959 (0.919, 0.999)	0.962 (0.923, 1.000)	0.00274 (0.0236, -0.0181)	0.794
MLS Sens	0.900 (0.800, 1.000)	0.941 (0.874, 1.000)	0.0412 (0.09007, -0.00771)	0.0893
MLS Spec	0.968 (0.945, 0.990)	0.940 (0.902, 0.977)	-0.0278 (0.00189, -0.05753)	0.0649
Fracture AUC	0.885 (0.827, 0.944)	0.918 (0.864, 0.972)	0.0331 (0.0774, -0.0111)	0.124
Fracture Sens	0.664 (0.463, 0.864)	0.741 (0.585, 0.897)	0.0773 (0.2078, -0.0532)	0.222
Fracture Spec	0.975 (0.961, 0.989)	0.983 (0.967, 0.998)	0.00781 (0.02003, -0.00441)	0.207

Table S10: Middle subgroup

Analysis	Without_AI	With_AI	Difference	p value
Abnormality AUC	0.867 (0.823, 0.912)	0.887 (0.846, 0.927)	0.0194 (0.0698, -0.0309)	0.426
Abnormality Sens	0.811 (0.750, 0.873)	0.886 (0.827, 0.945)	0.0742 (0.124, 0.024)	0.00561
Abnormality Spec	0.783 (0.680, 0.886)	0.734 (0.599, 0.869)	-0.0491 (0.0628, -0.1609)	0.362
ICH AUC	0.876 (0.829, 0.923)	0.947 (0.918, 0.975)	0.0709 (0.1118, 0.0299)	<0.001
ICH Sens	0.803 (0.723, 0.883)	0.903 (0.845, 0.961)	0.1 (0.1625, 0.0375)	0.00262
ICH Spec	0.957 (0.928, 0.986)	0.919 (0.860, 0.978)	-0.038 (0.00887, -0.08482)	0.107
EDH AUC	0.829 (0.720, 0.938)	0.862 (0.769, 0.955)	0.0334 (0.1087, -0.0419)	0.38
EDH Sens	0.646 (0.470, 0.822)	0.654 (0.442, 0.866)	0.00769 (0.149, -0.134)	0.914
EDH Spec	0.974 (0.956, 0.993)	0.979 (0.959, 0.999)	0.00438 (0.01355, -0.00479)	0.33
SDH AUC	0.737 (0.660, 0.814)	0.871 (0.810, 0.932)	0.134 (0.211, 0.057)	<0.001
SDH Sens	0.359 (0.219, 0.499)	0.694 (0.566, 0.822)	0.335 (0.44, 0.231)	<0.001
SDH Spec	0.990 (0.982, 0.998)	0.957 (0.928, 0.986)	-0.0328 (-0.00758, -0.05794)	0.011
SAH AUC	0.787 (0.711, 0.864)	0.899 (0.859, 0.939)	0.112 (0.185, 0.0381)	0.00592
SAH Sens	0.492 (0.318, 0.667)	0.800 (0.694, 0.906)	0.308 (0.455, 0.16)	<0.001
SAH Spec	0.937 (0.899, 0.974)	0.878 (0.813, 0.944)	-0.0586 (-0.0191, -0.098)	0.00442
IPH AUC	0.829 (0.758, 0.901)	0.846 (0.784, 0.909)	0.0169 (0.0772, -0.0434)	0.577
IPH Sens	0.703 (0.584, 0.821)	0.660 (0.523, 0.797)	-0.0429 (0.0794, -0.1651)	0.479
IPH Spec	0.906 (0.863, 0.949)	0.930 (0.889, 0.972)	0.0243 (0.0744, -0.0257)	0.319
IVH AUC	0.782 (0.690, 0.874)	0.809 (0.710, 0.908)	0.0269 (0.0922, -0.0385)	0.414
IVH Sens	0.480 (0.291, 0.669)	0.555 (0.367, 0.743)	0.075 (0.1706, -0.0206)	0.121
IVH Spec	0.983 (0.967, 0.999)	0.979 (0.959, 0.999)	-0.00385 (0.00922, -0.01691)	0.554
Infarct AUC	0.774 (0.704, 0.845)	0.832 (0.766, 0.899)	0.058 (0.116279, -0.000279)	0.0511
Infarct Sens	0.572 (0.425, 0.719)	0.708 (0.562, 0.854)	0.136 (0.2459, 0.0261)	0.0168
Infarct Spec	0.859 (0.790, 0.928)	0.795 (0.703, 0.887)	-0.064 (-0.00807, -0.11993)	0.0274
ME AUC	0.814 (0.757, 0.870)	0.853 (0.796, 0.909)	0.0389 (0.0777, 3.78e-05)	0.0498

Analysis	Without_AI	With_AI	Difference	p value
ME Sens	0.617 (0.500, 0.734)	0.685 (0.570, 0.801)	0.0687 (0.14141, -0.00391)	0.0624
ME Spec	0.938 (0.910, 0.967)	0.936 (0.898, 0.975)	-0.00196 (0.0336, -0.0375)	0.913
MLS AUC	0.940 (0.887, 0.993)	0.956 (0.915, 0.997)	0.0162 (0.0624, -0.03)	0.476
MLS Sens	0.859 (0.733, 0.985)	0.929 (0.826, 1.000)	0.0706 (0.1686, -0.0274)	0.154
MLS Spec	0.968 (0.947, 0.990)	0.923 (0.883, 0.962)	-0.0459 (-0.0123, -0.0794)	0.00807
Fracture AUC	0.811 (0.737, 0.884)	0.894 (0.829, 0.958)	0.0829 (0.16, 0.006)	0.0365
Fracture Sens	0.432 (0.254, 0.610)	0.650 (0.491, 0.809)	0.218 (0.3677, 0.0686)	0.00596
Fracture Spec	0.968 (0.951, 0.985)	0.983 (0.966, 1.000)	0.0148 (0.03087, -0.00118)	0.0692

Table S11: ED Middle + Senior subgroup