**Supplementary Table 1.** Contrast agent administration (Iohexol) volumes by imaging type.

|  |  |
| --- | --- |
| Imaging Target | Volume (ml) |
| Brain | 70 |
| Brain CT angiography | 70 |
| Chest | 60-70 |
| Chest CT angiography | 70-70 |
| Coronary CT angiography | 85-90 |
| Abdomen | 80-90 |
| Abdominal CT angiography | 70 |

**Supplementary Table 2.** Comparison of additional baseline variables of patients who underwent contrast-enhanced CT (n=9747) and non-enhanced CT (n=23191) before and after matching.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Contrast-enhanced, n=9747 | Non-enhanced, n=23191 | P value (non-matched) | Non-enhanced matched, n=9747 | P value (matched) |
| Diagnoses, n (%) |  |  |  |  |  |
| Smoking | 2565 (22) | 6027 (20.2) | <0.001 | 2415 (20.7) | 0.017 |
| Asthma | 397 (3.4) | 1200 (4) | 0.003 | 555 (4.8) | <0.001 |
| Hypothyroidism | 1014 (8.7) | 2805 (9.4) | 0.022 | 1011 (8.7) | 0.944 |
| Medications Administered, n (%) |  |  |  |  |  |
| Anti-platelet aggregates | 1059 (9.1) | 3357 (11.3) | <0.001 | 1109 (9.5) | 0.26 |
| Alpha blockers | 585 (5) | 1835 (6.2) | <0.001 | 641 (5.5) | 0.1 |
| Anti-depressants | 586 (5) | 1593 (5.3) | 0.195 | 639 (5.5) | 0.12 |
| Anticholinergics | 1012 (8.7) | 2115 (7.1) | <0.001 | 973 (8.3) | 0.36 |
| Antiemetics | 2300 (19.7) | 4228 (14.2) | <0.001 | 2172 (18.6) | 0.033 |
| Antipsychotics | 415 (3.6) | 1354 (4.5) | <0.001 | 438 (3.8) | 0.422 |
| Lactulose | 555 (4.8) | 1496 (5) | 0.279 | 571 (4.9) | 0.625 |
| Benzodiazepines | 1588 (13.6) | 3899 (13.1) | 0.156 | 1597 (13.7) | 0.864 |
| Beta agonists | 699 (6) | 1730 (5.8) | 0.471 | 690 (5.9) | 0.803 |
| Beta blockers | 2109 (18.1) | 6050 (20.3) | <0.001 | 2298 (19.7) | 0.002 |
| Beta-lactams | 3934 (33.7) | 8908 (29.9) | <0.001 | 4041 (34.6) | 0.14 |
| Calcium channel blockers | 1145 (9.8) | 3812 (12.8) | <0.001 | 1310 (11.2) | <0.001 |
| Cephalosporins | 3102 (26.6) | 6491 (21.8) | <0.001 | 2818 (24.2) | <0.001 |
| Heparin | 2365 (20.3) | 4523 (15.2) | <0.001 | 2019 (17.3) | <0.001 |
| Medical nutrition | 540 (4.6) | 1696 (5.7) | <0.001 | 621 (5.3) | 0.015 |
| Disothiazide diuretics | 395 (3.4) | 1011 (3.4) | 1 | 419 (3.6) | 0.392 |
| Folic acid | 266 (2.3) | 813 (2.7) | 0.01 | 298 (2.6) | 0.173 |
| Corticosteroids | 1459 (12.5) | 2965 (10) | <0.001 | 1300 (11.1) | 0.001 |
| Insulin | 763 (6.5) | 2916 (9.8) | <0.001 | 862 (7.4) | 0.011 |
| Laxatives | 778 (6.7) | 1984 (6.7) | 0.965 | 809 (6.9) | 0.42 |
| Macrolides | 534 (4.6) | 1015 (3.4) | <0.001 | 464 (4) | 0.024 |
| Metformin | 709 (6.1) | 1813 (6.1) | 1 | 729 (6.2) | 0.586 |
| Metronidazole | 2155 (18.5) | 2385 (8) | <0.001 | 1859 (15.9) | <0.001 |
| Opioids | 3755 (32.2) | 6942 (23.3) | <0.001 | 3509 (30.1) | 0.001 |
| Paracetamol (IV) | 407 (3.5) | 1315 (4.4) | <0.001 | 828 (7.1) | <0.001 |
| Packed blood cells | 393 (3.4) | 1068 (3.6) | 0.3 | 471 (4) | 0.007 |
| Penicillins | 951 (8.2) | 2736 (9.2) | 0.001 | 1258 (10.8) | <0.001 |
| KCl (IV) | 418 (3.6) | 1126 (3.8) | 0.356 | 622 (5.3) | <0.001 |
| Proton pump inhibitors | 2999 (25.7) | 7523 (25.3) | 0.334 | 3467 (29.7) | <0.001 |
| Psychiatric medication | 2239 (19.2) | 6034 (20.3) | 0.016 | 2304 (19.8) | 0.283 |
| Fluoroquinolones | 988 (8.5) | 1930 (6.5) | <0.001 | 1061 (9.1) | 0.091 |
| Renin-angiotensin-aldosterone system inhibitors | 2020 (17.3) | 5669 (19) | <0.001 | 2172 (18.6) | 0.01 |
| Selective serotonin reuptake inhibitors | 383 (3.3) | 1018 (3.4) | 0.506 | 400 (3.4) | 0.537 |
| Statins | 1582 (13.6) | 4356 (14.6) | 0.006 | 1647 (14.1) | 0.218 |
| Thyroid hormone replacement | 462 (4) | 1287 (4.3) | 0.103 | 509 (4.4) | 0.123 |
| Laboratory Results |  |  |  |  |  |
| Neutrophils, k/ul | 7.4±4.2 | 7.4±4.3 | 0.423 | 7.4±4.5 | 0.143 |
| Eosinophils, k/ul | 0.1±0.2 | 0.1±0.2 | 0.644 | 0.1±0.2 | 0.019 |
| Hematocrit, % | 36.5±6.5 | 36.2±6.6 | 0.003 | 35.9±6.9 | <0.001 |
| Mean corpuscular volume, fl/cell | 85.5±6.9 | 86.1±6.7 | <0.001 | 85.7±6.8 | 0.029 |
| Platelets, k/ul | 245.5±117.4 | 230.7±105.4 | <0.001 | 239.3±121.1 | 0.001 |
| Bacteriuria post imaging, n (%) | 299 (2.6) | 1328 (4.5) | <0.001 | 344 (2.9) | 0.072 |
| Bacteriuria, n (%) | 503 (4.3) | 1725 (5.8) | <0.001 | 540 (4.6) | 0.241 |
| BNP, n (%) | 636 (5.5) | 1081 (3.6) | <0.001 | 473 (4.1) | <0.001 |
| Troponin, n (%) | 2136 (18.3) | 4561 (15.3) | <0.001 | 1651 (14.2) | <0.001 |
| Hemodynamic parameters |  |  |  |  |  |
| Average SBP, mmHg | 132.9±24.9 | 136.2±27.4 | <0.001 | 132.9±26.6 | 0.622 |
| Minimal SBP, mmHg | 127.4±24.6 | 130±27.6 | <0.001 | 126.4±26.4 | <0.001 |
| Average DBP, mmHg | 74.8±84.7 | 95.9±3650.3 | 0.955 | 127.7±5832.7 | 0.023 |
| Minimal DBP, mmHg | 70.4±14.1 | 70.3±14.8 | 0.429 | 69.5±13.8 | <0.001 |
| Minimal HR, bpm | 81±17.7 | 78.4±16.5 | <0.001 | 79.7±16.6 | <0.001 |
| Average HR, bpm | 85.3±17.3 | 82.7±16.2 | <0.001 | 84.4±16.3 | 0.002 |
| Surgery, n (%) | 619 (5.3) | 2103 (7.1) | <0.001 | 704 (6) | 0.016 |

CT, computed tomography; SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rate; IV, intravenous

**Supplementary Table 3.** Standardized mean differences in the variables used for propensity score matching between patients that had undergone contrast-enhanced CT and propensity matched patients in the non-enhanced group, stratified by eGFR.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Subgroup stratified by eGFR, ml/min/1.73m² | | |
| Variable | **<30** | **30-60** | **≥ 60** |
| Age | 0.123 | 0.074 | 0.033 |
| Gender | 0.060 | 0.129 | 0.025 |
| Days in hospital | 0.068 | 0.074 | 0.123 |
| CKD | 0.091 | 0.060 | 0.076 |
| Diabetes | 0.008 | 0.018 | 0.016 |
| Heart failure | 0.039 | 0.017 | 0.008 |
| Nearest SBP | 0.011 | 0.060 | 0.015 |
| Antihypertensives | 0.053 | 0.031 | 0.060 |
| Loop Diuretics | 0.082 | 0.038 | 0.045 |
| Antibiotics | 0.098 | 0.044 | 0.003 |
| Fluids | 0.046 | 0.026 | 0.114 |
| Creatinine | 0.125 | 0.197 | 0.016 |
| BUN | 0.007 | 0.097 | 0.045 |
| eGFR | 0.122 | 0.109 | 0.023 |
| Kidney | 0.217 | 0.015 | 0.001 |
| Chest | 0.009 | 0.018 | 0.018 |
| Brain | 0.081 | 0.013 | 0.004 |
| Abdominal | 0.068 | 0.039 | 0.214 |

CKD, chronic kidney disease; BUN, blood urea nitrogen; eGFR, estimated glomerular filtration rate; WBC, white blood cells; SBP, systolic blood pressure

**Supplementary Table 4.** Outcomes among non-matched and propensity matched pairs of patients that underwent contrast enhanced CT vs non-enhanced CT for the entire cohort, with subgroups stratified by eGFR. Renin-angiotensin-aldosterone-system inhibitors were added a covariate in propensity matching in addition to covariates used in primary analysis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Contrast-enhanced all | Non-enhanced all | p-value | Non-enhanced matched | p-value (matched) | OR/Difference (95% CI) |
| Overall. Non-enhanced, n=29792; Contrast-enhanced, n=11664 | | | | | | |
|  | | | | | | |
| AKI, n (%) | 817 (7) | 3043 (10.2) | <0.001 | 949 (8.1) | 0.001 | 0.85 (0.77, 0.94) |
| AKI 2-3, n (%) | 190 (1.6) | 494 (1.7) | 0.864 | 179 (1.5) | 0.564 | 1.01 (0.94, 1.09) |
| AKR, n (%) | 1721 (14.8) | 5811 (19.5) | <0.001 | 1709 (14.7) | 0.824 | 1.01 (0.94, 1.08) |
| AKR 2-3, n (%) | 248 (2.1) | 858 (2.9) | <0.001 | 239 (2.0) | 0.680 | 1.04 (0.87, 1.24) |
| Dialysis (30 days), n (%) | 60 (0.5) | 230 (0.8) | 0.005 | 41 (0.4) | 0.06 | 1.47 (0.98, 2.18) |
| Mortality (30 days), n (%) | 1000 (8.6) | 3245 (10.9) | <0.001 | 996 (8.5) | 0.925 | 1.00 (0.92, 1.10) |
| Hospital stay, days | 9.4±12.8 | 11.5±25.2 | <0.001 | 11.8±23.8 | <0.001 | -1.70 (0.25, 0.57) |
|  |  |  |  |  |  |  |
| eGFR ≥ 60 ml/min/1.73m². Non-enhanced, n=18390; Contrast-enhanced, n=9307 | | | | | | |
|  | | | | | | |
| AKI, n (%) | 470 (5) | 1130 (6.1) | <0.001 | 505 (5.4) | 0.25 | 0.93 (0.82, 1.06) |
| AKI 2-3, n (%) | 130 (1.4) | 281 (1.5) | 0.43 | 129 (1.4) | 0.95 | 1.01 (0.79, 1.29) |
| AKR, n (%) | 1021 (11) | 1475 (8) | <0.001 | 722 (7.8) | <0.001 | 1.47 (1.33, 1.62) |
| AKR 2-3, n (%) | 157 (1.7) | 194 (1.1) | <0.001 | 90 (1) | <0.001 | 1.75 (1.35, 2.28) |
| Dialysis (30 days), n (%) | 16 (0.2) | 26 (0.1) | 0.518 | 18 (0.2) | 0.731 | 0.89 (0.44, 1.74) |
| Mortality (30 days), n (%) | 642 (6.9) | 1325 (7.2) | 0.36 | 594 (6.4) | 0.158 | 1.09 (0.97, 1.22) |
| Hospital stay, days | 9±12.1 | 11.1±24.9 | 0.001 | 11.1±24.9 | <0.001 | -2.10 (0.37, 0.73) |
|  |  |  |  |  |  |  |
| eGFR between 30 ml/min/1.73m² and 60 ml/min/1.73m². Non-enhanced, n=7590; Contrast-enhanced, n=2091 | | | | | | |
|  | | | | | | |
| AKI, n (%) | 258 (12.3) | 1009 (13.3) | 0.257 | 269 (12.9) | 0.608 | 0.95 (0.79, 1.14) |
| AKI 2-3, n (%) | 51 (2.4) | 166 (2.2) | 0.504 | 45 (2.2) | 0.536 | 1.13 (0.76, 1.70) |
| AKR, n (%) | 554 (26.5) | 2233 (29.4) | 0.009 | 583 (27.9) | 0.314 | 0.93 (0.81, 1.07) |
| AKR 2-3, n (%) | 61 (2.9) | 211 (2.8) | 0.709 | 59 (2.8) | 0.853 | 1.04 (0.72, 1.49) |
| Dialysis (30 days), n (%) | 15 (0.7) | 44 (0.6) | 0.525 | 11 (0.5) | 0.431 | 1.37 (0.63, 2.98) |
| Mortality (30 days) , n (%) | 283 (13.5) | 1001 (13.2) | 0.689 | 266 (12.7) | 0.436 | 1.07 (0.90, 1.28) |
| Hospital stay, days | 10.3±14.2 | 11.6±26.3 | 0.002 | 10.9±20.3 | 0.53 | -0.6 (-0.50, 0.26) |
|  |  |  |  |  |  |  |
| eGFR < 30ml/min/1.73m². Non-enhanced, n=3812; Contrast-enhanced, n=266 | | | | | | |
|  | | | | | | |
| AKI, n (%) | 89 (33.5) | 904 (23.7) | 0.001 | 78 (29.5) | 0.300 | 1.21 (0.84, 1.75) |
| AKI 2-3, n (%) | 9 (3.4) | 47 (1.2) | 0.009 | 4 (1.5) | 0.16 | 2.29 (0.70, 7.54) |
| AKR, n (%) | 146 (54.9) | 2103 (55.2) | 0.949 | 155 (58.3) | 0.431 | 0.87 (0.62, 1.23) |
| AKR 2-3, n (%) | 30 (11.3) | 453 (11.9) | 0.845 | 36 (13.5) | 0.43 | 0.81 (0.48, 1.36) |
| Dialysis (30 days), n (%) | 29 (10.9) | 160 (4.2) | <0.001 | 14 (5.3) | 0.017 | 2.20 (1.14, 4.27) |
| Mortality (30 days), n (%) | 75 (28.2) | 919 (24.1) | 0.14 | 49 (18.4) | 0.008 | 1.74 (1.16, 2.62) |
| Hospital stay, days | 14.6±21.5 | 13.7±24.5 | 0.578 | 12.3±15.7 | 0.156 | 2.3 (-2.76, 0.44) |

AKI, acute kidney injury; AKR, acute kidney recovery