**High Risk/Lethal Adverse Events Pattern/Association in Clinical Trials**

(Serious Event)

**Abstract**

TODO

**Introduction**

1. Risk of clinical trials
2. High risk adverse events
3. Death of patients in clinical trials
4. We provide a pattern analysis to high risk/lethal clinical trials

**Method**

1. Data source and data extraction
2. Association mining
3. High frequency events associated with death (how to generate results 1) –table 1
4. Adverse event pattern analysis : (event set) -> death, (how to generate results 2)

>= 2 events lead to death , table 2

1. Network analysis (how to generate results 3)
2. Frequently associated disease condition
3. Frequently associated treatment

**Results**

One event contribute to Death: (区分 serious 和 other)

2. FP-growth on all trial data: All event frequency
3. Death + event pair frequency
4. Calculate confidence
5. Rank by confidence
6. Affected patients
7. Trial counts

Discuss most common events associated with death in clinical trials

增加数据量

Column 1:

Column 2:

Column 3:

**Result 1:** serious adverse event high frequency single event

|  |  |  |
| --- | --- | --- |
| **Index** | **Single Disease** | **Frequency (arms#)** |
| 1 | Pneumonia | 5210 |
| 2 | Dehydration | 2832 |
| 3 | Vomiting | 2645 |
| 4 | Death | 2591 |
| 5 | Pyrexia | 2387 |
| 6 | Sepsis | 2099 |
| 7 | Nausea | 2096 |
| 8 | Anaemia | 2080 |
| 9 | Syncope | 2036 |
| 10 | Cellulitis | 2012 |
| 11 | Abdominal\_pain | 1987 |
| 12 | Dyspnoea | 1976 |
| 13 | Atrial\_fibrillation | 1901 |
| 14 | Gastroenteritis | 1891 |
| 15 | Urinary\_tract\_infection | 1863 |
| 16 | Myocardial\_infarction | 1823 |
| 17 | Diarrhoea | 1754 |
| 18 | Pulmonary\_embolism | 1731 |
| 19 | Chest\_pain | 1730 |
| 20 | Hypotension | 1643 |
| 21 | Hypertension | 1600 |
| 22 | Renal\_failure\_acute | 1469 |
| 23 | Bronchitis | 1435 |
| 24 | Cerebrovascular\_accident | 1419 |
| 25 | Fatigue | 1408 |
| 26 | Pleural\_effusion | 1333 |
| 27 | Deep\_vein\_thrombosis | 1317 |
| 28 | Back\_pain | 1299 |
| 29 | Febrile\_neutropenia | 1269 |
| 30 | Angina\_pectoris | 1257 |
| 31 | Depression | 1255 |
| 32 | Chronic\_obstructive\_pulmonary\_disease | 1244 |
| 33 | Renal\_failure | 1228 |
| 34 | Thrombocytopenia | 1206 |
| 35 | Neutropenia | 1204 |
| 36 | Cholelithiasis | 1201 |
| 37 | Appendicitis | 1198 |
| 38 | Constipation | 1196 |
| 39 | Convulsion | 1176 |
| 40 | Acute\_myocardial\_infarction | 1167 |
| 41 | Headache | 1164 |
| 42 | Cardiac\_failure\_congestive | 1137 |
| 43 | Dizziness | 1120 |
| 44 | Fall | 1114 |
| 45 | Cholecystitis | 1113 |
| 46 | Coronary\_artery\_disease | 1085 |
| 47 | Asthenia | 1080 |
| 48 | Osteoarthritis | 1063 |
| 49 | Gastrointestinal\_haemorrhage | 1005 |
| 50 | Cardiac\_failure | 1004 |
| 51 | Hypoxia | 998 |
| 52 | Infection | 947 |
| 53 | Asthma | 940 |
| 54 | Pancreatitis | 932 |
| 55 | Transient\_ischaemic\_attack | 924 |
| 56 | Cardiac\_arrest | 913 |
| 57 | Non-cardiac\_chest\_pain | 906 |
| 58 | Arthralgia | 902 |
| 59 | Gastritis | 864 |
| 60 | Pneumothorax | 862 |
| 61 | Diverticulitis | 836 |
| 62 | Bronchopneumonia | 813 |
| 63 | Hypoglycaemia | 812 |
| 64 | Septic\_shock | 805 |
| 65 | Ileus | 766 |
| 66 | Breast\_cancer | 764 |
| 67 | Pyelonephritis | 759 |
| 68 | Nephrolithiasis | 753 |
| 69 | Hyponatraemia | 745 |
| 70 | Pain | 732 |
| 71 | Small\_intestinal\_obstruction | 728 |
| 72 | Prostate\_cancer | 723 |
| 73 | Femur\_fracture | 710 |
| 74 | Colitis | 708 |
| 75 | Intestinal\_obstruction | 707 |
| 76 | Hyperglycaemia | 699 |
| 77 | Hypokalaemia | 687 |
| 78 | Intervertebral\_disc\_protrusion | 681 |
| 79 | Diarrhea | 663 |
| 80 | Pneumonitis | 659 |
| 81 | Vertigo | 653 |
| 82 | Haematuria | 651 |
| 83 | Upper\_respiratory\_tract\_infection | 642 |
| 84 | Bradycardia | 633 |
| 85 | Inguinal\_hernia | 625 |
| 86 | Hip\_fracture | 623 |
| 87 | Pain\_in\_extremity | 622 |
| 88 | Dysphagia | 615 |
| 89 | Haemoptysis | 613 |
| 90 | Oedema\_peripheral | 611 |
| 91 | Epistaxis | 610 |
| 92 | Urosepsis | 608 |
| 93 | Anorexia | 601 |
| 94 | Urinary\_retention | 598 |
| 95 | Leukopenia | 589 |
| 96 | Herpes\_zoster | 585 |
| 97 | Lobar\_pneumonia | 583 |
| 98 | Cerebral\_infarction | 581 |
| 99 | Anemia | 580 |
| 100 | Road\_traffic\_accident | 579 |
| 101 | Abdominal\_pain\_upper | 578 |
| 102 | Lower\_respiratory\_tract\_infection | 576 |
| 103 | General\_physical\_health\_deterioration | 574 |
| 104 | Cough | 568 |
| 105 | Myocardial\_ischaemia | 564 |
| 106 | Ascites | 563 |
| 107 | Thrombosis | 557 |
| 108 | Alanine\_aminotransferase\_increased | 552 |
| 109 | Acute\_respiratory\_failure | 546 |
| 110 | Multi-organ\_failure | 545 |
| 111 | Anxiety | 541 |
| 112 | Respiratory\_tract\_infection | 540 |
| 113 | Basal\_cell\_carcinoma | 535 |
| 114 | Pulmonary\_oedema | 533 |
| 115 | Lung\_infection | 532 |
| 116 | Cataract | 528 |
| 117 | Acute\_coronary\_syndrome | 526 |
| 118 | Cardio-respiratory\_arrest | 523 |
| 119 | Disease\_progression | 521 |
| 120 | Pancytopenia | 520 |
| 121 | Diabetes\_mellitus | 516 |
| 122 | Lung\_neoplasm\_malignant | 515 |
| 123 | Viral\_infection | 513 |
| 124 | Bacteraemia | 512 |
| 125 | Pancreatitis\_acute | 511 |
| 126 | Supraventricular\_tachycardia | 507 |
| 127 | Hyperkalaemia | 506 |
| 128 | Arrhythmia | 504 |
| 129 | Ankle\_fracture | 501 |
| 130 | Hypersensitivity | 499 |
| 131 | Rectal\_haemorrhage | 497 |
| 132 | Suicide\_attempt | 495 |
| 133 | Tachycardia | 490 |
| 134 | Influenza | 489 |
| 135 | Ischaemic\_stroke | 488 |
| 136 | Hypertensive\_crisis | 482 |
| 137 | Peritonitis | 480 |
| 138 | Overdose | 479 |
| 139 | Mental\_status\_changes | 477 |
| 140 | Suicidal\_ideation | 473 |
| 141 | Humerus\_fracture | 465 |
| 142 | Erysipelas | 457 |
| 143 | Subdural\_haematoma | 456 |
| 144 | Femoral\_neck\_fracture | 453 |
| 145 | Decreased\_appetite | 450 |
| 146 | Blood\_creatinine\_increased | 443 |
| 147 | Pericardial\_effusion | 442 |
| 148 | Respiratory\_distress | 439 |
| 149 | Rib\_fracture | 436 |
| 150 | Platelet\_count\_decreased | 432 |

**Single disease’s confidence to death**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Index** | **Confidence** | **Single Disease** | **Frequency (arms#)** | **Target** |
| 1 | 0.515513126 | Haematoma | 419 | Death |
| 2 | 0.504780115 | Cardio-respiratory arrest | 523 | Death |
| 3 | 0.504587156 | Multi-organ\_failure | 545 | Death |
| 4 | 0.5 | Cerebral\_haemorrhage | 490 | Death |
| 5 | 0.49795082 | Ischaemic\_stroke | 488 | Death |
| 6 | 0.497185741 | Pulmonary\_oedema | 533 | Death |
| 7 | 0.496031746 | Arrhythmia | 504 | Death |
| 8 | 0.492341357 | Erysipelas | 457 | Death |
| 9 | 0.492094862 | Atrial\_flutter | 506 | Death |
| 10 | 0.490066225 | Femoral\_neck\_fracture | 453 | Death |
| 11 | 0.488721805 | Lung\_infection | 532 | Death |
| 12 | 0.488479263 | Haematuria | 651 | Death |
| 13 | 0.487551867 | Hypertensive\_crisis | 482 | Death |
| 14 | 0.482871126 | Haemoptysis | 613 | Death |
| 15 | 0.481967213 | Epistaxis | 610 | Death |
| 16 | 0.480263158 | Subdural\_haematoma | 456 | Death |
| 17 | 0.477777778 | Respiratory\_tract\_infection | 540 | Death |
| 18 | 0.475378788 | Cataract | 528 | Death |
| 19 | 0.474849095 | Rectal\_haemorrhage | 497 | Death |
| 20 | 0.4743083 | Hyperkalaemia | 506 | Death |
| 21 | 0.472837022 | Pneumonia\_aspiration | 497 | Death |
| 22 | 0.466898955 | General\_physical\_health\_deterioration | 574 | Death |
| 23 | 0.465779468 | Acute\_coronary\_syndrome | 526 | Death |
| 24 | 0.4625 | Peritonitis | 480 | Death |
| 25 | 0.462171053 | Urosepsis | 608 | Death |
| 26 | 0.459183673 | Tachycardia | 490 | Death |
| 27 | 0.458385093 | Septic\_shock | 805 | Death |
| 28 | 0.454991817 | Oedema\_peripheral | 611 | Death |
| 29 | 0.453450164 | Cardiac\_arrest | 913 | Death |
| 30 | 0.450549451 | Acute\_respiratory\_failure | 546 | Death |
| 31 | 0.450485437 | Lung\_neoplasm\_malignant | 515 | Death |
| 32 | 0.449612403 | Diabetes\_mellitus | 516 | Death |
| 33 | 0.446870451 | Hypokalaemia | 687 | Death |
| 34 | 0.446366782 | Abdominal\_pain\_upper | 578 | Death |
| 35 | 0.445422535 | Cough | 568 | Death |
| 36 | 0.444444444 | Lower\_respiratory\_tract\_infection | 576 | Death |
| 37 | 0.443262411 | Myocardial\_ischaemia | 564 | Death |
| 38 | 0.44295302 | Hyponatraemia | 745 | Death |
| 39 | 0.441041348 | Vertigo | 653 | Death |
| 40 | 0.440835267 | Pneumothorax | 862 | Death |
| 41 | 0.439842209 | Supraventricular\_tachycardia | 507 | Death |
| 42 | 0.439799331 | Urinary\_retention | 598 | Death |
| 43 | 0.438625205 | Cholecystitis\_acute | 611 | Death |
| 44 | 0.436681223 | Confusional\_state | 687 | Death |
| 45 | 0.43490701 | Hyperglycaemia | 699 | Death |
| 46 | 0.434482759 | Colon\_cancer | 580 | Death |
| 47 | 0.432520325 | Dysphagia | 615 | Death |
| 48 | 0.4312749 | Cardiac\_failure | 1004 | Death |
| 49 | 0.427756654 | Osteomyelitis | 526 | Death |
| 50 | 0.426614481 | Pancreatitis\_acute | 511 | Death |
| 51 | 0.426045016 | Pain\_in\_extremity | 622 | Death |
| 52 | 0.424875622 | Gastrointestinal\_haemorrhage | 1005 | Death |
| 53 | 0.422321429 | Dizziness | 1120 | Death |
| 54 | 0.421955403 | Lobar\_pneumonia | 583 | Death |
| 55 | 0.42019544 | Renal\_failure | 1228 | Death |
| 56 | 0.419218585 | Infection | 947 | Death |
| 57 | 0.41864139 | Bradycardia | 633 | Death |
| 58 | 0.415781487 | Pneumonitis | 659 | Death |
| 59 | 0.415630551 | Ascites | 563 | Death |
| 60 | 0.414814815 | Asthenia | 1080 | Death |
| 61 | 0.412568306 | Pain | 732 | Death |
| 62 | 0.406196213 | Cerebral\_infarction | 581 | Death |
| 63 | 0.406099518 | Hip\_fracture | 623 | Death |
| 64 | 0.406005222 | Ileus | 766 | Death |
| 65 | 0.405518395 | Constipation | 1196 | Death |
| 66 | 0.4032 | Inguinal\_hernia | 625 | Death |
| 67 | 0.402542373 | Colitis | 708 | Death |
| 68 | 0.401408451 | Femur\_fracture | 710 | Death |
| 69 | 0.400282885 | Angina\_unstable | 707 | Death |
| 70 | 0.399141631 | Pancreatitis | 932 | Death |
| 71 | 0.399014778 | Hypoglycaemia | 812 | Death |
| 72 | 0.394136808 | Respiratory\_failure | 1228 | Death |
| 73 | 0.393787575 | Hypoxia | 998 | Death |
| 74 | 0.39321075 | Intestinal\_obstruction | 707 | Death |
| 75 | 0.393162393 | Herpes\_zoster | 585 | Death |
| 76 | 0.390847712 | Pleural\_effusion | 1333 | Death |
| 77 | 0.390018484 | Anxiety | 541 | Death |
| 78 | 0.388888889 | Gastritis | 864 | Death |
| 79 | 0.388794567 | Leukopenia | 589 | Death |
| 80 | 0.387453875 | Bronchopneumonia | 813 | Death |
| 81 | 0.385996409 | Thrombosis | 557 | Death |
| 82 | 0.383116883 | Transient\_ischaemic\_attack | 924 | Death |
| 83 | 0.381619938 | Upper\_respiratory\_tract\_infection | 642 | Death |
| 84 | 0.37804878 | Arthralgia | 902 | Death |
| 85 | 0.376460018 | Cholecystitis | 1113 | Death |
| 86 | 0.374784111 | Road\_traffic\_accident | 579 | Death |
| 87 | 0.371880706 | Hypotension | 1643 | Death |
| 88 | 0.371152155 | Cardiac\_failure\_congestive | 1137 | Death |
| 89 | 0.367975366 | Back\_pain | 1299 | Death |
| 90 | 0.364953887 | Pyelonephritis | 759 | Death |
| 91 | 0.361505682 | Fatigue | 1408 | Death |
| 92 | 0.361244019 | Diverticulitis | 836 | Death |
| 93 | 0.360995851 | Prostate\_cancer | 723 | Death |
| 94 | 0.358390281 | Deep\_vein\_thrombosis | 1317 | Death |
| 95 | 0.355769231 | Small\_intestinal\_obstruction | 728 | Death |
| 96 | 0.355343771 | Renal\_failure\_acute | 1469 | Death |
| 97 | 0.354474982 | Cerebrovascular\_accident | 1419 | Death |
| 98 | 0.353898886 | Acute\_myocardial\_infarction | 1167 | Death |
| 99 | 0.352404643 | Thrombocytopenia | 1206 | Death |
| 100 | 0.351190476 | Convulsion | 1176 | Death |
| 101 | 0.349192101 | Fall | 1114 | Death |
| 102 | 0.347941567 | Nephrolithiasis | 753 | Death |
| 103 | 0.34587899 | Sepsis | 2099 | Death |
| 104 | 0.345399698 | Diarrhea | 663 | Death |
| 105 | 0.345 | Hypertension | 1600 | Death |
| 106 | 0.340069686 | Bronchitis | 1435 | Death |
| 107 | 0.33451417 | Dyspnoea | 1976 | Death |
| 108 | 0.333333333 | Angina\_pectoris | 1257 | Death |
| 109 | 0.33295325 | Diarrhoea | 1754 | Death |
| 110 | 0.331993569 | Chronic\_obstructive\_pulmonary\_disease | 1244 | Death |
| 111 | 0.33102253 | Pulmonary\_embolism | 1731 | Death |
| 112 | 0.327403846 | Anaemia | 2080 | Death |
| 113 | 0.326267281 | Coronary\_artery\_disease | 1085 | Death |
| 114 | 0.326144135 | Atrial\_fibrillation | 1901 | Death |
| 115 | 0.326055313 | Dyspnea | 687 | Death |
| 116 | 0.325601375 | Headache | 1164 | Death |
| 117 | 0.323399558 | Non-cardiac\_chest\_pain | 906 | Death |
| 118 | 0.323064113 | Cholelithiasis | 1201 | Death |
| 119 | 0.319253438 | Syncope | 2036 | Death |
| 120 | 0.318303811 | Urinary\_tract\_infection | 1863 | Death |
| 121 | 0.316793893 | Nausea | 2096 | Death |
| 122 | 0.316086548 | Osteoarthritis | 1063 | Death |
| 123 | 0.31431706 | Myocardial\_infarction | 1823 | Death |
| 124 | 0.314243759 | Intervertebral\_disc\_protrusion | 681 | Death |
| 125 | 0.311440678 | Dehydration | 2832 | Death |
| 126 | 0.310209424 | Breast\_cancer | 764 | Death |
| 127 | 0.30982659 | Chest\_pain | 1730 | Death |
| 128 | 0.308366534 | Depression | 1255 | Death |
| 129 | 0.305860113 | Vomiting | 2645 | Death |
| 130 | 0.295681063 | Neutropenia | 1204 | Death |
| 131 | 0.292903875 | Abdominal\_pain | 1987 | Death |
| 132 | 0.289264414 | Cellulitis | 2012 | Death |
| 133 | 0.283976732 | Gastroenteritis | 1891 | Death |
| 134 | 0.283687943 | Febrile\_neutropenia | 1269 | Death |
| 135 | 0.280851064 | Asthma | 940 | Death |
| 136 | 0.273565145 | Pyrexia | 2387 | Death |
| 137 | 0.263772955 | Appendicitis | 1198 | Death |
| 138 | 0.225393494 | Pneumonia | 4765 | Death |

**Double serious disease contribute to Death:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Index | Confidence | Double Disease | Frequency (arms#) | Target |
| 1 | 0.726973684 | Cardiac\_failure Dizziness | 304 | Death |
| 2 | 0.716171617 | Septic\_shock Cardiac\_failure | 303 | Death |
| 3 | 0.713804714 | Haematuria Bronchitis | 297 | Death |
| 4 | 0.704819277 | Cardiac\_arrest Back\_pain | 332 | Death |
| 5 | 0.703947368 | Multi-organ\_failure Atrial\_fibrillation | 304 | Death |
| 6 | 0.700657895 | Vertigo Sepsis | 304 | Death |
| 7 | 0.699669967 | Femur\_fracture Back\_pain | 303 | Death |
| 8 | 0.699386503 | Septic\_shock Back\_pain | 326 | Death |
| 9 | 0.699115044 | Cardiac\_arrest Cardiac\_failure | 339 | Death |
| 10 | 0.698717949 | Dizziness Respiratory\_failure | 312 | Death |
| 11 | 0.693251534 | Transient\_ischaemic\_attack Pleural\_effusion | 326 | Death |
| 12 | 0.692810458 | Cholecystitis Constipation | 306 | Death |
| 13 | 0.692063492 | Cardiac\_failure Asthenia | 315 | Death |
| 14 | 0.689855072 | Cardiac\_arrest Bronchitis | 345 | Death |
| 15 | 0.688888889 | Bronchopneumonia Syncope | 315 | Death |
| 16 | 0.688829787 | Cardiac\_failure Deep\_vein\_thrombosis | 376 | Death |
| 17 | 0.686980609 | Septic\_shock Cerebrovascular\_accident | 361 | Death |
| 18 | 0.686930091 | Vertigo Anaemia | 329 | Death |
| 19 | 0.685714286 | Transient\_ischaemic\_attack Cardiac\_failure | 350 | Death |
| 20 | 0.685714286 | Cardiac\_arrest Asthenia | 315 | Death |
| 21 | 0.683060109 | Cardiac\_failure Back\_pain | 366 | Death |
| 22 | 0.682242991 | Cholecystitis Dizziness | 321 | Death |
| 23 | 0.681940701 | Cardiac\_failure Gastrointestinal\_haemorrhage | 371 | Death |
| 24 | 0.679878049 | Vertigo Dyspnoea | 328 | Death |
| 25 | 0.678851175 | Cardiac\_arrest Renal\_failure | 383 | Death |
| 26 | 0.67791411 | Cardiac\_arrest Transient\_ischaemic\_attack | 326 | Death |
| 27 | 0.67791411 | Haematuria Gastroenteritis | 326 | Death |
| 28 | 0.67781155 | Gastrointestinal\_haemorrhage Convulsion | 329 | Death |
| 29 | 0.675159236 | Pneumothorax Hypertension | 314 | Death |
| 30 | 0.674486804 | Septic\_shock Bronchitis | 341 | Death |
| 31 | 0.673076923 | Vertigo Dehydration | 312 | Death |
| 32 | 0.672897196 | Gastrointestinal\_haemorrhage Fall | 321 | Death |
| 33 | 0.671122995 | Dizziness Gastroenteritis | 374 | Death |
| 34 | 0.671087533 | Acute\_myocardial\_infarction Renal\_failure | 377 | Death |
| 35 | 0.67032967 | Cardiac\_arrest Acute\_myocardial\_infarction | 364 | Death |
| 36 | 0.669781931 | Hypoglycaemia Bronchitis | 321 | Death |
| 37 | 0.669724771 | Haemoptysis Pulmonary\_embolism | 327 | Death |
| 38 | 0.669491525 | Cardiac\_arrest Hypertension | 354 | Death |
| 39 | 0.668769716 | Cholelithiasis Respiratory\_failure | 317 | Death |
| 40 | 0.668639053 | Cardiac\_failure Fall | 338 | Death |
| 41 | 0.667655786 | Cardiac\_failure Hypotension | 337 | Death |
| 42 | 0.667597765 | Dizziness Bronchitis | 358 | Death |
| 43 | 0.666666667 | Haemoptysis Sepsis | 348 | Death |
| 44 | 0.666666667 | Dizziness Renal\_failure | 369 | Death |
| 45 | 0.66576087 | Septic\_shock Syncope | 368 | Death |
| 46 | 0.665634675 | Hyperglycaemia Gastroenteritis | 323 | Death |
| 47 | 0.664788732 | Cardiac\_arrest Chronic\_obstructive\_pulmonary\_disease | 355 | Death |
| 48 | 0.664122137 | Cardiac\_failure Diarrhoea | 393 | Death |
| 49 | 0.664041995 | Dizziness Pleural\_effusion | 381 | Death |
| 50 | 0.663608563 | Constipation Cerebrovascular\_accident | 327 | Death |
| 51 | 0.663043478 | Dizziness Cerebrovascular\_accident | 368 | Death |
| 52 | 0.663013699 | Renal\_failure Chronic\_obstructive\_pulmonary\_disease | 365 | Death |
| 53 | 0.662613982 | Femur\_fracture Cerebrovascular\_accident | 329 | Death |
| 54 | 0.662460568 | Gastrointestinal\_haemorrhage Cholecystitis | 317 | Death |
| 55 | 0.661442006 | Confusional\_state Respiratory\_failure | 319 | Death |
| 56 | 0.660660661 | Femur\_fracture Syncope | 333 | Death |
| 57 | 0.66011236 | Epistaxis Sepsis | 356 | Death |
| 58 | 0.659763314 | Fall Pleural\_effusion | 338 | Death |
| 59 | 0.659340659 | Haematuria Syncope | 364 | Death |
| 60 | 0.658753709 | Cholecystitis Pleural\_effusion | 337 | Death |
| 61 | 0.658476658 | Cardiac\_failure Renal\_failure | 407 | Death |
| 62 | 0.657657658 | Hyponatraemia Gastroenteritis | 333 | Death |
| 63 | 0.657608696 | Haematuria Sepsis | 368 | Death |
| 64 | 0.657492355 | Femur\_fracture Diarrhoea | 327 | Death |
| 65 | 0.657068063 | Cardiac\_arrest Gastrointestinal\_haemorrhage | 382 | Death |
| 66 | 0.656934307 | Cardiac\_failure Respiratory\_failure | 411 | Death |
| 67 | 0.656804734 | Haematuria Atrial\_fibrillation | 338 | Death |
| 68 | 0.656641604 | Cardiac\_failure Bronchitis | 399 | Death |
| 69 | 0.656534954 | Haemoptysis Diarrhoea | 329 | Death |
| 70 | 0.656330749 | Cardiac\_failure Chronic\_obstructive\_pulmonary\_disease | 387 | Death |
| 71 | 0.65625 | Gastrointestinal\_haemorrhage Bronchitis | 384 | Death |
| 72 | 0.656069364 | Haematuria Renal\_failure\_acute | 346 | Death |
| 73 | 0.655976676 | Hyperglycaemia Syncope | 343 | Death |
| 74 | 0.655882353 | Haematuria Pulmonary\_embolism | 340 | Death |
| 75 | 0.654761905 | Diverticulitis Gastroenteritis | 336 | Death |
| 76 | 0.654205607 | Hypokalaemia Asthenia | 321 | Death |
| 77 | 0.653846154 | Gastrointestinal\_haemorrhage Acute\_myocardial\_infarction | 390 | Death |
| 78 | 0.653614458 | Septic\_shock Gastrointestinal\_haemorrhage | 332 | Death |
| 79 | 0.653521127 | Transient\_ischaemic\_attack Respiratory\_failure | 355 | Death |
| 80 | 0.653465347 | Gastrointestinal\_haemorrhage Back\_pain | 404 | Death |
| 81 | 0.653250774 | Cholecystitis Fall | 323 | Death |
| 82 | 0.653250774 | Angina\_unstable Dyspnoea | 323 | Death |
| 83 | 0.652941176 | Septic\_shock Cardiac\_arrest | 340 | Death |
| 84 | 0.652068127 | Cardiac\_failure Dehydration | 411 | Death |
| 85 | 0.651376147 | Pancreatitis Bronchitis | 327 | Death |
| 86 | 0.651351351 | Chronic\_obstructive\_pulmonary\_disease Back\_pain | 370 | Death |
| 87 | 0.651234568 | Femur\_fracture Chest\_pain | 324 | Death |
| 88 | 0.651162791 | Transient\_ischaemic\_attack Renal\_failure | 344 | Death |
| 89 | 0.650837989 | Cardiac\_failure Coronary\_artery\_disease | 358 | Death |
| 90 | 0.650655022 | Cardiac\_failure Cerebrovascular\_accident | 458 | Death |
| 91 | 0.650259067 | Cardiac\_failure Pleural\_effusion | 386 | Death |
| 92 | 0.650246305 | Acute\_myocardial\_infarction Respiratory\_failure | 406 | Death |
| 93 | 0.65 | Gastrointestinal\_haemorrhage Chronic\_obstructive\_pulmonary\_disease | 380 | Death |
| 94 | 0.649595687 | Cardiac\_arrest Gastroenteritis | 371 | Death |
| 95 | 0.647540984 | Transient\_ischaemic\_attack Gastrointestinal\_haemorrhage | 366 | Death |
| 96 | 0.647398844 | Septic\_shock Gastroenteritis | 346 | Death |
| 97 | 0.646884273 | Hyponatraemia Hypotension | 337 | Death |
| 98 | 0.64619883 | Vertigo Syncope | 342 | Death |
| 99 | 0.646153846 | Gastritis Cholecystitis | 325 | Death |
| 100 | 0.646067416 | Haematuria Cellulitis | 356 | Death |
| 101 | 0.646017699 | Cardiac\_arrest Coronary\_artery\_disease | 339 | Death |
| 102 | 0.644970414 | Pneumothorax Urinary\_tract\_infection | 338 | Death |
| 103 | 0.644562334 | Cholecystitis Hypotension | 377 | Death |
| 104 | 0.644508671 | Convulsion Renal\_failure | 346 | Death |
| 105 | 0.644341801 | Cardiac\_arrest Respiratory\_failure | 433 | Death |
| 106 | 0.643916914 | Septic\_shock Asthenia | 337 | Death |
| 107 | 0.643916914 | Multi-organ\_failure Dyspnoea | 337 | Death |
| 108 | 0.64265928 | Femur\_fracture Sepsis | 361 | Death |
| 109 | 0.642424242 | Cholecystitis Renal\_failure | 330 | Death |
| 110 | 0.641943734 | Septic\_shock Renal\_failure | 391 | Death |
| 111 | 0.641909814 | Septic\_shock Myocardial\_infarction | 377 | Death |
| 112 | 0.641723356 | Cardiac\_failure Chest\_pain | 441 | Death |
| 113 | 0.641399417 | Fall Respiratory\_failure | 343 | Death |
| 114 | 0.641337386 | Colon\_cancer Atrial\_fibrillation | 329 | Death |
| 115 | 0.641242938 | Fall Hypotension | 354 | Death |
| 116 | 0.640949555 | Angina\_unstable Anaemia | 337 | Death |
| 117 | 0.640243902 | Constipation Respiratory\_failure | 328 | Death |
| 118 | 0.640167364 | Cardiac\_failure Pulmonary\_embolism | 478 | Death |
| 119 | 0.640117994 | Respiratory\_tract\_infection Anaemia | 339 | Death |
| 120 | 0.64010989 | Cardiac\_failure Hypertension | 364 | Death |
| 121 | 0.64 | Renal\_failure Angina\_pectoris | 375 | Death |
| 122 | 0.63943662 | Septic\_shock Chest\_pain | 355 | Death |
| 123 | 0.63902439 | Cardiac\_failure Acute\_myocardial\_infarction | 410 | Death |
| 124 | 0.638961039 | Cardiac\_arrest Pleural\_effusion | 385 | Death |
| 125 | 0.638820639 | Cardiac\_arrest Cellulitis | 407 | Death |
| 126 | 0.638497653 | Gastrointestinal\_haemorrhage Gastroenteritis | 426 | Death |
| 127 | 0.638483965 | Epistaxis Syncope | 343 | Death |
| 128 | 0.637883008 | Pneumothorax Pleural\_effusion | 359 | Death |
| 129 | 0.637339056 | Gastrointestinal\_haemorrhage Cerebrovascular\_accident | 466 | Death |
| 130 | 0.637019231 | Constipation Hypertension | 416 | Death |
| 131 | 0.636761488 | Cardiac\_failure Syncope | 457 | Death |
| 132 | 0.636612022 | Hypokalaemia Syncope | 366 | Death |
| 133 | 0.636363636 | Cardio-respiratory\_arrest Anaemia | 330 | Death |
| 134 | 0.636363636 | Cardiac\_arrest Angina\_pectoris | 374 | Death |
| 135 | 0.636144578 | Asthenia Respiratory\_failure | 415 | Death |
| 136 | 0.635883905 | Septic\_shock Pleural\_effusion | 379 | Death |
| 137 | 0.635574837 | Dizziness Sepsis | 461 | Death |
| 138 | 0.6352657 | Cardiac\_arrest Hypotension | 414 | Death |
| 139 | 0.635 | Cholecystitis Hypertension | 400 | Death |
| 140 | 0.63496144 | Respiratory\_failure Angina\_pectoris | 389 | Death |
| 141 | 0.634819533 | Renal\_failure Cerebrovascular\_accident | 471 | Death |
| 142 | 0.634666667 | Angina\_pectoris Pleural\_effusion | 375 | Death |
| 143 | 0.634285714 | Hyponatraemia Asthenia | 350 | Death |
| 144 | 0.634210526 | Hypoglycaemia Gastroenteritis | 380 | Death |
| 145 | 0.634146341 | Pancreatitis Hypertension | 369 | Death |
| 146 | 0.634005764 | Fall Renal\_failure | 347 | Death |
| 147 | 0.633633634 | Abdominal\_pain\_upper Sepsis | 333 | Death |
| 148 | 0.633333333 | Pleural\_effusion Bronchitis | 420 | Death |
| 149 | 0.63310962 | Cardiac\_arrest Syncope | 447 | Death |
| 150 | 0.633004926 | Haematuria Dyspnoea | 406 | Death |

**Triple disease contribute to Death:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Index | Confidence | Triple disease | Frequency (arms#) | Target |
| 1 | 0.805343511 | Cardiac\_failure Cerebrovascular\_accident Bronchitis | 262 | Death |
| 2 | 0.8 | Cardiac\_failure Deep\_vein\_thrombosis Cerebrovascular\_accident | 270 | Death |
| 3 | 0.798013245 | Cardiac\_failure Cerebrovascular\_accident Syncope | 302 | Death |
| 4 | 0.795620438 | Renal\_failure Cerebrovascular\_accident Gastroenteritis | 274 | Death |
| 5 | 0.795539033 | Cardiac\_failure Respiratory\_failure Cerebrovascular\_accident | 269 | Death |
| 6 | 0.795539033 | Cardiac\_failure Renal\_failure Cerebrovascular\_accident | 269 | Death |
| 7 | 0.794871795 | Cardiac\_failure Cerebrovascular\_accident Abdominal\_pain | 273 | Death |
| 8 | 0.794223827 | Cardiac\_failure Cerebrovascular\_accident Pyrexia | 277 | Death |
| 9 | 0.790613718 | Cardiac\_arrest Respiratory\_failure Syncope | 277 | Death |
| 10 | 0.787769784 | Cardiac\_failure Cerebrovascular\_accident Dehydration | 278 | Death |
| 11 | 0.781481481 | Cardiac\_failure Acute\_myocardial\_infarction Pulmonary\_embolism | 270 | Death |
| 12 | 0.781021898 | Renal\_failure Back\_pain Cerebrovascular\_accident | 274 | Death |
| 13 | 0.778911565 | Cardiac\_failure Cerebrovascular\_accident Chest\_pain | 294 | Death |
| 14 | 0.778877888 | Cardiac\_failure Cerebrovascular\_accident Sepsis | 303 | Death |
| 15 | 0.778501629 | Cardiac\_failure Cerebrovascular\_accident Urinary\_tract\_infection | 307 | Death |
| 16 | 0.777408638 | Cardiac\_failure Cerebrovascular\_accident Renal\_failure\_acute | 301 | Death |
| 17 | 0.777385159 | Cardiac\_failure Bronchitis Pulmonary\_embolism | 283 | Death |
| 18 | 0.774907749 | Septic\_shock Cerebrovascular\_accident Dyspnoea | 271 | Death |
| 19 | 0.773381295 | Cardiac\_failure Respiratory\_failure Syncope | 278 | Death |
| 20 | 0.772893773 | Cardiac\_failure Gastrointestinal\_haemorrhage Syncope | 273 | Death |
| 21 | 0.772893773 | Transient\_ischaemic\_attack Cardiac\_failure Myocardial\_infarction | 273 | Death |
| 22 | 0.772563177 | Cardiac\_failure Cerebrovascular\_accident Gastroenteritis | 277 | Death |
| 23 | 0.771986971 | Cardiac\_failure Cerebrovascular\_accident Pulmonary\_embolism | 307 | Death |
| 24 | 0.769784173 | Cardiac\_failure Pulmonary\_embolism Cellulitis | 278 | Death |
| 25 | 0.769230769 | Back\_pain Pleural\_effusion Cerebrovascular\_accident | 286 | Death |
| 26 | 0.768115942 | Cardiac\_failure Gastrointestinal\_haemorrhage Pulmonary\_embolism | 276 | Death |
| 27 | 0.767973856 | Cardiac\_failure Pulmonary\_embolism Syncope | 306 | Death |
| 28 | 0.767918089 | Cardiac\_failure Respiratory\_failure Pulmonary\_embolism | 293 | Death |
| 29 | 0.766423358 | Cardiac\_failure Back\_pain Pulmonary\_embolism | 274 | Death |
| 30 | 0.765124555 | Gastrointestinal\_haemorrhage Pleural\_effusion Cerebrovascular\_accident | 281 | Death |
| 31 | 0.764900662 | Cardiac\_failure Respiratory\_failure Dyspnoea | 302 | Death |
| 32 | 0.764492754 | Gastrointestinal\_haemorrhage Back\_pain Cerebrovascular\_accident | 276 | Death |
| 33 | 0.764309764 | Cardiac\_failure Syncope Pyrexia | 297 | Death |
| 34 | 0.762886598 | Back\_pain Cerebrovascular\_accident Gastroenteritis | 291 | Death |
| 35 | 0.762589928 | Cardiac\_failure Myocardial\_infarction Dehydration | 278 | Death |
| 36 | 0.762411348 | Cardiac\_failure Chronic\_obstructive\_pulmonary\_disease Dyspnoea | 282 | Death |
| 37 | 0.762237762 | Cardiac\_failure Pleural\_effusion Atrial\_fibrillation | 286 | Death |
| 38 | 0.762068966 | Cardiac\_failure Chest\_pain Pulmonary\_embolism | 290 | Death |
| 39 | 0.761732852 | Cardiac\_failure Diarrhoea Syncope | 277 | Death |
| 40 | 0.761732852 | Gastrointestinal\_haemorrhage Acute\_myocardial\_infarction Sepsis | 277 | Death |
| 41 | 0.761609907 | Cardiac\_failure Cerebrovascular\_accident Dyspnoea | 323 | Death |
| 42 | 0.760869565 | Septic\_shock Pulmonary\_embolism Myocardial\_infarction | 276 | Death |
| 43 | 0.76056338 | Cardiac\_failure Acute\_myocardial\_infarction Cerebrovascular\_accident | 284 | Death |
| 44 | 0.76056338 | Acute\_myocardial\_infarction Respiratory\_failure Pulmonary\_embolism | 284 | Death |
| 45 | 0.76056338 | Septic\_shock Cerebrovascular\_accident Sepsis | 284 | Death |
| 46 | 0.759856631 | Cardiac\_failure Respiratory\_failure Pyrexia | 279 | Death |
| 47 | 0.759856631 | Cardiac\_failure Chest\_pain Pyrexia | 279 | Death |
| 48 | 0.759450172 | Cardiac\_failure Chest\_pain Sepsis | 291 | Death |
| 49 | 0.758992806 | Cardiac\_failure Gastrointestinal\_haemorrhage Renal\_failure\_acute | 278 | Death |
| 50 | 0.758992806 | Cardiac\_failure Renal\_failure Dehydration | 278 | Death |
| 51 | 0.758865248 | Cardiac\_failure Dizziness Pneumonia | 282 | Death |
| 52 | 0.758741259 | Pleural\_effusion Cerebrovascular\_accident Gastroenteritis | 286 | Death |
| 53 | 0.75862069 | Gastrointestinal\_haemorrhage Renal\_failure Cerebrovascular\_accident | 290 | Death |
| 54 | 0.757377049 | Cardiac\_arrest Cerebrovascular\_accident Dyspnoea | 305 | Death |
| 55 | 0.757377049 | Cardiac\_failure Chronic\_obstructive\_pulmonary\_disease Atrial\_fibrillation | 305 | Death |
| 56 | 0.756183746 | Septic\_shock Syncope Anaemia | 283 | Death |
| 57 | 0.75617284 | Cardiac\_failure Cerebrovascular\_accident Anaemia | 324 | Death |
| 58 | 0.755395683 | Chronic\_obstructive\_pulmonary\_disease Bronchitis Pulmonary\_embolism | 278 | Death |
| 59 | 0.755102041 | Cardiac\_failure Gastrointestinal\_haemorrhage Atrial\_fibrillation | 294 | Death |
| 60 | 0.754385965 | Cardiac\_arrest Cardiac\_failure Atrial\_fibrillation | 285 | Death |
| 61 | 0.75432526 | Cardiac\_failure Renal\_failure Syncope | 289 | Death |
| 62 | 0.75432526 | Cardiac\_failure Renal\_failure\_acute Chest\_pain | 289 | Death |
| 63 | 0.754266212 | Respiratory\_failure Back\_pain Syncope | 293 | Death |
| 64 | 0.754208754 | Cardiac\_arrest Cerebrovascular\_accident Syncope | 297 | Death |
| 65 | 0.753472222 | Gastrointestinal\_haemorrhage Bronchitis Pulmonary\_embolism | 288 | Death |
| 66 | 0.753472222 | Gastrointestinal\_haemorrhage Back\_pain Syncope | 288 | Death |
| 67 | 0.753472222 | Renal\_failure Myocardial\_infarction Gastroenteritis | 288 | Death |
| 68 | 0.75257732 | Cardiac\_failure Bronchitis Sepsis | 291 | Death |
| 69 | 0.752542373 | Renal\_failure Gastroenteritis Syncope | 295 | Death |
| 70 | 0.75170068 | Gastrointestinal\_haemorrhage Myocardial\_infarction Gastroenteritis | 294 | Death |
| 71 | 0.75170068 | Cardiac\_failure Syncope Dehydration | 294 | Death |
| 72 | 0.75088968 | Cardiac\_failure Gastroenteritis Syncope | 281 | Death |
| 73 | 0.75088968 | Cardiac\_failure Bronchitis Myocardial\_infarction | 281 | Death |
| 74 | 0.750853242 | Cardiac\_failure Deep\_vein\_thrombosis Anaemia | 293 | Death |
| 75 | 0.75 | Cardiac\_failure Diarrhoea Atrial\_fibrillation | 288 | Death |
| 76 | 0.748322148 | Cardiac\_failure Deep\_vein\_thrombosis Pulmonary\_embolism | 298 | Death |
| 77 | 0.74829932 | Renal\_failure Pulmonary\_embolism Gastroenteritis | 294 | Death |
| 78 | 0.748251748 | Dizziness Gastroenteritis Sepsis | 286 | Death |
| 79 | 0.74822695 | Cardiac\_failure Acute\_myocardial\_infarction Syncope | 282 | Death |
| 80 | 0.74822695 | Cardiac\_failure Pulmonary\_embolism Diarrhoea | 282 | Death |
| 81 | 0.747440273 | Renal\_failure Bronchitis Pulmonary\_embolism | 293 | Death |
| 82 | 0.747368421 | Gastrointestinal\_haemorrhage Back\_pain Myocardial\_infarction | 285 | Death |
| 83 | 0.747368421 | Transient\_ischaemic\_attack Cardiac\_failure Atrial\_fibrillation | 285 | Death |
| 84 | 0.747368421 | Septic\_shock Urinary\_tract\_infection Syncope | 285 | Death |
| 85 | 0.747330961 | Osteoarthritis Syncope Sepsis | 281 | Death |
| 86 | 0.747330961 | Renal\_failure Chronic\_obstructive\_pulmonary\_disease Dyspnoea | 281 | Death |
| 87 | 0.746575342 | Gastrointestinal\_haemorrhage Cerebrovascular\_accident Gastroenteritis | 292 | Death |
| 88 | 0.746575342 | Cardiac\_failure Deep\_vein\_thrombosis Sepsis | 292 | Death |
| 89 | 0.746575342 | Cardiac\_failure Respiratory\_failure Renal\_failure\_acute | 292 | Death |
| 90 | 0.745928339 | Cardiac\_arrest Respiratory\_failure Dyspnoea | 307 | Death |
| 91 | 0.745874587 | Respiratory\_failure Bronchitis Pulmonary\_embolism | 303 | Death |
| 92 | 0.744897959 | Asthenia Respiratory\_failure Atrial\_fibrillation | 294 | Death |
| 93 | 0.744827586 | Cardiac\_failure Back\_pain Atrial\_fibrillation | 290 | Death |
| 94 | 0.744827586 | Cardiac\_failure Respiratory\_failure Myocardial\_infarction | 290 | Death |
| 95 | 0.744755245 | Cardiac\_failure Bronchitis Syncope | 286 | Death |
| 96 | 0.744755245 | Cardiac\_arrest Gastrointestinal\_haemorrhage Myocardial\_infarction | 286 | Death |
| 97 | 0.744680851 | Cardiac\_arrest Myocardial\_infarction Gastroenteritis | 282 | Death |
| 98 | 0.744680851 | Respiratory\_failure Cerebrovascular\_accident Bronchitis | 282 | Death |
| 99 | 0.744107744 | Cardiac\_arrest Syncope Pyrexia | 297 | Death |
| 100 | 0.744107744 | Cardiac\_failure Gastrointestinal\_haemorrhage Sepsis | 297 | Death |
| 101 | 0.744027304 | Asthenia Respiratory\_failure Syncope | 293 | Death |
| 102 | 0.743944637 | Back\_pain Myocardial\_infarction Gastroenteritis | 289 | Death |
| 103 | 0.743944637 | Gastrointestinal\_haemorrhage Pleural\_effusion Myocardial\_infarction | 289 | Death |
| 104 | 0.743902439 | Cardiac\_arrest Syncope Sepsis | 328 | Death |
| 105 | 0.743670886 | Cardiac\_arrest Dyspnoea Syncope | 316 | Death |
| 106 | 0.743243243 | Cardiac\_arrest Renal\_failure Dyspnoea | 296 | Death |
| 107 | 0.743055556 | Cardiac\_failure Deep\_vein\_thrombosis Atrial\_fibrillation | 288 | Death |
| 108 | 0.742574257 | Cardiac\_failure Respiratory\_failure Anaemia | 303 | Death |
| 109 | 0.742268041 | Cardiac\_failure Back\_pain Dyspnoea | 291 | Death |
| 110 | 0.74204947 | Pleural\_effusion Bronchitis Myocardial\_infarction | 283 | Death |
| 111 | 0.74204947 | Pleural\_effusion Myocardial\_infarction Gastroenteritis | 283 | Death |
| 112 | 0.741935484 | Cardiac\_failure Acute\_myocardial\_infarction Atrial\_fibrillation | 310 | Death |
| 113 | 0.741830065 | Cardiac\_failure Chest\_pain Urinary\_tract\_infection | 306 | Death |
| 114 | 0.741610738 | Cardiac\_arrest Respiratory\_failure Myocardial\_infarction | 298 | Death |
| 115 | 0.741258741 | Acute\_myocardial\_infarction Respiratory\_failure Dyspnoea | 286 | Death |
| 116 | 0.741100324 | Cardiac\_failure Respiratory\_failure Sepsis | 309 | Death |
| 117 | 0.740350877 | Gastrointestinal\_haemorrhage Hypertension Sepsis | 285 | Death |
| 118 | 0.740350877 | Fall Cerebrovascular\_accident Sepsis | 285 | Death |
| 119 | 0.74 | Cardiac\_failure Atrial\_fibrillation Dehydration | 300 | Death |
| 120 | 0.73964497 | Gastrointestinal\_haemorrhage Cerebrovascular\_accident Sepsis | 338 | Death |
| 121 | 0.73943662 | Cardiac\_failure Acute\_myocardial\_infarction Anaemia | 284 | Death |
| 122 | 0.73943662 | Cardiac\_arrest Pulmonary\_embolism Cellulitis | 284 | Death |
| 123 | 0.738993711 | Cardiac\_failure Renal\_failure\_acute Syncope | 318 | Death |
| 124 | 0.738831615 | Septic\_shock Dyspnoea Syncope | 291 | Death |
| 125 | 0.738255034 | Cardiac\_failure Abdominal\_pain Syncope | 298 | Death |
| 126 | 0.738255034 | Respiratory\_failure Renal\_failure Cerebrovascular\_accident | 298 | Death |
| 127 | 0.738095238 | Cardiac\_failure Myocardial\_infarction Pyrexia | 294 | Death |
| 128 | 0.738095238 | Cardiac\_failure Renal\_failure Pulmonary\_embolism | 294 | Death |
| 129 | 0.737762238 | Cardiac\_failure Renal\_failure Myocardial\_infarction | 286 | Death |
| 130 | 0.737762238 | Cardiac\_arrest Gastroenteritis Dyspnoea | 286 | Death |
| 131 | 0.737179487 | Cardiac\_arrest Cerebrovascular\_accident Anaemia | 312 | Death |
| 132 | 0.737024221 | Cardiac\_arrest Cerebrovascular\_accident Urinary\_tract\_infection | 289 | Death |
| 133 | 0.736507937 | Cardiac\_failure Renal\_failure\_acute Pulmonary\_embolism | 315 | Death |
| 134 | 0.736486486 | Respiratory\_failure Chronic\_obstructive\_pulmonary\_disease Anaemia | 296 | Death |
| 135 | 0.736486486 | Cardiac\_failure Bronchitis Urinary\_tract\_infection | 296 | Death |
| 136 | 0.73630137 | Cardiac\_arrest Cellulitis Syncope | 292 | Death |
| 137 | 0.736111111 | Cardiac\_failure Gastroenteritis Atrial\_fibrillation | 288 | Death |
| 138 | 0.736111111 | Respiratory\_failure Myocardial\_infarction Gastroenteritis | 288 | Death |
| 139 | 0.736111111 | Chronic\_obstructive\_pulmonary\_disease Bronchitis Sepsis | 288 | Death |
| 140 | 0.735973597 | Cardiac\_failure Angina\_pectoris Cerebrovascular\_accident | 303 | Death |
| 141 | 0.735785953 | Gastrointestinal\_haemorrhage Renal\_failure Cellulitis | 299 | Death |
| 142 | 0.73559322 | Cardiac\_failure Deep\_vein\_thrombosis Dyspnoea | 295 | Death |
| 143 | 0.735395189 | Fall Gastroenteritis Sepsis | 291 | Death |
| 144 | 0.735395189 | Cardiac\_failure Cellulitis Syncope | 291 | Death |
| 145 | 0.735395189 | Gastrointestinal\_haemorrhage Bronchitis Dehydration | 291 | Death |
| 146 | 0.735202492 | Cardiac\_failure Renal\_failure\_acute Myocardial\_infarction | 321 | Death |
| 147 | 0.735202492 | Cardiac\_failure Syncope Sepsis | 321 | Death |
| 148 | 0.735202492 | Bronchitis Hypertension Sepsis | 321 | Death |
| 149 | 0.735191638 | Respiratory\_failure Bronchitis Myocardial\_infarction | 287 | Death |
| 150 | 0.735191638 | Cardiac\_failure Diarrhoea Dehydration | 287 | Death |

Result 3: adverse event network (diagrams)

Result 4:

Result 5:

Result 6: condition

**Discussion**

Methodology discussion

Clinical meaning

Future work

**Conclusion**