



PSI #22 Iatrogenic Pneumothorax

Area-Level Indicator

Numerator

Discharges 18 years and older with ICD-9-CM code for iatrogenic pneumothorax in any diagnosis field (principal or secondary) of medical and surgical discharges defined by specific DRGs or MS-DRGs.

ICD-9-CM Iatrogenic Pneumothorax diagnosis code:

5121 IATROGENIC PNEUMOTHORAX

See *Patient Safety Indicators Appendices*:

- Appendix B – Medical Discharge DRGs
- Appendix C – Medical Discharge MS-DRGs
- Appendix D – Surgical Discharge DRGs
- Appendix E – Surgical Discharge MS-DRGs

Exclude cases:

- MDC 14 (pregnancy, childbirth, and puerperium)
- with diagnosis code of chest trauma or pleural effusion
- with an ICD-9-CM procedure code of diaphragmatic surgery repair
- with any code indicating thoracic surgery, lung or pleural biopsy, or cardiac surgery

ICD-9-CM Chest Trauma diagnosis codes:

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| 80700 | FRACTURE RIB NOS-CLOSED | 8073 | FRACTURE OF STERNUM-OPEN |
| 80701 | FRACTURE ONE RIB-CLOSED | 8074 | FLAIL CHEST |
| 80702 | FRACTURE TWO RIBS-CLOSED | 8075 | FX LARYNX/TRACHEA-CLOSED |
| 80703 | FRACTURE THREE RIBS-CLOS | 8076 | FX LARYNX/TRACHEA-OPEN |
| 80704 | FRACTURE FOUR RIBS-CLOSE | 8090 | FRACTURE TRUNK BONE-CLOS |
| 80705 | FRACTURE FIVE RIBS-CLOSE | 8091 | FRACTURE TRUNK BONE-OPEN |
| 80706 | FRACTURE SIX RIBS-CLOSED | 8600 | TRAUM PNEUMOTHORAX-CLOSE |
| 80707 | FRACTURE SEVEN RIBS-CLOS | 8601 | TRAUM PNEUMOTHORAX-OPEN |
| 80708 | FX EIGHT/MORE RIB-CLOSED | 8602 | TRAUM HEMOTHORAX-CLOSED |
| 80709 | FX MULT RIBS NOS-CLOSED | 8603 | TRAUM HEMOTHORAX-OPEN |
| 80710 | FRACTURE RIB NOS-OPEN | 8604 | TRAUM PNEUMOHEMOTHOR-CL |
| 80711 | FRACTURE ONE RIB-OPEN | 8605 | TRAUM PNEUMOHEMOTHOR-OPN |
| 80712 | FRACTURE TWO RIBS-OPEN | 86100 | HEART INJURY NOS-CLOSED |
| 80713 | FRACTURE THREE RIBS-OPEN | 86101 | HEART CONTUSION-CLOSED |
| 80714 | FRACTURE FOUR RIBS-OPEN | 86102 | HEART LACERATION-CLOSED |
| 80715 | FRACTURE FIVE RIBS-OPEN | 86103 | HEART CHAMBER LACERAT-CL |
| 80716 | FRACTURE SIX RIBS-OPEN | 86110 | HEART INJURY NOS-OPEN |
| 80717 | FRACTURE SEVEN RIBS-OPEN | 86111 | HEART CONTUSION-OPEN |
| 80718 | FX EIGHT/MORE RIBS-OPEN | 86112 | HEART LACERATION-OPEN |
| 80719 | FX MULT RIBS NOS-OPEN | 86113 | HEART CHAMBER LACER-OPN |
| 8072 | FRACTURE OF STERNUM-CLOS | 86120 | LUNG INJURY NOS-CLOSED |

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| 86121 | LUNG CONTUSION-CLOSED | 90182 | INJ INT MAMMARY ART/VEIN |
| 86122 | LUNG LACERATION-CLOSED | 90183 | INJ MULT THORACIC VESSEL |
| 86130 | LUNG INJURY NOS-OPEN | 90189 | INJ THORACIC VESSEL NEC |
| 86131 | LUNG CONTUSION-OPEN | 9019 | INJ THORACIC VESSEL NOS |
| 86132 | LUNG LACERATION-OPEN | 9110 | ABRASION TRUNK |
| 8620 | DIAPHRAGM INJURY-CLOSED | 9111 | ABRASION TRUNK-INFECTED |
| 8621 | DIAPHRAGM INJURY-OPEN | 9118 | SUPERFIC INJU TRUNK NEC |
| 86221 | BRONCHUS INJURY-CLOSED | 9119 | SUPERFIC INJU TRUNK NEC-INF |
| 86222 | ESOPHAGUS INJURY-CLOSED | 9220 | CONTUSION OF BREAST |
| 86229 | INTRATHORACIC INJ NEC-CL | 9221 | CONTUSION OF CHEST WALL |
| 86231 | BRONCHUS INJURY-OPEN | 9223 | BACK CONTUSION |
| 86232 | ESOPHAGUS INJURY-OPEN | 92231 | BACK CONTUSION |
| 86239 | INTRATHORAC INJ NEC-OPEN | 92233 | INTERSCPLR REG CONTUSION |
| 8628 | INTRATHORACIC INJ NOS-CL | 9228 | MULIPLE CONTUSION TRUNK |
| 8629 | INTRATHORAC INJ NOS-OPEN | 9229 | CONTUSION OF TRUNK |
| 8750 | OPEN WOUND OF CHEST | 92611 | CRUSHING INJURY BACK |
| 8751 | OPEN WOUND CHEST-COMPL | 92619 | CRUSHING INJ TRUNK NEC |
| 8760 | OPEN WOUND OF BACK | 9268 | MULT CRUSHING INJ TRUNK |
| 8761 | OPEN WOUND BACK-COMPL | 9269 | CRUSHING INJ TRUNK NOS |
| 9010 | INJURY THORACIC AORTA | 9290 | CRUSH INJ MULT SITE NEC |
| 9011 | INJ INNOMIN/SUBCLAV ART | 9299 | CRUSHING INJURY NOS |
| 9012 | INJ SUPERIOR VENA CAVA | 9541 | INJ SYMPA NERVE NEC |
| 9013 | INJ INNOMIN/SUBCLAV VEIN | 9548 | INJURY TRUNK NERVE NEC |
| 90140 | INJ PULMONARY VESSEL NOS | 9549 | INJURY TRUNK NERVE NOS |
| 90141 | INJURY PULMONARY ARTERY | 95911 | INJURY OF CHEST WALL NEC |
| 90142 | INJURY PULMONARY VEIN | 95919 | TRUNK INJURY-SITES NEC |
| 90181 | INJ INTERCOSTAL ART/VEIN | 9599 | INJURY-SITE NOS |

ICD-9-CM Pleural Effusion diagnosis codes:

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| 0101 | TUBERCULOUS PLEURISY IN PRIMARY PROGRESSIVE TUBERCULOSIS | 01174 | TPNEU, TUBERCLE BACILI NOT FOUND BY MICROSCOPY BUT BY BACTERIAL CULTURE |
| 01010 | TUBERCULOUS PLEURISY IN PRIMARY PROGRESSIVE TUBERCULOSIS, UNSPECIFIED | 01175 | TPNEU, TUBERCLE BACILI NOT FOUND BY BACTERIOLOGICAL BUT CONFIRMED HISTOLOGICALLY |
| 01011 | TPIPPT, BACTERIAL OR HISTOLOGICAL EXAM NOT DONE | 01176 | TPENU, TUBERCLE BACILI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL BUT CONFIRMED OTHER METHODS |
| 01012 | TPIPPT, BACTERIAL OR HISTOLOGICAL EXAM UNKNOWN | 0120 | TUBERCULOUS PLEURISY |
| 01013 | TPIPPT, TUBERCLE BACILI FOUND BY MICROSCOPY | 01200 | TUBERCULOUS PLEURISY, UNSPECIFIED |
| 01014 | TPIPPT, TUBERCLE BACILI NOT FOUND BY MICROSCOPY BUT BY BACTERIAL CULTURE | 01201 | TP, BACTERIAL OR HISTOLOGICAL EXAM NOT DONE |
| 01015 | TPIPPT, TUBERCLE BACILI NOT FOUND BY BACTERIOLOGICAL BUT CONFIRMED HISTOLOGICALLY | 01202 | TP, BACTERIAL OR HISTOLOGICAL EXAM UNKNOWN |
| 01016 | TPIPPT, TUBERCLE BACILI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL BUT CONFIRMED OTHER METHODS | 01203 | TP, TUBERCLE BACILI FOUND BY MICROSCOPY |
| 0117 | TUBRCULOUS PNEUMOTHORAX | 01204 | TP, TUBERCLE BACILI NOT FOUND BY MICROSCOPY BUT BY BACTERIAL CULTURE |
| 01170 | TUBRCULOUS PNEUMOTHORAX, UNSPECIFIED | 01205 | TP, TUBERCLE BACILI NOT FOUND BY BACTERIOLOGICAL BUT CONFIRMED HISTOLOGICALLY |
| 01171 | TPNEU, BACTERIAL OR HISTOLOGICAL EXAM NOT DONE | 01206 | TP, TUBERCLE BACILI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL BUT CONFIRMED OTHER METHODS |
| 01172 | TPNEU, BACTERIAL OR HISTOLOGICAL EXAM UNKNOWN | 1972 | SECOND MALIG NEO PLEURA |
| 01173 | TPNEU, TUBERCLE BACILI FOUND BY MICROSCOPY | 5111 | WITH EFUSION, WITH MENTION OF A BACTERIAL CAUSE OTHER THAN TUBERCULOSIS |

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| 5118 | OTHER SPECIFIED FORM OF EFFUSION, EXCEPT TUBERCULOUS | 51189 | OTHER SPECIFIED FORMS OF EFFUSION, EXCEPT TUBERCULOSIS |
| 51181 | MALIGNANT PLEURAL EFFUSION | | |
| | OCT08- | 5119 | UNSPECIFIED PLEURAL EFFUSION |

ICD-9-CM Diaphragmatic Surgery Repair codes:

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| 537 | ABD REPAIR-DIAPHR HERNIA | 5380 | THOR REP-DIAPH HERN NOS |
| 5371 | LAPAROSCOPIC REPAIR OF DIAPHRAGMATIC HERNIA, ABDOMINAL APPROACH OCT08- | 5381 | DIAPHRAGMATIC PPLICATION |
| 5372 | OTHER AND OPEN REPAIR OF DIAPHRAGMATIC HERNIA, ABDOMINAL APPROACH OCT08- | 5382 | PARASTERN HERNIA REPAIR |
| 5375 | REPAIR OF DIAPHRAGMATIC HERNIA, ABDOMINAL APPROACH, NOS OCT08- | 5583 | LAPAROSCOPIC REPAIR OF DIAPHRAGMATIC HERNIA, WITH THORACIC APPROACH OCT08- |
| | | 5584 | OTHER AND OPEN REPAIR OF DIAPHRAGMATIC HERNIA, WITH THORACIC APPROACH OCT08- |

ICD-9-CM Thoracic Surgery procedure codes:

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| 0522 | SYMPATHECTOMY CERVICAL | 325 | COMPLETE PNEUMONECTOMY |
| 0523 | SYMPATHECTOMY LUMBAR | 3250 | THORACOSPC PNEUMONECTOMY |
| 0529 | OTHER SYMPATHECTOMY AND GANGLIONECTOMY | 3259 | OTHER PNEUMONECTOMY NOS |
| 0780 | THYMECTOMY, NOT OTHERWISE SPECIFIED | 326 | RADICAL DISSECTION OF THORACIC STRUCTURES |
| 0781 | OTHER PARTIAL EXCISION OF THYMUS | 329 | OTHER EXCISION OF LUNG |
| 0782 | OTHER TOTAL EXCISION OF THYMUS | 330 | INCISION OF BRONCHUS |
| 0783 | THORACOSCOPIC PARTIAL EXCISION OF THYMUS | 331 | INCISION OF LUNG |
| 0784 | THORACOSCOPIC TOTAL EXCISION OF THYMUS | 3320 | THORACOSCOPC LUNG BIOPSY |
| 3121 | MEDIASTINAL TRACHEOSTOMY | 3325 | OPEN BIOPSY OF BRONCHUS |
| 3145 | OPEN BIOPSY OF LARYNX OR TRACHEA | 3326 | CLOSE [PERCUTANEOUS][NEEDLE] BIOPSY OF LUNG |
| 3173 | CLOSURE OF OTHER FISTULA OF TRACHEA | 3327 | CLOSED ENDOSCOPIC BIOPSY OF LUNG |
| 3179 | OTHER REPAIR AND PLASTIC OPERATIONS ON TRACHEA | 3328 | OPEN BIOPSY OF LUNG |
| 3199 | OTHER OPERATIONS ON TRACHEA | 3331 | DESTRUCTION OF PHRENIC NERVE FOR COLLAPSE OF LUNG (NO LONGER PERFORMED) |
| 3209 | OTHER LOCAL EXCISION OR DESTRUCTION OF LESION OR TISSUE OF BRONCHUS | 3332 | ARTIFICIAL PNEUMOTHORAX FOR COLLAPSE OF LUNG |
| 321 | OTHER EXCISION OF BRONCHUS | 3334 | THORACOPLASTY |
| 3220 | THORAC EXC LUNG LESION | 3339 | OTHER SURGICAL COLLAPSE OF LUNG |
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| Local excision or destruction of lesion or tissue of lung | | Repair and plastic operation on lung and bronchus | |
| 3221 | PLICATION OF EMPHYSEMATIOUS BLEB | 3341 | SUTURE OF LACERATION OF BRONCHUS |
| 3222 | LUNG VOLUME REDUCTION SURGERY | 3342 | CLOSURE OF BRONCHIAL FISTULA |
| 3223 | OPEN ABLTN LUNG LES/TISS OCT06- | 3343 | CLOSURE OF LACERATION OF LUNG |
| 3224 | PERC ABLTN LUNG LES/TISS OCT06- | 3348 | OTHER REPAIR AND PLASTIC OPERATIONS ON BRONCHUS |
| 3225 | THOR ABLTN LUNG LES/TISS OCT06- | 3349 | OTHER REPAIR AND PLASTIC OPERATIONS ON LUNG |
| 3226 | ABLTN LUNG TISS NEC/NOS OCT06- | <hr/> | |
| 3228 | ENDOSCOPIC EXCISION OR DESTRUCTION OF LESION OR TISSUE OF LUNG | Lung transplant | |
| 3229 | OTHER LOCAL EXCISION OR DESTRUCTION OF LESION OR TISSUE OF LUNG | 335 | LUNG TRANSPLANTATION |
| 323 | SEGMENTAL RESECTION OF LUNG | 3350 | LUNG TRANSPLANTATION, NOS |
| 3230 | THORAC SEG LUNG RESECT | 3351 | UNILATERAL LUNG TRANSPLANTATION |
| 3239 | OTH SEG LUNG RESECT NOS | 3352 | BILATERAL LUNG TRANSPLANTATION |
| 324 | LOBECTOMY OF LUNG | 336 | COMBINED HEART-LUNG TRANSPLANTATION |
| 3241 | THORAC LOBECTOMY LUNG | 3392 | LIGATION OF BRONCHUS |
| 3249 | OTHER LOBECTOMY OF LUNG | 3393 | PUNCTURE OF LUNG |
| | | 3398 | OTHER OPERATIONS ON BRONCHUS |
| | | 3399 | OTHER OPERATIONS ON LUNG |

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| 3329 | OTHER DIAGNOSTIC PROCEDURE ON LUNG AND BRONCHUS | 4069 | OTHER OPERATIONS ON THORACIC DUCT |
| 3333 | PNEUMOPERITONEUM FOR COLLAPSE OF LUNG | <hr/> | |
| 3401 | INCISION OF CHEST WALL | Esophagotomy | |
| 3402 | EXPLORATORY THORACOTOMY | 4201 | INCISION OF ESOPHAGEAL WEB |
| 3403 | REOPENING OF RECENT THORACOTOMY SITE | 4209 | OTHER INCISION OF ESOPHAGUS |
| 3405 | CREATION OF PLEUROPERITONEAL SHUNT | 4210 | ESOPHAGOSTOMY, NOS |
| 3409 | OTHER INCISION OF PLEURA | 4211 | CERVICAL ESOPHAGOSTOMY |
| 341 | INCISION OF MEDIASTINUM | 4212 | EXTERIORIZATION OF ESOPHAGEAL POUCH |
| <hr/> | | 4219 | OTHER EXTERNAL FISTULIZATION OF ESOPHAGUS |
| Diagnostic procedures on chest wall, pleura, mediastinum, and diaphragm | | 4221 | OPERATIVE ESOPHAGOSCOPY BY INCISION |
| 3420 | THORACOSCOPIC PLEURAL BX | 4225 | OPEN BIOPSY OF ESOPHAGUS |
| 3421 | TRANSPLEURAL THORACOSOCOPY | 4231 | LOCAL EXCISION OF ESOPHAGEAL DIVERTICULUM |
| 3422 | MEDIASTINOSCOPY | 4232 | LOCAL EXCISION OF OTHER LESION OR TISSUE OF ESOPHAGUS |
| 3423 | BIOPSY OF CHEST WALL | <hr/> | |
| 3424 | PLEURAL BIOPSY | Excision of esophagus | |
| 3425 | CLOSED [PERCUTANEOUS][NEEDLE] BIOPSY OF MEDIASTINUM | 4239 | OTHER DESTRUCTION OF LESION OR TISSUE OF ESOPHAGUS |
| 3426 | OPEN BIOPSY OF MEDIASTINUM | 4240 | ESOPHAGECTOMY, NOS |
| 3427 | BIOPSY OF DIAPHRAGM | 4241 | PARTIAL ESOPHAGECTOMY |
| 3428 | OTHER DIAGNOSTIC PROCEDURES ON CHEST WALL, PLEURA, AND DIAPHRAGM | 4242 | TOTAL ESOPHAGECTOMY |
| 3429 | OTHER DIAGNOSTIC PROCEDURES ON MEDIASTINUM | <hr/> | |
| 343 | EXCISION OR DESTRUCTION OF LESION OR TISSUE OF MEDIASTINUM | Intrathoracic anastomosis of exophagus | |
| 344 | EXCISION OR DESTRUCTION OF LESION OF CHEST WALL | 4251 | INTRATHORACIC ESOPHAGUESOPHAGOSTOMY |
| 3451 | DECORTICATION OF LUNG | 4252 | INTRATHORACIC ESOPHAGOGASTROSTOMY |
| 3452 | THORACOSCOPIC DECORT LUNG | 4253 | INTRATHORACIC ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF SMALL BOWEL |
| 3459 | OTHER EXCISION OF PLEURA | 4254 | OTHER INTRATHORACIC ESOPHAGOENTEROSTOMY |
| <hr/> | | 4255 | INTRATHORACIC ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF COLON |
| Repair of chest wall | | 4256 | OTHER INTRATHORACIC ESOPHAGOCOLOSTOMY |
| 3471 | SUTURE OF LACERATION OF CHEST WALL | 4258 | INTRATHORACIC ESOPHAGEAL ANASTOMOSIS W/ OTHER INTERPOSITION |
| 3472 | CLOSURE OF THORACOSTOMY | 4259 | OTHER INTRATHORACIC ANASTOMOSIS OF ESOPHAGUS |
| 3473 | CLOSURE OF OTHER FISTULA OF THORAX | <hr/> | |
| 3474 | REPAIR OF PECTUS DEFORMITY | Antesternal anastomosis | |
| 3479 | OTHER REPAIR OF CHEST WALL | 4261 | ANTESTERNAL ESOPHAGUESOPHAGOSTOMY |
| <hr/> | | 4262 | ANTESTERNAL ESOPHAGOGASTROSTOMY |
| Operations on diaphragm | | 4263 | ANTESTERNAL ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF SMALL BOWEL |
| 3481 | EXCISION OF LESION OR TISSUE OF DIAPHRAGM | 4264 | OTHER ANTESTERNAL ESOPHAGOENTEROSTOMY |
| 3482 | SUTURE OF LACERATION OF DIAPHRAGM | 4265 | ANTESTERNAL ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF COLON |
| 3483 | CLOSURE OF FISTULA OF DIAPHRAGM | 4266 | OTHER ANTESTERNAL ESOPHAGOCOLOSTOMY |
| 3484 | OTHER REPAIR OF DIAPHRAGM | 4268 | OTHER ANTESTERNAL ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION |
| 3485 | IMPLANTATION OF DIAPHRAGMATIC PACEMAKER | <hr/> | |
| 3489 | OTHER OPERATIONS ON DIAPHRAGM | | |
| 3493 | REPAIR OF PLEURA | | |
| 3499 | OTHER OPERATIONS ON THORAX, OTHER | | |
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| Operations on thoracic duct | | | |
| 4061 | CANNULATION OF THORACIC DUCT | | |
| 4062 | FISTULIZATION OF THORACIC DUCT | | |
| 4063 | CLOSURE OF FISTULA OF THORACIC DUCT | | |
| 4064 | LIGATION OF THORACIC DUCT | | |

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| 4269 | OTHER ANTESTERNAL ANASTOMOSIS OF ESOPHAGUS | 4287 | OTHER GRAFT OF ESOPHAGUS |
| <hr/> | | 4289 | OTHER REPAIR OF ESOPHAGUS |
| Other repair of esophagus | | 4465 | ESOPHAGOGASTROPLASTY |
| 427 | ESOPHAGOMYOTOMY | 4466 | OTHER PROCEDURES FOR CREATION OF ESOPHAGOGASTRIC SPHINCTERIC COMPETENCE |
| 4281 | INSERTION OF PERMANENT TUBE INTO ESOPHAGUS | 8104 | DORSAL AND DORSO-LUMBAR FUSION, ANTERIOR TECHNIQUE |
| 4282 | SUTURE OF LACERATION OF ESOPHAGUS | 8134 | REFUSION OF DORSAL AND DORSOLUMBAR SPINE, ANTERIOR TECHNIQUE |
| 4283 | CLOSURE OF ESOPHAGOSTOMY | | |
| 4284 | REPAIR OF ESOPHAGEAL FISTULA, NEC | | |
| 4285 | REPAIR OF ESOPHAGEAL STRICTURE | | |
| 4286 | PRODUCTION OF SUBCUTANEOUS TUNNEL W/O ESOPHAGEAL ANASTOMOSIS | | |

ICD-9-CM Lung or Pleural Biopsy procedure codes:

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| 3326 | CLOSED [PERCUTANEOUS] [NEEDLE] BIOPSY OF LUNG | 3328 | OPEN BIOPSY OF LUNG |
| | | 3424 | PLEURAL BIOPSY |

ICD9-CM Cardiac Procedure codes:

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| 3510 | OPEN HEART VALVULOPLASTY WITHOUT REPLACEMENT, UNSPECIFIED VALVE | 3539 | OPERATIONS ON OTHER STRUCTURES ADJACENT TO VALVES OF HEART |
| 3511 | OPEN HEART VALVULOPLASTY OF AORTIC VALVE WITHOUT REPLACEMENT | 3550 | REPAIR OF UNSPECIFIED SEPTAL DEFECT OF HEART WITH PROSTHESIS |
| 3512 | OPEN HEART VALVULOPLASTY OF MITRAL VALVE WITHOUT REPLACEMENT | 3551 | REPAIR OF ATRIAL SEPTAL DEFECT WITH PROSTHESIS, OPEN TECHNIQUE |
| 3513 | OPEN HEART VALVULOPLASTY OF PULMONARY VALVE WITHOUT REPLACEMENT | 3553 | REPAIR OF VENTRICULAR SEPTAL DEFECT WITH PROSTHESIS, OPEN TECHNIQUE |
| 3514 | OPEN HEART VALVULOPLASTY OF TRICUSPID VALVE WITHOUT REPLACEMENT | 3554 | REPAIR OF ENDOCARDIAL CUSHION DEFECT WITH PROSTHESIS |
| 3520 | REPLACEMENT OF UNSPECIFIED HEART VALVE | 3560 | REPAIR OF UNSPECIFIED SEPTAL DEFECT OF HEART WITH TISSUE GRAFT |
| 3521 | REPLACEMENT OF AORTIC VALVE WITH TISSUE GRAFT | 3561 | REPAIR OF ATRIAL SEPTAL DEFECT WITH TISSUE GRAFT |
| 3522 | OTHER REPLACEMENT OF AORTIC VALVE | 3562 | REPAIR OF VENTRICULAR SEPTAL DEFECT WITH TISSUE GRAFT |
| 3523 | REPLACEMENT OF MITRAL VALVE WITH TISSUE GRAFT | 3563 | REPAIR OF ENDOCARDIAL CUSHION DEFECT WITH TISSUE GRAFT |
| 3524 | OTHER REPLACEMENT OF MITRAL VALVE | 3570 | OTHER AND UNSPECIFIED REPAIR OF UNSPECIFIED SEPTAL DEFECT OF HEART |
| 3525 | REPLACEMENT OF PULMONARY VALVE WITH TISSUE GRAFT | 3571 | OTHER AND UNSPECIFIED REPAIR OF ATRIAL SEPTAL DEFECT |
| 3526 | OTHER REPLACEMENT OF PULMONARY VALVE | 3572 | OTHER AND UNSPECIFIED REPAIR OF VENTRICULAR SEPTAL DEFECT |
| 3527 | REPLACEMENT OF TRICUSPID VALVE WITH TISSUE GRAFT | 3573 | OTHER AND UNSPECIFIED REPAIR OF ENDOCARDIAL CUSHION DEFECT |
| 3528 | OTHER REPLACEMENT OF TRICUSPID VALVE | 3581 | TOTAL REPAIR OF TETRALOGY OF FALLOT |
| 3531 | OPERATIONS ON PAPILLARY MUSCLE | 3582 | TOTAL REPAIR OF TOTAL ANOMALOUS PULMONARY VENOUS CONNECTION |
| 3532 | OPERATIONS ON CHORDAE TENDINEAE | 3583 | TOTAL REPAIR OF TRUNCUS ARTERIOSUS |
| 3533 | ANNULOPLASTY | 3584 | TOTAL CORRECTION OF TRANSPOSITION OF GREAT VESSELS, NOT ELSEWHERE CLASSIFIED |
| 3534 | INFUNDIBULECTOMY | 3591 | INTERATRIAL TRANSPOSITION OF VENOUS RETURN |
| 3535 | OPERATIONS ON TRABECULAE CARNEAE CORDIS | | |

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| 3592 | CREATION OF CONDUIT BETWEEN RIGHT VENTRICLE AND PULMONARY ARTERY | 3735 | PARTIAL VENTRICULECTOMY |
| 3593 | CREATION OF CONDUIT BETWEEN LEFT VENTRICLE AND AORTA | 3736 | EXCISION OR DESTRUCTION OF LEFT ATRIAL APPENDAGE (LAA) OCT08- |
| 3594 | CREATION OF CONDUIT BETWEEN ATRIUM AND PULMONARY ARTERY | 3741 | IMPLANTATION OF PROSTHETIC CARDIAC SUPPORT DEVICE AROUND THE HEART |
| 3595 | REVISION OF CORRECTIVE PROCEDURE ON HEART | 3749 | OTHER REPAIR OF HEART AND PERICARDIUM |
| 3598 | OTHER OPERATIONS ON SEPTA OF HEART | 3751 | HEART TRANSPLANTATION |
| 3599 | OTHER OPERATIONS ON VALVES OF HEART | 3752 | IMPLANTATION OF TOTAL REPLACEMENT HEART SYSTEM |
| 3603 | OPEN CHEST CORONARY ARTERY ANGIOPLASTY | 3753 | REPLACEMENT OF REPAIR OF THORACIC UNIT OF TOTAL REPLACEMENT HEART SYSTEM |
| 3610 | AORTOCORONARY BYPASS FOR HEART REVASCULARIZATION, NOT OTHERWISE SPECIFIED | 3754 | REPLACEMENT OR REPAIR OF OTHER IMPLANTABLE COMPONENT OF TOTAL REPLACEMENT HEART SYSTEM |
| 3611 | (AORTO)CORONARY BYPASS OF ONE CORONARY ARTERY | 3755 | REMOVAL OF INTERNAL BIVENTRICULAR HEART REPLACEMENT SYSTEM OCT08- |
| 3612 | (AORTO)CORONARY BYPASS OF TWO CORONARY ARTERIES | 3760 | IMPLANTATION OR INSERTION OF BIVENTRICULAR EXTERNAL HEART ASSIST SYSTEM OCT08- |
| 3613 | (AORTO)CORONARY BYPASS OF THREE CORONARY ARTERIES | 3761 | IMPLANT OF PULSATION BALLOON |
| 3614 | (AORTO)CORONARY BYPASS OF FOUR OR MORE CORONARY ARTERIES | 3762 | INSERTION OF NON-IMPLANTABLE HEART ASSIST SYSTEM |
| 3615 | SINGLE INTERNAL MAMMARY-CORONARY ARTERY BYPASS | 3763 | REPAIR OF HEART ASSIST SYSTEM |
| 3616 | DOUBLE INTERNAL MAMMARY-CORONARY ARTERY BYPASS | 3764 | REMOVAL OF HEART ASSIST SYSTEM |
| 3617 | ABDOMINAL -CORONARY ARTERY BYPASS | 3765 | IMPLANT OF EXTERNAL HEART ASSIST SYSTEM |
| 3619 | OTHER BYPASS ANASTOMOSIS FOR HEART REVASCULARIZATION | 3766 | INSERTION OF IMPLANTABLE HEART ASSIST SYSTEM |
| 362 | HEART REVASCULARIZATION BY ARTERIAL IMPLANT | 3767 | IMPLANTATION OF CARDIOMYOSTIMULATION SYSTEM |
| 3631 | OPEN CHEST TRANSMYOCARDIAL REVASCULARIZATION | 3791 | OPEN CHEST CARDIAC MASSAGE |
| 3632 | OTHER TRANSMYOCARDIAL REVASCULARIZATION | 3804 | INCISION OF VESSEL, AORTA |
| 3639 | OTHER HEART REVASCULARIZATION | 3805 | INCISION OF VESSEL, OTHER THORACIC |
| 3691 | REPAIR OF ANEURYSM OF CORONARY VESSEL | 3844 | RESECTION OF ABDOMINAL AORTA WITH GRAFT REPLACEMENT |
| 3699 | OTHER OPERATIONS ON VESSELS OF HEART | 3845 | RESECTION OF THORACIC VESSEL WITH GRAFT REPLACEMENT |
| 370 | PERICARDIOCENTESIS | 3864 | EXCISION OF LESION OF AORTA |
| 3710 | INCISION OF HEART, NOT OTHERWISE SPECIFIED | 3865 | EXCISION OF LESION OTHER THORACIC VESSEL |
| 3711 | CARDIOTOMY | 3884 | LIGATION , DIVISION OF AORTA |
| 3712 | PERICARDIOTOMY | 3885 | LIGATION, DIVISION OF OTHER THORACIC VESSELS |
| 3731 | PERICARDIECTOMY | 390 | SYSTEMIC TO PULMONARY ARTERY SHUNT |
| 3732 | EXCISION OF ANEURYSM OF HEART | 3921 | CAVAL-PULMONARY ARTERY ANASTOMOSIS |
| 3733 | EXCISION OR DESTRUCTION OF OTHER LESION OR TISSUE OF HEART, OPEN APPROACH | 3922 | AORTA-SUBCLAVIAN-CAROTID BYPASS |
| | | 3923 | OTHER INTRATHORACIC VASCULAR SHUNT OR BYPASS |

Denominator

Population of county or Metro Area¹ associated with FIPS code of patient's residence or hospital location.

¹ The term "metropolitan area" (MA) was adopted by the U.S. Census in 1990 and referred collectively to metropolitan statistical areas (MSAs), consolidated metropolitan statistical areas (CMSAs) and primary metropolitan statistical areas (PMSAs). In addition, "area" could refer to either 1) FIPS county, 2) modified FIPS county, 3) 1999 OMB Metropolitan Statistical Area or 3) 2003 OMB Metropolitan Statistical Area. Micropolitan Statistical Areas are not used in the QI software.