

Supplementary Table 1. Cardiac surgery ICD-9-CM codes searched in the National Inpatient Sample from 1998–2013

<b>Procedure</b>	<b>ICD-9-CM Codes</b>	<b>CPT</b>
Aorto-coronary bypass: 1–4 or more coronary arteries (CABG)	36.11–36.15	33510, 33511, 33512, 33513, 33514, 33516, 33517, 33518, 33519, 33521, 33522, 33523, 33530, 35600
Extracorporeal circulation auxiliary to open heart surgery (cardiopulmonary bypass)	39.61, 39.62	32852, 33031, 33120, 33251, 33256, 33259, 33261, 33305, 33315, 33322, 33335, 33368, 33369, 33400, 33403, 33404, 33405, 33406, 33410, 33411, 33422, 33426, 33427, 33430, 33460, 33465, 33474, 33496, 33500, 33504, 33641, 33702, 33710, 33720, 33736, 33774, 33775, 33776, 33777, 33814, 33853, 33860, 33863, 33864, 33870, 33875, 33877, 33910, 33916, 33922, 33999, 35211, 35241, 35271, 52854, 99184
Heart replacement procedures	37.5x	33944, 33945, 33999, 0051T, 0052T, 0053T, 99184
Insertion of implantable heart assist system	37.66	33976, 33967, 33970, 33971, 33973, 33974, 33975, 33977, 33978, 33979, 33980, 33981, 33982, 33983, 33999, 92970
Open heart valvuloplasty of aortic valve without replacement, replacement with tissue graft, or other replacement	35.11, 35.21, 35.22	33400, 33401, 33403, 33417, 33602, 33406, 33410, 33411, 33412, 33413, 33365, 33404
Open heart valvuloplasty of mitral valve without replacement, replacement with tissue graft, or other replacement	35.12, 35.23, 35.24	33425, 33426, 33427, 33600, 33602, 33732, 33425, 33426, 33427, 33430, 33425, 33430
Open heart valvuloplasty of pulmonary valve without replacement, replacement with tissue graft, or other replacement	35.13, 35.25, 35.26	33476, 33478, 33602, 33920, 33413, 33475, 33475
Open heart valvuloplasty of tricuspid valve without replacement, replacement with tissue graft, or other replacement	35.14, 35.27, 35.28	33460, 33463, 33464, 33468, 33600, 33463, 33465, 33460, 33463, 33464, 33465
Operations on structures adjacent to heart valves	35.3x	33300, 33305, 33411, 33412, 33413, 33414, 33415, 33416, 33476, 33478, 33676, 33684, 33702, 33710, 33720, 33722
Pericardiectomy, including	37.31, 37.32,	33030, 33031, 33050, 33542, 33120,

excision of aneurysm or other lesion (open approach) of heart. Excluding endovascular, thoracoscopic approaches.	37.33	33130, 33250, 33251, 33254, 33255, 33256, 33257, 33258, 33259, 33261, 33542
Surgery on the atrial or ventricular septa	35.4x, 35.5x, 35.6x, 35.7x	33770, 33545, 33608, 33610, 33611, 33612, 33641, 33645, 33645, 33647, 33660, 33665, 33670, 33675, 33676, 33677, 33681, 33684, 33688, 33702, 33710, 33735, 33736, 33737, 33771, 33776, 33780, 33782, 33783, 33999, 92992, 92993, 93580, 93581

The NIS was searched from 1998–2013 to identify patients undergoing cardiac surgery. An “x” next to a code indicates that all nested codes were searched, e.g., “37.5x” indicates that “37.51–37.55” were searched. CPT: Current Procedural Terminology; ICD-9-CM: International Classification of Diseases, Ninth Revision, Clinical Modification.