

Supplementary material

Supplementary Table 1 Classification of surgical procedures by ICD-9 clinical modification (CM) procedure codes*

Surgery classification	Subcategorization	ICD-9-CM procedure codes
Cholecystectomy		5123, 5122, 5121, 5124
Hernia repair		1711, 1712, 1713, 1721, 1722, 1723, 1724, 4642, 5300, 5301, 5302, 5303, 5304, 5305, 5310, 5311, 5312, 5313, 5314, 5315, 5316, 5317, 5321, 5329, 5331, 5339, 5341, 5342, 5343, 5349, 5351, 5359, 5361, 5362, 5363, 5369
Major abdominal	Total/partial colectomy	4572, 4573, 4574, 4575, 4576, 4579, 4581, 4582, 4583, 4604, 4850, 4851, 4852, 4859, 4862, 4863
	Total/partial nephrectomy	554, 5551, 5552, 5553, 5554
	Total/partial pancreatectomy	5251, 5252, 5253, 5259, 526, 527
	Total/partial splenectomy	4142, 4143, 415
	Total/partial gastrectomy	435, 436, 437, 4381, 4382, 4389, 4391, 4399
Major orthopedic	Total/partial knee, hip replacement or revision	8151, 8152, 8153, 8154, 8155
	Open reduction procedures (tibia/fibula, femur, radius/ulna, humerus)	7921, 7922, 7925, 7926, 7931, 7932, 7935, 7936
Major cardiovascular	Coronary artery bypass graft	3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3619
	Open cardiac valve repair or replacement	3510, 3511, 3512, 3513, 3514, 3520, 3521, 3522, 3523, 3524, 3525, 3526, 3527, 3528
	Abdominal aortic aneurysm repair	3834, 3844, 3864, 3971

*The presence of these procedure codes in any position was sufficient to classify a surgery during a hospital admission

Supplementary Table 2 National estimates and trends in surgical procedure rates per 1,000 cirrhosis hospitalizations

Discharge year	Cholecystectomy	Hernia repair	Other major abdominal	Major orthopedic	Major cardiovascular	Total
2005	22.1	10.3	8.9	9.9	3.3	54.5
2006	19.3	9.6	8.9	10.1	3.6	51.4
2007	18.2	10.1	7.9	10.4	3.0	49.6
2008	18.5	9.7	7.1	10.9	2.8	49.1
2009	16.0	9.2	7.2	10.6	3.6	46.7
2010	16.2	9.7	6.9	10.2	2.5	45.5
2011	14.7	8.9	6.5	10.1	2.8	43.0
2012	13.8	8.7	6.2	10.5	2.7	41.9
2013	12.4	9.2	6.3	10.6	2.9	41.4
2014	12.7	8.5	6.3	11.4	3.2	42.0
Linear Trend, (β , P-value)	-1.004* (P<0.001)	-0.166* (P=0.001)	-0.316* (P<0.001)	0.083 (P=0.078)	-0.052 (P=0.231)	-1.454* (P<0.001)

*P<0.05