

Supplementary Table S1. ICD-10-CM/PCS codes and administrative definitions used for cohort identification, procedures, severity markers, and covariates.

Variable	Coding system	Code(s) / rule
Acute cholangitis	ICD-10-CM	K803*, K830*
Choledocholithiasis	ICD-10-CM	K804*, K805*, K806*, K807*, K808*
Bile duct fistula	ICD-10-CM	K833*
Non-calculous bile duct obstruction/stricture	ICD-10-CM	K831*
Sphincter of Oddi disorder/spasm	ICD-10-CM	K834*
Transfer-in hospitalization	NIS administrative variable	TRAN_IN=1
Transfer-out hospitalization	NIS administrative variable	TRAN_OUT=1
In-hospital mortality	NIS administrative variable	DIED=1
Diagnostic ERCP	ICD-10-PCS	0FJB8ZZ, 0FJD8ZZ, 0FJG8ZZ
Therapeutic ERCP	ICD-10-PCS	0F598ZZ, 0F5C8ZZ, 0F5D8ZZ, 0F5F8ZZ, 0F798DZ, 0F798ZZ, 0F7C8DZ, 0F7C8ZZ, 0F7D8DZ, 0F7D8ZZ, 0F7F8DZ, 0F7F8ZZ, 0F9980Z, 0F998ZX, 0F998ZZ, 0F9C80Z, 0F9C8ZX, 0F9C8ZZ, 0F9D80Z, 0F9D8ZX, 0F9D8ZZ, 0F9F80Z, 0F9F8ZX, 0F9F8ZZ, 0F9G80Z, 0F9G8ZX, 0F9G8ZZ, 0FC98ZZ, 0FCC8ZZ, 0FCD8ZZ, 0FCF8ZZ, 0FCG8ZZ, 0FF98ZZ, 0FFC8ZZ, 0FFD8ZZ, 0FFF8ZZ
Any ERCP	ICD-10-PCS	Derived from above
Pancreatic duct stent	ICD-10-PCS	0FHD8DZ, 0FHD8YZ, 0F7D8DZ, 0F7F8DZ, 0F9D80Z, 0F9F80Z
Biliary stent	ICD-10-PCS	0FHB8DZ, 0FHB8YZ, 0F758DZ, 0F768DZ, 0F788DZ, 0F798DZ, 0F7C8DZ, 0F9580Z, 0F9680Z, 0F9880Z, 0F9980Z, 0F9C80Z
Percutaneous cholecystostomy / IR tube placement	ICD-10-PCS	0F9430Z, 0F943ZX, 0F943ZZ
Cholecystectomy	ICD-10-PCS	0FT40ZZ, 0FT44ZZ
Sepsis	ICD-10-CM	R652*, A41*, A40* in I10_DX1–I10_DX5
Severe sepsis / SIRS	ICD-10-CM	R651*, R652*
Acute kidney injury	ICD-10-CM	N17*
Dialysis	ICD-10-PCS	5A1D00Z, 5A1D60Z, 3E1M39Z
CRRT	ICD-10-PCS	5A1D80Z, 5A1D90Z
AKI requiring dialysis	Derived	aki==1 & dialysis==1
Acute respiratory failure	ICD-10-CM	J960*
Intubation / invasive airway	ICD-10-PCS	0BH18EZ, 0BH17EZ
Shock	ICD-10-CM	R571
Altered mental status	ICD-10-CM	R4182

Variable	Coding system	Code(s) / rule
Thrombocytopenia	ICD-10-CM	D6959, D696
Central venous catheter placement	ICD-10-PCS	05HM33Z, 05HM3DZ, 05HN33Z, 05HN3DZ, 06HM33Z, 06HM3DZ, 06HN33Z, 06HN3DZ
Diabetes mellitus	ICD-10-CM	E11*
Obesity	ICD-10-CM	E66*, Z684*
Morbid obesity	ICD-10-CM	E6601
Hypertension	ICD-10-CM	I10
Hyperlipidemia	ICD-10-CM	E785
Coronary artery disease	ICD-10-CM	I2510, I25810, I25811, I25812, I2582, I2583, I2589, I255, I259
Congestive heart failure	ICD-10-CM	I110, I130, I132, I509, I501, I5020, I5022, I5030, I5032, I5040, I5042
Chronic kidney disease	ICD-10-CM	N18*
Cerebrovascular accident/stroke	ICD-10-CM	I63*
Smoking/tobacco exposure	ICD-10-CM	F17*, Z720, Z87891
Cirrhosis (including alcoholic cirrhosis)	ICD-10-CM	K74*, K717, K703*, K702
Cirrhosis (non-alcohol-related definition)	ICD-10-CM	K74*, K717
Liver failure	ICD-10-CM	K72*
Hepatic encephalopathy	ICD-10-CM	K7682
Portal vein thrombosis	ICD-10-CM	I81
HIV infection	ICD-10-CM	B20
Atrial fibrillation	ICD-10-CM	I480*, I4811*, I4819*, I4820*, I4821*, I4891*
Pulmonary embolism	ICD-10-CM	I26*
Cholecystitis	ICD-10-CM	K81*
Retained CBD stones	ICD-10-CM	K9186
Post-cholecystectomy cholangitis	ICD-10-CM	K8309

Abbreviations: CBD, common bile duct; CRRT, continuous renal replacement therapy; ERCP, endoscopic retrograde cholangiopancreatography; ICD-10-CM, International Classification of Diseases, Tenth Revision, Clinical Modification; ICD-10-PCS, International Classification of Diseases, Tenth Revision, Procedure Coding System; NIS, National Inpatient Sample.

Supplementary Table S2. Variable-level missingness for covariates used in adjusted mortality analyses.

Variable	Missing n
Race/ethnicity	176
Primary expected payer	9
Age	0
Sex	0
Weekend admission	0
Hospital bed size	0
Hospital teaching status	0
Hospital region	0
Calendar year	0
Diabetes mellitus	0
Hypertension	0
Congestive heart failure	0
Atrial fibrillation	0
COPD	0
Chronic kidney disease	0
Malignancy	0
Cirrhosis	0
Morbid obesity	0