



### GECKO Case Report Form (CRF)

Use with Appendix B (Data Dictionary) to help data collection.

REDCap unique ID	
Data collection period	

#### Section 1: Pre-operative data fields

Age	Sex	<input type="checkbox"/> M <input type="checkbox"/> F	ASA	<input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> V	BMI	--	Frailty	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9
Comorbidities (Tick <u>all</u> that apply)	<input type="checkbox"/> MI <input type="checkbox"/> CHF <input type="checkbox"/> PVD <input type="checkbox"/> CVA/TIA <input type="checkbox"/> Dementia <input type="checkbox"/> COPD <input type="checkbox"/> CTD <input type="checkbox"/> PUD <input type="checkbox"/> Hemiplegia <input type="checkbox"/> Leukaemia <input type="checkbox"/> Lymphoma <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Hypertension <input type="checkbox"/> IBD Diabetes mellitus <input type="checkbox"/> Diet-controlled <input type="checkbox"/> Non-insulin <input type="checkbox"/> Insulin controlled						History of acute cholecystitis or cholangitis	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Solid tumour <input type="checkbox"/> Localised <input type="checkbox"/> Metastatic Liver disease <input type="checkbox"/> Mild <input type="checkbox"/> Moderate to Severe CKD <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IV <input type="checkbox"/> V <input type="checkbox"/> None of the Above							
	USS: <input type="checkbox"/> Yes <input type="checkbox"/> No - not available <input type="checkbox"/> No - not indicated <input type="checkbox"/> No - patient declined <input type="checkbox"/> Unknown CT: <input type="checkbox"/> Yes <input type="checkbox"/> No: not available <input type="checkbox"/> No: not indicated <input type="checkbox"/> No: patient declined <input type="checkbox"/> Unknown MRCP: <input type="checkbox"/> Yes <input type="checkbox"/> No: not available <input type="checkbox"/> No: not indicated <input type="checkbox"/> No: patient declined <input type="checkbox"/> Unknown ERCP: <input type="checkbox"/> Yes <input type="checkbox"/> No: not available <input type="checkbox"/> No: not indicated <input type="checkbox"/> No: patient declined <input type="checkbox"/> Unknown EUS: <input type="checkbox"/> Yes <input type="checkbox"/> No: not available <input type="checkbox"/> No: not indicated <input type="checkbox"/> No: patient declined <input type="checkbox"/> Unknown HIDA: <input type="checkbox"/> Yes <input type="checkbox"/> No: not available <input type="checkbox"/> No: not indicated <input type="checkbox"/> No: patient declined <input type="checkbox"/> Unknown							
	Imaging findings	<input type="checkbox"/> Gallstones <input type="checkbox"/> Thick-walled gallbladder <input type="checkbox"/> Pericholecystic fluid <input type="checkbox"/> CBD stones <input type="checkbox"/> Dilated CBD (Diameter: _ . _ mm (1dp))						
Days between	First symptom onset and admission: _ _ _	Diagnosis and decision to operate: _ _ _	Decision to operate and surgery: _ _ _	Urgency of surgery	<input type="checkbox"/> Elective <input type="checkbox"/> Delayed <input type="checkbox"/> Emergency (patient was on elective waiting list? <input type="checkbox"/> Yes <input type="checkbox"/> No)			
Indication for surgery	<input type="checkbox"/> Acute calculous cholecystitis (Tokyo grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III; Was Tokyo grade documented in notes: <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> Biliary colic <input type="checkbox"/> Acalculous cholecystitis <input type="checkbox"/> Chronic cholecystitis <input type="checkbox"/> CBD stone <input type="checkbox"/> Polyp <input type="checkbox"/> Dyskinesia <input type="checkbox"/> Gallstone pancreatitis (Atlanta criteria: <input type="checkbox"/> Mild <input type="checkbox"/> Mod <input type="checkbox"/> Severe; Was Atlanta criteria documented in notes: <input type="checkbox"/> Yes <input type="checkbox"/> No)							

#### Section 2: Intraoperative data fields

Mode of anaesthesia (Tick <u>all</u> that apply)	<input type="checkbox"/> Local (Route: <input type="checkbox"/> Subcutaneous <input type="checkbox"/> Intraperitoneal) <input type="checkbox"/> Regional (Route: <input type="checkbox"/> spine-related <input type="checkbox"/> regional nerve block) <input type="checkbox"/> Sedation <input type="checkbox"/> General inhaled (Type: <input type="checkbox"/> sevoflurane <input type="checkbox"/> halothane <input type="checkbox"/> desflurane <input type="checkbox"/> N2O <input type="checkbox"/> isoflurane) <input type="checkbox"/> Total Intravenous Volatile Anaesthetic			Intraoperative antibiotics	<input type="checkbox"/> Yes - Prophylactic <input type="checkbox"/> Yes - Intra-op spillage <input type="checkbox"/> Yes - cholecystitis <input type="checkbox"/> No		
Primary operator	<input type="checkbox"/> Consultant or attending (Specialty: <input type="checkbox"/> General <input type="checkbox"/> OG <input type="checkbox"/> HPB <input type="checkbox"/> Colorectal <input type="checkbox"/> Breast <input type="checkbox"/> Vascular <input type="checkbox"/> Other: ) <input type="checkbox"/> Surgical trainee (Grade: <input type="checkbox"/> Senior <input type="checkbox"/> Junior; Training operation? <input type="checkbox"/> Yes <input type="checkbox"/> No; Consultant present? <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> Non-surgeon Number of cholecystectomies performed by primary surgeon prior to this procedure: <input type="checkbox"/> 0-50 <input type="checkbox"/> 51-100 <input type="checkbox"/> 101-200 <input type="checkbox"/> >200						
Operative approach	<input type="checkbox"/> Open (Why? <input type="checkbox"/> No laparoscopy <input type="checkbox"/> Surgeon not trained in laparoscopy <input type="checkbox"/> Laparoscopy broken <input type="checkbox"/> Previous surgeries <input type="checkbox"/> Disease severity) <input type="checkbox"/> Open conversion (Why? <input type="checkbox"/> Suboptimal view <input type="checkbox"/> Adhesions <input type="checkbox"/> Unable to safely dissect CVS <input type="checkbox"/> Suspected BDI <input type="checkbox"/> Pneumoperitoneum not tolerated <input type="checkbox"/> Bleeding <input type="checkbox"/> Bowel injury <input type="checkbox"/> Equipment failure <input type="checkbox"/> Suspected or actual cholecystoduodenal or cholecystocolonic fistula) <input type="checkbox"/> Laparoscopic (Type: <input type="checkbox"/> Standard <input type="checkbox"/> SILS; Gasless? <input type="checkbox"/> Yes <input type="checkbox"/> No; Reusable equipment: <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> Robotic (Type: <input type="checkbox"/> Standard <input type="checkbox"/> SILS; Gasless? <input type="checkbox"/> Yes <input type="checkbox"/> No; Reusable equipment: <input type="checkbox"/> Yes <input type="checkbox"/> No)						
Intraoperative difficulty (Nassar) - for minimally invasive technique	<input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> V	CVS obtained successfully? - for minimally invasive technique	<input type="checkbox"/> Yes <input type="checkbox"/> No If No, which criteria was met? (Tick <u>all</u> that apply) <input type="checkbox"/> Clearance of the hepatocystic triangle <input type="checkbox"/> Exposure of the lower cystic plate <input type="checkbox"/> Only two structures are attached to the gallbladder <input type="checkbox"/> None of the above			Was there a time-out to verify CVS?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Operation performed	<input type="checkbox"/> Total cholecystectomy (Type: <input type="checkbox"/> Standard <input type="checkbox"/> Fundus-first approach) <input type="checkbox"/> Subtotal cholecystectomy (Type: <input type="checkbox"/> Reconstituting <input type="checkbox"/> Fenestrated) <input type="checkbox"/> Not performed ( <input type="checkbox"/> Diagnostic laparoscopy <input type="checkbox"/> Cholecystostomy)		Abdominal drain	<input type="checkbox"/> Yes <input type="checkbox"/> No	Anatomical biliary variant	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Intraoperative CBD assessment (Tick <u>all</u> that apply)	<input type="checkbox"/> Intraoperative cholangiogram <input type="checkbox"/> Incisionless fluorescent cholangiography <input type="checkbox"/> Laparoscopic US <input type="checkbox"/> Intraoperative ERCP Decision: <input type="checkbox"/> Selective <input type="checkbox"/> Routine; If selective, indication: <input type="checkbox"/> Raised LFT <input type="checkbox"/> BDI concern <input type="checkbox"/> Pre-op imaging suggests CBD stone Findings: <input type="checkbox"/> Stone <input type="checkbox"/> No stone; If stone, management: <input type="checkbox"/> Flushing with saline and smooth muscle relaxant <input type="checkbox"/> Fogarty catheter trawl <input type="checkbox"/> Basket retrieval <input type="checkbox"/> Choledochoscope <input type="checkbox"/> No intraoperative treatment attempted						
CBD exploration	<input type="checkbox"/> Yes (Type: <input type="checkbox"/> Trancystic <input type="checkbox"/> Choledochotomy; If Choledochotomy, closure: <input type="checkbox"/> Primary closure <input type="checkbox"/> T-tube) <input type="checkbox"/> No		Operative contamination	<input type="checkbox"/> Clean <input type="checkbox"/> Clean-Contaminated <input type="checkbox"/> Contaminated <input type="checkbox"/> Dirty			
Intraoperative complications - excluding BDI (see section 4)	<input type="checkbox"/> Bile spilt <input type="checkbox"/> Stones Spilt <input type="checkbox"/> Bleeding <input type="checkbox"/> Major vascular injury <input type="checkbox"/> Bowel injury		Reusable gowns	<input type="checkbox"/> Yes ( <input type="checkbox"/> All staff <input type="checkbox"/> some staff) <input type="checkbox"/> No		Reusable drapes	<input type="checkbox"/> Yes <input type="checkbox"/> No

#### Section 3: 30-day outcomes

Highest 30-day Clavien-Dindo (CD)	<input type="checkbox"/> 0 <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa (Radiological drainage? <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> IIIb (Re-operation? <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V (Postop day of death: _ _ )	Unplanned critical care admission	<input type="checkbox"/> Yes (Length of stay: _ _ ) <input type="checkbox"/> No	Unplanned Re-imaging	<input type="checkbox"/> Yes (Type: <input type="checkbox"/> USS <input type="checkbox"/> CT <input type="checkbox"/> MRI <input type="checkbox"/> ERCP) <input type="checkbox"/> No
30-day postoperative Complications (Tick <u>all</u> that apply)	<input type="checkbox"/> Surgical site infection (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Pulmonary complications (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Bile leak (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Bleeding (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Intra-abdominal collection (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Acute pancreatitis (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V)				
Length of stay	_ _ days		Unplanned 30-day Readmission	<input type="checkbox"/> Yes (Length of stay: _ _ ) <input type="checkbox"/> No	

Section 4: BDI data fields						
BDI identified at 30-day follow-up of index cholecystectomy	<input type="checkbox"/> Yes (if yes, please fill in the rest of the data points below) <input type="checkbox"/> No (Was BDI identified at one-year of index cholecystectomy: <input type="checkbox"/> Yes <input type="checkbox"/> No (if yes, please fill in the rest of the data points below))					
Presentation of BDI	<input type="checkbox"/> Intraoperatively <input type="checkbox"/> Controlled bile leak from abdominal drain <input type="checkbox"/> Abdominal pain due to uncontrolled bile leak <input type="checkbox"/> Obstructive jaundice or cholangitis <input type="checkbox"/> Intra-abdominal abscess or biloma			Days from index cholecystectomy to diagnosis (0 = intraoperatively)	--	
BDI grade (Strasberg)	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E1 <input type="checkbox"/> E2 <input type="checkbox"/> E3 <input type="checkbox"/> E4 <input type="checkbox"/> E5	Concomitant vascular injury	<input type="checkbox"/> Yes ( <input type="checkbox"/> Right hepatic artery <input type="checkbox"/> Common hepatic artery <input type="checkbox"/> Main portal vein <input type="checkbox"/> Right portal vein) <input type="checkbox"/> No			
Imaging modality to investigate and confirm BDI	<input type="checkbox"/> OTC <input type="checkbox"/> USS <input type="checkbox"/> MRCP <input type="checkbox"/> CT <input type="checkbox"/> ERCP <input type="checkbox"/> PTC <input type="checkbox"/> Nuclear medicine scan <input type="checkbox"/> Tubogram <input type="checkbox"/> None		Discussion with specialist HPB centre	<input type="checkbox"/> Yes (Days from injury to referral: __; Transferred? <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> No <input type="checkbox"/> Not required - Injury occurred at specialist HPB centre		
Management of BDI (Tick all that apply)	<input type="checkbox"/> ERCP alone (Days after index cholecystectomy: __) <input type="checkbox"/> ERCP and stent (Days after index cholecystectomy: __) <input type="checkbox"/> PTC (Days after index cholecystectomy: __) <input type="checkbox"/> Washout only (Days after index cholecystectomy: __) <input type="checkbox"/> Surgical repair (Days after index cholecystectomy: __)					
Specialty of surgeon performing BDI repair	<input type="checkbox"/> HPB surgeon <input type="checkbox"/> UGI surgeon <input type="checkbox"/> General surgeon	Method of repair	<input type="checkbox"/> Roux-en-Y Hepaticojejunostomy <input type="checkbox"/> CBD repair without T-tube <input type="checkbox"/> CBD repair with T-tube <input type="checkbox"/> CBD end to end anastomosis <input type="checkbox"/> Hepaticoduodenostomy	Vascular repair	<input type="checkbox"/> Yes <input type="checkbox"/> No	
One-year complications (Tick all that apply)	<input type="checkbox"/> Stricture formation (Days from repair to complication: __) <input type="checkbox"/> Cholangitis (Days from repair to complication: __) <input type="checkbox"/> Anastomotic leakage (Days from repair to complication: __) <input type="checkbox"/> Intra-abdominal abscess or biloma (Days from repair to complication: __) <input type="checkbox"/> Re-repair (Days from repair to complication: __)				If BDI surgical repair	
Section 5: Histology data fields						
Postoperative histology	<input type="checkbox"/> Not sent for examination <input type="checkbox"/> Sent for examination (Indication: <input type="checkbox"/> Routine <input type="checkbox"/> Selective; Days from index cholecystectomy to histology result: __; Result: <input type="checkbox"/> Benign <input type="checkbox"/> Malignant (if malignant, please fill in the rest of the data points below))					
Staging investigations after index cholecystectomy	<input type="checkbox"/> CT thorax abdomen pelvis (Days from histology result to staging: __) <input type="checkbox"/> MRI liver (Days from histology result to staging: __) <input type="checkbox"/> PET-CT (Days from histology result to staging: __) <input type="checkbox"/> Staging laparoscopy (Days from histology result to staging: __)					
TNM grade (AJCC 8 <sup>th</sup> edition)	<b>T category:</b> <input type="checkbox"/> Tis <input type="checkbox"/> T1a (lamina propria) <input type="checkbox"/> T1b (muscularis) <input type="checkbox"/> T2a (peritoneal side) <input type="checkbox"/> T2b (hepatic side) <input type="checkbox"/> T3 <input type="checkbox"/> T4 <b>N category:</b> <input type="checkbox"/> N0 <input type="checkbox"/> N1 (1-3 nodes) <input type="checkbox"/> N2 (>3 nodes) <b>M category:</b> <input type="checkbox"/> M0 <input type="checkbox"/> M1					
Discussed at MDT	<input type="checkbox"/> Yes <input type="checkbox"/> No	Adjuvant treatment	<input type="checkbox"/> Chemotherapy <input type="checkbox"/> Radiotherapy <input type="checkbox"/> None			
Revisional surgery	<input type="checkbox"/> Yes <input type="checkbox"/> No - not required <input type="checkbox"/> No - unresectable tumour					
Type of revisional surgery (Tick all that apply)	<input type="checkbox"/> Liver resection (Extent: <input type="checkbox"/> Liver bed <input type="checkbox"/> 1 segment <input type="checkbox"/> 2 segments <input type="checkbox"/> ≥3 segments) <input type="checkbox"/> Bile duct resection <input type="checkbox"/> Lymph node dissection		Days from histology result to revisional surgery	--		
Pathology results	<b>Resection margin status:</b> <input type="checkbox"/> R0 <input type="checkbox"/> R1 <input type="checkbox"/> R2 <b>Lymphovascular invasion:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Perineural invasion:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No				If revisional surgery	
Recurrence on imaging at one year	<input type="checkbox"/> Yes (Days from surgery to recurrence: __) <input type="checkbox"/> No					
Section 6: One-year outcomes						
Highest one-year Clavien-Dindo (CD)	<input type="checkbox"/> 0 <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa (Radiological drainage? <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> IIIb (Re-operation? <input type="checkbox"/> Yes <input type="checkbox"/> No) <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V (Postop day of death: __)			Total number of readmissions	--	
One-year complications (Tick all that apply)	<input type="checkbox"/> Surgical site infection (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Pulmonary complications (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Bile leak (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Biliary stricture (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Bleeding (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Intra-abdominal collection (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V) <input type="checkbox"/> Acute pancreatitis (CD Grade: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> IIIa <input type="checkbox"/> IIIb <input type="checkbox"/> IVa <input type="checkbox"/> IVb <input type="checkbox"/> V)					