

DATA DICTIONARY

Pre-operative Data Fields	Required data (definition / comment)
1. Patient age	Years (Whole years at the time of operation)
2. Patient sex at birth	Male / Female
3. ASA grade	I / II / III / IV / V (Appendix D for definitions)
4. Body Mass Index (BMI in kg/m ²)	Underweight BMI Below 18.5 / Normal weight BMI 18.5-24.9 / Pre-obesity BMI 25.0-29.9 / Obesity class I BMI 30.0-34.9 / Obesity class II BMI 35.0-39.9 / Obesity class III BMI 40+
5. Clinical Frailty Scale	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 (Appendix D for definitions)
6. Comorbidities (Select <u>all</u> that apply)	<p>Myocardial Infraction (MI) / Congestive Heart Failure (CHF) / Peripheral Vascular Disease (PVD) Cerebrovascular Accident (CVA) or Transient Ischaemic Attack (TIA) / Dementia / Chronic Obstructive Pulmonary Disease (COPD) / Connective Tissue Disease (CTD) Peptic Ulcer Disease (PUD) / Hemiplegia / Leukaemia / Lymphoma / Human Immunodeficiency Virus (HIV) or Acquired Immunodeficiency Syndrome (AIDS) / Hypertension / Inflammatory Bowel Disease (IBD) / Diabetes Mellitus (Type 1 or Type 2). <u>If yes:</u> Diet-Controlled / Medication (non-insulin) controlled / Insulin-controlled Solid Tumour. <u>If yes:</u> Localised / Metastatic Liver Disease. <u>If yes:</u> Mild / Moderate to Severe Chronic Kidney Disease (CKD). <u>If yes:</u> Stage I / II / IIIa / IIIb / IV / V None of the Above</p> <p><u>Definitions:</u></p> <ul style="list-style-type: none"> eGFR for CKD stages: I ≥ 90; II = 60-90; IIIa = 45-59; IIIb = 30-44; IV = 15-29; V <15 Definitions for Liver Disease: Mild defined as chronic hepatitis or cirrhosis without portal hypertension; Moderate defined as cirrhosis and portal hypertension but no variceal bleeding history; Severe defined as cirrhosis and portal hypertension with variceal bleeding history.
7. History of acute cholecystitis or cholangitis	Yes / No
8. Number of admissions with biliary symptoms in previous 12 months prior to surgery	Number of admissions excluding the current one
9. Preoperative imaging (Select <u>all</u> that apply)	Yes / Unknown / No (Not available / Not indicated / Patient declined) for each of the following: USS / CT / ERCP / MRCP / Endoscopic Ultrasound (EUS) / Hepatobiliary IminoDiacetic Acid (HIDA)
10. Preoperative imaging findings*	<p>*Only for USS / CT / MRCP, what are the findings (tick <u>all</u> that apply):</p> <p>Gallstones Thick-walled Gallbladder (≥3mm or reported as thick walled) Pericholecystic fluid CBD stones Dilated CBD. <u>If yes:</u> CBD diameter (record in mm, to one decimal)</p>
11. Days between <u>first</u> biliary symptom onset and admission	Number of days (Whole number, day 0 is same day of first symptom onset)

12. Days between diagnosis and decision to operate	<p>Number of days (Whole number, day 0 is same day of diagnosis)</p> <p><u>Guide for decision to operate day:</u></p> <ul style="list-style-type: none"> For elective cases this should be the day the patient was seen in the outpatient clinic. For delayed cases this is the day the patient was LAST discharged from hospital with biliary disease. For emergency cases this should be the day the decision was made to perform an acute cholecystectomy in that emergency admission. If the patient was previously on an elective waiting list for surgery, please still use the date it was decided to perform the operation as an emergency.
13. Days between decision to operate and surgery performed	<p>Number of days (Whole number, day 0 is same day as surgery)</p>
14. Urgency of surgery (Appendix D for definitions)	<p>Elective Delayed Emergency. <u>If yes:</u> Was the patient already on the elective waiting list for surgery? (Yes / No)</p>
15. Indication for surgery (Appendix D for definitions)	<p>Acute calculous cholecystitis. <u>If yes:</u> Tokyo grade: I / II / III (Was the Tokyo grade documented in patient notes: Yes / No) Biliary colic Acalculous cholecystitis Chronic calculous cholecystitis Common Bile Duct (CBD) stone Gallbladder polyp Dyskinesia Gallstone pancreatitis. <u>If yes:</u> Atlanta criteria: mild / moderate / severe (Was the Atlanta criteria documented in patient notes: Yes / No)</p>
Intra-operative Data Fields	Required data (definition / comment)
1. Mode of Anaesthesia* (Select <u>all</u> that apply)	<p>Local (subcutaneous / intraperitoneal) Regional (spine-related / regional nerve block) Sedation (e.g., midazolam) General Inhaled (sevoflurane / halothane / desflurane / Nitric Oxide (N2O) / isoflurane) Total Intravenous Volatile Anaesthetic (TIVA) *This refers to the anaesthetic used during the operation and NOT as induction agents</p>
2. Intraoperative antibiotics*	<p>Yes (Prophylactic / Intraoperative spillage / Cholecystitis) / No *Defined as administration of antibiotics at least 30 minutes prior to skin incision to end of operation</p>
3. Primary operator	<p>Consultant or attending Senior trainee (i.e., senior registrar or resident with >4 years surgical training/residency) Junior trainee (i.e., junior registrar or resident with ≤ 4 years surgical training/residency) Non-surgeon (e.g., medical practitioner or nurse)</p> <p><u>If Consultant:</u> What specialty? (General / Oesophago-gastric (OG) / HPB / Colorectal / Breast / Vascular / Other) <u>If Trainee:</u> Was this a training operation? (Yes / No). Was a consultant present? (Yes / No) <u>If any:</u> Number of cholecystectomies performed prior to this procedure: 0-50 / 51-100 / 101-200 / >200</p>
4. Operative approach	<p>Open / Open conversion / Laparoscopic (Standard / Single Incision Laparoscopic Surgery (SILS)) / Robotic (Standard / SILS)</p> <ol style="list-style-type: none"> <u>If open, why:</u> No laparoscopic equipment / Surgeon not trained in laparoscopy / Laparoscopy equipment broken / Multiple previous surgery / Disease severity. <u>If open conversion, why:</u> Suboptimal view / Adhesions / Not able to safely dissect CVS / Suspected bile duct injury / Patient unable to tolerate pneumoperitoneum / Bleeding / Bowel injury / Laparoscopic or robotic equipment failure / Suspected or actual cholecystoduodenal or cholecystocolonic fistula. <u>If laparoscopic or robotic:</u> was this gasless (Yes / No), were reusable equipment used? (Yes / No).
5. Intra-operative difficulty score – this is for minimally invasive surgery	<p>I / II / III / IV / V (Nassar Grade: Appendix D for definitions)</p>
6. Was the Critical View of Safety (CVS) obtained (all three) – this is for minimally invasive surgery	<p>Yes / No <u>If no, which criteria was met:</u> 1) Clearing fat and fibrous tissue from the hepatocystic triangle.</p>

	2) The lower third of the gallbladder being cleared from the cystic plate. 3) Only two structures are attached to the gallbladder.
7. Was there a time-out to verify CVS	Yes / No <u>Defined as a momentary pause that what one is seeing is likely the correct anatomy</u>
8. Operation performed	Standard total cholecystectomy Total cholecystectomy by the fundus-first (top down) approach Subtotal cholecystectomy (reconstituting / fenestrated) Not performed (diagnostic laparoscopy / cholecystostomy) <u>Definitions of subtotal cholecystectomy:</u> <ul style="list-style-type: none"> Fenestrated: does not occlude the gallbladder but may suture the cystic duct internally Reconstituting: closes off the lower end of the gallbladder, creating a remnant gallbladder
9. Abdominal drain insertion	Yes / No
10. Anatomical Biliary variant	Yes / No
11. Intraoperative CBD Assessment	Intraoperative cholangiogram (IOC) / Incisionless fluorescent cholangiography/ Laparoscopic ultrasound / Intraoperative ERCP <u>If yes to any of the above:</u> <ul style="list-style-type: none"> Decision: Selective / Routine. <u>If selective, state Indication:</u> Raised liver function test / Concern of a bile duct injury / pre-operative imaging suggestive of CBD stone Findings: Stone / No stone. <u>If stone, tick all that apply for management:</u> Flushing with saline and smooth muscle relaxant / Fogarty catheter trawl / Basket retrieval / Choledochoscope / No intraoperative treatment attempted
12. Common Bile Duct exploration	Yes (Trancystic / Choledochotomy) / No <u>If Choledochotomy then select closure:</u> Primary closure / T-tube
13. Operative contamination	Clean (Gastrointestinal (GI) and genitourinary (GU) tract not entered) Clean-Contaminated (GI or GU tracts entered but no gross contamination) Contaminated (GI or GU tracts entered with gross spillage or major break in sterile technique) Dirty (There is already contamination prior to operation, e.g., faeces or bile).
14. Intraoperative complications - <u>excluding bile duct injury (BDI)</u> (Select <u>all</u> that apply)	Bile spilt / Stones Spilt / Bleeding / Major vascular injury / Bowel injury
15. Were reusable gowns used in this procedure?	Yes (All scrubbed staff/ some scrubbed staff) / No
16. Were reusable drapes used in this procedure?	Yes / No
30-day Outcomes	Required data (definition / comment)
1. Highest 30-day Clavien-Dindo (CD) Grade	0 / I / II / IIIa / IIIb / IVa / IVb / V (<u>Appendix D</u> for definitions) If CD IIIa: Radiological drainage (yes / No) If CD IIIb: Re-laparoscopy (yes / No) If CD V (death): please indicate time from index cholecystectomy to death: number of days (whole number, 0 = same day)
2. Unplanned critical care admission - where critical care admission was not part of pre-operative plan	Yes / No If <u>yes</u> , please indicate length of stay in critical care: number of days (whole number)
3. Unplanned Re-imaging - where imaging in post-operative period (e.g.,	Yes / No If <u>yes</u> then tick all that apply: USS / CT / MRI / ERCP

CT, MRCP) was not part of pre-operative plan	
4. 30-day postoperative complications (Select <u>all</u> that apply)	Surgical site infection (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V) Postoperative pulmonary complications (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V) Bile leak (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V) Bleeding (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V) Intra-abdominal collection (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V) Acute pancreatitis (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V) *For all of the above, please indicate the Clavien-Dindo grade associated with that complication
5. Length of stay	Whole number of days (Where discharge < 23 hours, enter 0. If the patient has not been discharged prior to the end of 30-day follow-up, enter '31')
6. Unplanned readmission within 30 days	Yes (Length of stay) / No
Bile Duct Injury (BDI) data fields	Required data (definition / comment)
1. BDI identified within 30-days of index cholecystectomy	Yes / No If yes: please fill in the rest of the data points below. If No: Was BDI identified within one-year of index cholecystectomy: Yes / No (if yes, then please fill in the rest of the data points below)
2. Presentation of BDI	Intraoperatively / Controlled bile leak from surgically placed abdominal drain / Abdominal pain due to uncontrolled bile leak / Obstructive jaundice or cholangitis / Intra-abdominal abscess or biloma
3. Days from index cholecystectomy to diagnosis	Number of days (0 = intraoperatively)
4. Bile duct injury grade	A / B / C / D / E1 / E2 / E3 / E4 / E5 (Strasberg Injury Grade: Appendix D for definition)
5. Concomitant vascular injury	Yes (Right hepatic artery / Common hepatic artery / Main portal vein / Right portal vein) / No
6. Imaging modality to investigate and confirm BDI	On-table cholangiography (OTC) / USS / MRCP / CT / ERCP / Percutaneous transhepatic cholangiography (PTC) / Nuclear medicine scan (e.g. Functional liver scan) / Tubogram / None
7. Discussion with a specialist HPB centre	Yes / No / Not required (Injury occurred at specialist HPB centre) If yes: <ul style="list-style-type: none"> Transferred to specialist HPB centre: Yes / No Time from injury to referral: number of days (whole number)
8. Management of Bile duct injury (Select <u>all</u> that apply)	Non-surgery (ERCP only / ERCP and stent / PTC) / Surgery (washout only / repair) If any of the above: <ul style="list-style-type: none"> Time after index cholecystectomy: number of days (Whole number, day of index cholecystectomy = day 0) If surgical repair: <ul style="list-style-type: none"> Specialty of surgeon performing Bile duct injury repair: HPB surgeon / UGI surgeon / General surgeon Method of repair: Roux-en-Y Hepaticojejunostomy / CBD repair without T-tube / CBD repair with T-tube / CBD end to end anastomosis / Hepaticoduodenostomy Vascular repair: Yes / No One-year complications: Stricture formation / Cholangitis / anastomotic leakage / intra-abdominal abscess or biloma / re-repair. If yes to any, time from repair to complication: number of days (Whole number, day of repair = day 0)

	<p>Stricture definition: defined as a clinically relevant stricture leading to either jaundice, significant alterations of the liver function tests, cirrhosis or reoccurring cholangitis requiring radiological/surgical intervention or a liver failure related death</p>
Histology data fields	Required data (definition / comment)
1. Postoperative histology	<p>Not sent for examination / Sent for examination</p> <p><u>If sent for examination</u>, please complete:</p> <ul style="list-style-type: none"> ● Indication: Routine / Selective ● Time from index cholecystectomy to histology result: Number of days (whole number) ● Result: Benign / Malignant <p><u>If Malignant</u>, please complete the rest of the data points below</p>
2. Staging investigations after index cholecystectomy (select <u>all</u> that apply)	<p>CT thorax abdomen pelvis / MRI liver / PET-CT / Staging laparoscopy</p> <p><u>For any of the above, please indicate time from histology result to staging investigation:</u> number of days (whole number)</p>
3. TNM grade (AJCC 8th edition) (Appendix D for definition)	<p>T category: Tis / T1a (lamina propria) / T1b (muscularis) / T2a (peritoneal side) / T2b (hepatic side) / T3 / T4</p> <p>N category: N0 / N1 (1-3 nodes) / N2 (>3 nodes)</p> <p>M category: M0 / M1</p>
4. Discussed at MDT	Yes / No
5. Adjuvant treatment	No / Chemotherapy / Radiotherapy
6. Revisional surgery completed	<p>Yes / No (not required) / No (unresectable tumour)</p> <ul style="list-style-type: none"> ● <u>If yes</u>, type of surgery (select <u>all</u> that apply): Liver resection (liver bed / one segment / two segments / ≥ 3 segments) / bile duct resection / lymph node dissection ● <u>If yes</u>, time from histology result to revisional surgery: Number of days (whole number)
7. Pathology results if revisional surgery	<p>Resection margin status: R0 / R1 / R2</p> <p>Lymphovascular invasion: Yes / No</p> <p>Perineural invasion: Yes / No</p> <p><u>Resection margin definition:</u> R0 = microscopically negative for residual tumor; R1 = microscopically margins still demonstrate the presence of tumor; R2 = macroscopically-visible disease remains post-surgery.</p>
8. Recurrence on imaging at one year	<p>Yes / No</p> <p><u>If yes</u>, time from surgery to recurrence: number of days (whole number)</p>
One-year Outcomes	Required data (definition / comment)
1. Highest one-year Clavien-Dindo (CD) Grade	<p>0 / I / II / IIIa / IIIb / IVa / IVb / V</p> <p><u>If CD IIIa:</u> Radiological drainage (yes / No)</p> <p><u>If CD IV:</u> Re-laparoscopy (yes / No)</p> <p><u>If CD V (death):</u> please indicate time from index cholecystectomy to death: number of days (whole number)</p>
2. Readmissions	Total number of readmissions

3. One-year complications(Select all that apply)**Surgical site infection** (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V)**Postoperative pulmonary complications** (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V)**Bile leak** (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V)**Biliary stricture** (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V)**Bleeding** (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V)**Intra-abdominal collection** (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V)**Acute pancreatitis** (CD Grade* 0 / I / II / IIIa / IIIb / IVa / IVb / V)***For all of the above, please indicate the Clavien-Dindo grade associated with that complication**