



EAST MULTICENTER STUDY DATA DICTIONARY

Management of Acute Appendicitis and Cholecystitis During the COVID-19 Pandemic: An EAST Multicenter Contemporaneous Cohort Study

Data Entry Points and appropriate definitions / clarifications:

Entry space	Definition / Instructions
Site ID	Each site's assigned number
Patient Number	6-digit number starting with your Site ID, ie. 12-001, 12-002, 12-003, and 12-004.

Demographics:

Admit Date	Admission date of the patient enrolled
Admit Time	Admission time of the patient enrolled
Discharge Date	Discharge date of the patient enrolled
Age	Age of patient enrolled
Sex	Sex of patient enrolled
Race	Race of the patient enrolled
Height	Height of the patient (in cm)
Weight	How much patient weighs (in kg)
Pregnancy status	Whether the patient is pregnant
Weeks' gestation	Number of weeks' gestation if pregnant
Preoperative Diagnosis	Diagnosis of the patient at time of admission (Select single best choice for description of diagnosis: acute cholecystitis or acute appendicitis) Diagnosis of Acute Cholecystitis made by clinical history, physical exam and radiographic findings consistent with the diagnosis (or clinical history of RUQ pain developing over hours to days with/without fever, chills, nausea, vomiting. Physical exam with RUQ tenderness to palpation. Imaging including US and/or abdominal CT scan with gallbladder wall thickening, pericholecystic fluid)

Diagnosis of Acute Appendicitis was made by clinical history, physical exam and radiographic findings consistent with the diagnosis. (clinical history of acute onset on periumbilical or right lower quadrant pain with/without fever, chills, nausea, vomiting, diarrhea. Exam with right lower quadrant tenderness to palpation. Abdominal CT scan with findings of a dilated or thick walled appendicitis, with surrounding inflammation and/or findings of perforation)

Comorbidities (check all that apply):

Hypertension	Abnormally high blood pressure
Diabetes mellitus	A long-term metabolic disorder characterized by high blood sugar, insulin resistance, and relative lack of insulin Insulin-dependent indicates daily use of insulin injection for glucose control. Non-insulin dependent indicates use of oral medications and/or diet modification for glucose control. Specify with or without end organ damage ((retinopathy, neuropathy, or brittle diabetes)
PVD (includes AAA \geq 6cm)	A circulation disorder characterized by narrowing or blockage of the blood vessels; Abdominal aortic aneurysm is an enlargement of the abdominal portion of the aorta or main blood vessel that delivers blood to the body and is measured at its greatest diameter in cm
Coronary artery disease	An impedance or blockage of one or more blood vessels that supplies blood to the heart
Congestive Heart Failure	A chronic and progressive condition in which the heart is inefficient at pumping blood and oxygen to meet the body's demands Indicate estimated ejection fraction (EF) based on a recent echocardiogram measurement expressed as a percentage of how much blood the left ventricle pumps out with each contraction.
Current smoker	If patient is an active smoker at the time of initial presentation, check yes
Alcohol abuse	A pattern of drinking that results in harm to one's health, interpersonal relationships, or ability to work
Substance abuse	The harmful or hazardous use of psychoactive substances, including illicit drugs
Chronic pulmonary disease	Any long-term lung disorder that affects airways, lung tissues or circulation of blood into and out of the lungs. The most common disorders include asthma, COPD, emphysema, interstitial lung disease, pulmonary hypertension, cystic fibrosis, chronic pneumonia
COPD	Chronic Obstructive Pulmonary Disease is a chronic inflammatory lung disease that causes obstructed airflow from the lungs

On Home Oxygen	Current use of supplemental oxygen at home usually administered via nasal cannula which flows at a rate of L/min
L/min	If on home oxygen, please indicate how much in liters/minute
History of myocardial infarction	Any prior heart attack which occurs when the heart's blood vessels are blocked or flow is severely slowed resulting in death of the heart muscle cells
CVA with mild or no residual deficits or TIA	Impaired or blocked blood flow to the brain due to a blockage or artery rupture resulting in death of brain cells due to lack of oxygen resulting in numbness, weakness on one side of the body and slurred speech. These symptoms improve and do not significantly impair activities of daily living; Transient ischemic attack is a CVA that only lasts a few minutes.
Dementia	An overall term that describes cognitive decline including worsening memory, language, problem-solving and other thinking skills. Common conditions including Alzheimer's disease, vascular dementia.
Connective tissue disorder	Any disorder that involves the protein-rich tissue (fat, bone, cartilage) that supports organs and parts of the body usually the joints, muscles and skin.
Peptic Ulcer Disease	Sores or ulcers in the stomach or first portion of the intestine (duodenum)
Mild liver disease (without portal HTN, includes chronic hepatitis)	Liver dysfunction due to inflammation that does not result in fibrosis or
Moderate or severe liver disease	Liver dysfunction that has progressed to fibrosis and/or cirrhosis with associated findings such as portal hypertension, ascites, varices
Hemiplegia	Paralysis of one side of the body
Moderate or severe renal disease	Chronic kidney dysfunction with a decreased GFR (<45) ranging to renal failure (ESRD) with need for dialysis
Prior abdominal operations	Any prior surgery in the abdomen (free text)
Steroids	Current use of any steroid medication
Chemotherapy	Currently on chemotherapy for any reason
Other Immunosuppressant medications	List other immunosuppressive medications not listed above
Tumor without metastases (excludes if >5 yr from diagnosis)	Any cancer that is localized and has not spread to other parts of the body
Leukemia (acute or chronic)	A cancer of the blood or bone marrow
Lymphoma	A cancer of the immune or lymphatic system which affects cells of the lymph nodes, spleen, thymus, bone marrow
Metastatic solid tumor	Any cancer that has spread to other parts of the body

HIV/AIDS

Human immunodeficiency virus (HIV) damages the immune system which can develop into acquired immunodeficiency syndrome (AIDS) which is a condition in which progressive failure of the immune system allows life-threatening infections and cancers to thrive

Hospital Characteristics

Type of Hospital

University Hospital

An institution that combines the services of a hospital with the education of medical students and residents and with research and are most often affiliated with a medical school and/or university.

Community Teaching

Non-federal acute care facility that is not affiliated with university but has an accredited medical residency training program

Community Non-teaching

Non-federal acute care facility that is not affiliated with university and does not have residency training

University affiliated

A hospital that is affiliated with a university and may or may not participate in the training/education of residents or medical students

Public

A government owned and fully funded hospital

Private

A hospital owned and operated by an organization/company other than the state/government

Total number of all COVID-19 positive patients treated to date

Total number of COVID positive patients treated at your hospital thus far

Total number of **surgical** COVID-19 positive patients treated to date

Total number of surgical patients that tested positive for COVID-19

Number of designated COVID units in your hospital

Total number of wards and ICUs caring for COVID patients at your hospital

Admission Physiology

Temperature

Temperature at the time of presentation

Initial HR

Heart rate at the time of presentation

Initial SBP

Systolic blood pressure at the time of presentation

Initial DBP

Diastolic blood pressure at time of presentation

Duration of Symptoms

Indicate Duration of symptoms (in hours) from symptom onset until ED triage

Alvarado Score

Migration of pain

A score that predicts the likelihood of appendicitis as the diagnosis
Pain that began in location and moved to the right lower quadrant

Anorexia

Lack or loss of appetite

Nausea

Feeling of sickness with need to vomit

Tenderness in the right lower quadrant

Pain with palpation at the right lower abdomen

Rebound pain

Pain experience when the hand is released from the point of palpation

Elevated temperature
Leukocytosis
Shift of white blood cell count to the left

A temperature >37.3C or 99.1F
Elevated WBC count >10,000
Leukocyte or neutrophil count >75% on WBC differential

AAST Grading System for Appendicitis – Clinical

Grade I	Pain, leukocytosis (increased WBC count) and right lower quadrant (RLQ) tenderness
Grade II	Pain, leukocytosis and RLQ tenderness
Grade III	Pain, leukocytosis and RLQ tenderness
Grade IV	Pain, leukocytosis and RLQ tenderness; may have palpable mass
Grade V	Generalized peritonitis

AAST Grading System for Acute Cholecystitis– Clinical

Grade I	Right upper quadrant (RUQ) or epigastric pain; Murphy's sign (pain and cessation of breath on inspiration during palpation of the RUQ); Leukocytosis
Grade II	RUQ or epigastric pain; Murphy's sign; Leukocytosis
Grade III	Localized peritonitis in RUQ
Grade IV	Localized peritonitis at multiple locations; abdominal distension with symptoms of bowel obstruction
Grade V	Above, with generalized peritonitis

Previous episodes of pain

Number of prior experiences of pain and location

COVID symptoms

Indicate if there were symptoms (symptomatic) or no symptoms (asymptomatic) related to a positive COVID test

COVID severity

If symptomatic, indicate severity of disease:
Mild = mild fever, cough, headache, loss of smell/taste
Moderate = above plus pneumonia
Severe = above plus any of the following: marked tachypnea (RR>30/min), hypoxemia (SpO2 <93%, P/F ratio <300), lung infiltrates (>50% within 24-48 hours on imaging)
Critical = respiratory failure, septic shock, and/or multiple organ dysfunction or failure

Admission Lab Values

WBC
HGB
T. Bili
D. Bili
AST (SGOT)
ALT (SGPT)
ALP
Amylase
Lipase

Indicate date and time admission labs were collected:
Admission White Blood Cell Count (K/mcL)
Admission Hemoglobin (g/dL)
Admission Total Serum Bilirubin (mg/dL)
Admission Direct Serum Bilirubin (mg/dL)
Admission Aspartate transaminase (U/L)
Admission Alanine transaminase (U/L)
Admission Alkaline Phosphatase (U/L)
Admission Amylase (U/L)
Admission Lipase (U/L)

D-dimer
LDH
Procalcitonin

Admission D-dimer (ng/mL)
Admission LDH (U/L)
Admission procalcitonin (ng/mL)

COVID Test results

Admission COVID test reported as positive, negative or unknown and date of testing

Repeat Lab values:

WBC
HGB
T. Bili
D. Bili
AST (SGOT)
ALT (SGPT)
ALP
Amylase
Lipase
D-dimer
LDH
Procalcitonin

Indicate date and time first set of **repeat** labs were collected:
Repeat White Blood Cell Count (K/mcL)
Repeat Hemoglobin (g/dL)
Repeat Total Serum Bilirubin (mg/dL)
Repeat Direct Serum Bilirubin (mg/dL)
Repeat Aspartate transaminase (U/L)
Repeat Alanine transaminase (U/L)
Repeat Alkaline Phosphatase (U/L)
Repeat Amylase (U/L)
Repeat Lipase (U/L)
Repeat D-dimer (ng/mL)
Repeat LDH (U/L)
Repeat procalcitonin (ng/mL)

Repeat COVID Test

Repeat COVID test reported as positive, negative or unknown

Number of COVID tests completed

The number of COVID tests that were performed during a hospitalization

Type of COVID test/manufacturer (for each)

For each test, list the type (rapid, standard, send out) and the company that made the test, if known

Management Variables

Preoperative Procedures:

Preoperative HIDA scan

Check if HIDA scan was performed preoperatively, including results: positive or negative for acute cholecystitis; indicate date of procedure

Preoperative Ultrasound

Check if right upper quadrant ultrasound was performed preoperatively. Indicate date and time procedure was performed. Check off ultrasound findings such as presence of gallstones, pericholecystic fluid, gallbladder wall thickening. Indicate the diameter of the CBD in millimeters. Indicate whether stones were visualized in the common bile duct.
Free text other findings
Check if right lower quadrant US was performed preoperative for appendicitis and include the date and time the study was performed. Check of US findings such as normal appendix, non-compressible blind ending structure, appendicolith, unable to visualize, inconclusive; free text other findings

Preoperative ERCP

Check if Endoscopic Retrograde Cholangiopancreatography (endoscopic cannulation of the common bile duct with a side-viewing endoscope and a retrograde contrast injection) was performed prior to cholecystectomy. Indicate date and time procedure was performed. Indicate whether CBD stones were seen. Free text other findings ONLY if preoperative ERCP was performed. Leave blank if none performed

Preoperative MRCP	Check if Magnetic Resonance Cholangiopancreatography (non-invasive medical imaging technique) was performed prior to cholecystectomy. Indicate the date and time the procedure was performed. Indicate whether CBD stones were seen. Free text other findings ONLY if preoperative MRCP was performed, otherwise leave blank
Preoperative EUS	Check here if Endoscopic ultrasound was done prior to cholecystectomy. Include the date and time that it was performed. Indicate if stones were visualized in the CBD. Free text any other findings ONLY if preoperative endoscopic ultrasound was performed, otherwise leave blank
Preoperative CT Scan	<p>Check here if CT scan was done prior to cholecystectomy. Include the date and time that it was performed. Indicate if stones were visualized in the CBD. Indicate if there was fluid around the gallbladder, stones in the gallbladder, presence of wall thickening, diameter of CBD, presence of CBD stones. Free text any other findings ONLY if CT was performed, otherwise leave blank</p> <p>Check here if CT scan was done prior to appendectomy. Include the date and time it was performed. Indicate if the appendix was normal, inflammatory changes localized to appendix, appendiceal dilation and size, contrast nonfilling of appendix, appendiceal wall necrosis with contrast nonenhancement, local periappendiceal fluid, contrast extravasation, regional soft tissue inflammatory changes/phlegmon/abscess, diffuse abdominal or pelvic inflammatory changes, free intraperitoneal fluid or air, perforated appendicitis, phlegmon, cecal inflammation, appendicolith, unable to visualize, inconclusive; free text other findings only if CT was performed, otherwise leave blank</p>
Preoperative MRI	<p>Check here is MRI was performed prior to cholecystectomy and indicate date and time it was performed. Indicate if stones were present, presence of wall thickening, presence of fluid around the gallbladder. Indicate if stones were present in the common bile duct and if the CBD was dilated, the diameter of the structure; free text other findings only if MRI was performed, otherwise leave blank</p> <p>Check here is MRI was performed prior to appendectomy and indicate date and time it was performed. Indicate if the appendix was normal, perforated, regional soft tissue inflammation/phlegmon/abscess, stone/hard stool in the appendix, dilation of the structure and the diameter, unable to see the appendix; free text other findings only if MRI was performed, otherwise leave blank</p>
<u>Image AAST Appendicitis Severity Grade</u>	Criteria for each grade based on CT scan findings
Grade I	Inflammatory changes localized to the appendix with or without appendiceal dilation with or without contrast non-filling
Grade II	Appendiceal wall necrosis with contrast non-enhancement with or without air in the appendiceal wall
Grade III	Above with local periappendiceal fluid with or without contrast extravasation
Grade IV	Regional soft tissue inflammatory changes, phlegmon or abscess
Grade V	Diffuse abdominal or pelvic inflammatory changes with or without free Intra-peritoneal fluid or air

Image AAST Acute Cholecystitis

Severity Grade

Grade I

Criteria for each grade based on CT/US/HIDA findings

Wall thickening; distension; gallstones or sludge; pericholecystic fluid; non-visualization of gallbladder on HIDA scan

Grade II

Above, and air in the GB lumen, wall or biliary tree; focal mucosal defect without frank perforation

Grade III

HIDA with focal transmural defect; extraluminal fluid collection or radiotracer but limited to the RUQ

Grade IV

Abscess in RUQ outside of GB; bilioenteric fistula (connection between Structures of the biliary system and the bowel); gallstone ileus

Grade V

Free intra-peritoneal bile

Initial Treatment Strategy

Check all that apply to the preliminary care plan

Antibiotics only administered

Percutaneous drainage with pre-operative antibiotics >1 hr before procedure = drainage catheter placed through the skin into the abdomen with antibiotics given more than 1 hour before the catheter placement

Percutaneous drainage without pre-operative antibiotics >1 hr before procedure = drainage catheter placed through the skin into the abdomen with no antibiotics given or antibiotics given within 60 minutes of the procedure

Appendectomy with pre-operative antibiotics >1 hr before procedure = appendix surgically remove with antibiotics given more than 1 hour before surgery

Appendectomy without pre-operative antibiotics >1 hr before procedure = appendix surgically removed with no antibiotics given or antibiotics given within 60 minutes of the procedure

Cholecystectomy with pre-operative antibiotics >1 hr before procedure = gallbladder surgically removed with antibiotics given more than 1 hour before surgery

Cholecystectomy without pre-operative antibiotics >1hr before procedure = gallbladder surgically removed with no antibiotics given or antibiotics given within 60 minutes of the procedure

If treatment not listed, please include in free text

Preoperative Antibiotics

Preoperative antibiotics

Indicate if preoperative antibiotics were used

Duration of antibiotic

Indicate if <24 or >= 24 hours of antibiotics were used; if >24h, indicate number of days antibiotic were used

Indication for treatment

Select if the antibiotics were for therapeutic treatment, empiric coverage against anticipated likely cause, or pre-operative per SCIP (Surgical Care Improvement Project) guidelines

Class of preoperative antibiotics

Select the antibiotic(s) and/or class(es) administered in the preoperative period

Initial Intervention

Date/time of intervention

Indicate the day and time of the initial surgical procedure

Time from ED triage to initial Intervention

Indicate the time from the evaluation in the ED to the start of the surgical procedure

Operative Procedures

Initial Operative Approach

Check single best option for initial operative approach

IOC
Intraoperative ERCP
Intraoperative EUS

Check off if IOC (Intraoperative cholangiogram), intraoperative ERCP or intraoperative EUS were performed. Indicate whether CBD stones were visualized. Free text any other findings

Final Operative Approach

Check single best option for final operative approach

Final Operation

Single best option for final operation
Cholecystectomy
Subtotal fenestrating cholecystectomy = majority of the gallbladder removed with remaining portion left open or cystic duct is closed internally
Subtotal reconstituting cholecystectomy = majority of the gallbladder removed to lowest portion that is then closed with sutures or staples
Percutaneous drainage without cholecystectomy
Cholecystectomy with common bile duct exploration
Appendectomy
Ileocectomy
Right hemicolectomy
Percutaneous drainage without appendectomy

Intraoperative Findings
Appendicitis

Options include (choose all that apply):
Normal appendix
Acutely inflamed appendix with intact wall
Perforated appendix, with evidence of local contamination
Perforated appendix, with abscess or phlegmon in region of appendix
Perforated appendix, with addition of generalized purulent contamination away from appendix
Gangrenous appendix, wall intact
Gangrenous appendix, with evidence of local contamination
Gangrenous appendix, with addition of generalized purulent contamination away from appendix
Abscess
Serous abdominal/pelvic fluid
Purulent abdominal/pelvic fluid
Other

Cholecystitis

Normal gallbladder with stones
Normal gallbladder without stones
Acutely inflamed gallbladder, intact
Perforated gallbladder with local contamination
Perforated gallbladder with abscess or phlegmon
Perforated gallbladder with purulent contamination away from gallbladder
Gangrenous gallbladder, intact
Gangrenous gallbladder with local contamination

Gangrenous gallbladder with abscess or phlegmon
 Gangrenous gallbladder with purulent contamination away from gallbladder
 Other

Operative AAST Appendicitis Severity Grade

Criteria for each grade based on intra-operative findings

Grade I Acutely inflamed appendix, appendiceal wall intact

Grade II Gangrenous appendix, appendiceal wall intact

Grade III Above, with evidence of local contamination

Grade IV Above, with abscess or phlegmon in region of appendix

Grade V Above, with addition of generalized purulent contamination away from appendix

Operative AAST Acute Cholecystitis Severity Grade

Criteria for each grade based on intra-operative findings

Grade I Inflammatory changes localized to the GB; wall thickening; distension; gallstones

Grade II Distended GB with pus or hydrops; necrosis or gangrene of wall; not perforated

Grade III Perforated GB wall (non-iatrogenic) with bile outside the GB but limited to RUQ

Grade IV Pericholecystic abscess; bilioenteric fistula; gallstone ileus

Grade V Above, plus generalized peritonitis

Intraoperative adverse event (iAE) Single best option for presence or absence of iAE. Options include Yes or No

iAE Grade Single best option for grade of intraoperative event

1 – injury requiring no repair within the same procedure (cauterization, use of prothrombotic material, small vessel ligation)

2 – injury requiring surgical repair, without organ removal or a change in the planned procedure (e.g. any suture repair, patch repair)

3 – injury requiring tissue or organ removal with completion of the originally planned procedure

4 – injury requiring a significant change (excluding minimally invasive to open conversions) and/or incompleteness of the originally planned procedure

5 – missed intraoperative injury requiring reoperation within 7 days

6 – intraoperative death

iAE required transfusion of > or = 2 units pRBC Indicate yes or no

Operative duration (min): (skin to skin) Indicate duration of operation in minutes (enter -99 if N/A)

Surgical drains Indicate whether surgical drains were placed

Postoperative Procedures:

Check off any postoperative procedures that were performed after cholecystectomy (ERCP or MRCP). Indicate the date and time that they were performed. Indicate whether CBD stones were visualized. Free text any other findings ONLY if that postoperative procedure was performed, otherwise leave blank

Check off any post-operative procedures that were performed after appendectomy. Indicate the date and time that they were performed

Postoperative Antibiotic use:

Postoperative antibiotics

Indicate if postoperative antibiotics were used

Duration of antibiotic

Indicate if <24 or >= 24 hours of antibiotics were used; if >24h, indicate number of days antibiotic were used

Class of postoperative antibiotics

Select the antibiotic(s) and/or class(es) administered in the postoperative period

Outcomes:

Index hospitalization discharge date

Date of discharge

Hospital LOS (days)

Free text entry for number of consecutive days patient hospitalized at initial admission (Day of admission = hospital day #1) LOS = Length of Stay

ICU LOS (days)

Free text entry of number of consecutive days patient required ICU admission (ICU = Intensive Care Unit, LOS = Length of Stay) - Day of admission = hospital day #1

Duration of Mechanical Ventilation (days)

Free text entry for total number of days patient required mechanical ventilation (Day of admission = hospital day #1)

Mortality

Indicated if patient expired during initial hospitalization

Disposition

Indicate if patient was discharged to home, rehab facility, skilled nursing facility, long term acute care facility, etc.

Complications (check all that apply and list date encountered):

Surgical Site Infection (SSI)

Defined as: signs and symptoms of infection (redness, tenderness, warmth, purulent drainage) requiring treatment (either incisional opening or antibiotic prescription)

Superficial Incisional SSI

Check if applies. SSI = Surgical Site infection. Indicate location of infection and date it was discovered.

Deep Incisional SSI

Check if applies. Indicate location, as well as date discovered.

Organ/Space SSI

Check if applies. Indicate location and date discovered.

SSI Grade

Grade 1 = localized, local intervention indicated
Grade 2 = oral intervention (antibiotic, antifungal, etc.) indicated

Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; interventional radiology or operative intervention indicated
Grade 4 = life-threatening consequences (e.g., septic shock, hypotension, acidosis, necrosis)
Grade 5 = death secondary to infection
(National Cancer Institute (NCI) Common Terminology Criteria for Adverse Events (CTCAE))

Intra-abdominal abscess

Defined as signs and symptoms of deep infection (abdominal tenderness, obstruction, nausea, diarrhea) confirmed by imaging (ultrasound or CT) and requiring treatment (either open or percutaneous drainage or antibiotic prescription)

Intra-abdominal abscess Grade

Grade 2 = oral intervention indicated (e.g. antibiotic, antifungal, etc.)
Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; invasive intervention indicated
Grade 4 = life-threatening consequences; urgent intervention indicated
Grade 5 = death

Wound complication

Wound Complication Grade

Wound complication Grade:
Grade 1 = Incisional separation of $\leq 25\%$ of wound, no deeper than superficial fascia
Grade 2 = Incisional separation $>25\%$ of wound with local care; asymptomatic hernia
Grade 3 = Symptomatic hernia without evidence of strangulation; fascial disruption/dehiscence without evisceration; primary wound closure or revision by operative intervention indicated; hospitalization or hyperbaric oxygen indicated
Grade 4 = Symptomatic hernia with evidence of strangulation; fascial disruption with evisceration; major reconstruction flap, grafting, resection, or amputation indicated
Grade 5 = Death

Bleeding

Check if applies. Refers to significant postoperative hemorrhage leading to drop in hemoglobin +/- transfusion and/or return to Operating room; indicate date bleeding first occurred

Bleeding Grade:

Grade 1 = hematoma with minimal symptoms, invasive intervention, not indicated
Grade 2 = hematoma with minimally invasive evacuation or aspiration indicated
Grade 3 = transfusion, interventional radiology, or operative intervention
Grade 4 = bleeding with life-threatening consequences or major urgent intervention
Grade 5 = death secondary to hemorrhage

Bile leak

Check if applies. Leak of bile from cystic duct, gallbladder bed or injury to major duct, diagnosed by laboratory studies and imaging. Indicate location of leak if known and date it was discovered

Retained stones

Check if applies. Laboratory or ultrasound evidence of postoperative choledocholithiasis that is confirmed on IOC, ERCP, MRCP, EUS

Multi-organ failure	Check if applies. Condition characterized by progressive deterioration of the lungs, liver, kidney, and clotting mechanisms. Indicate date diagnosed
Multi-organ failure Grade	Grade 3 = shock with azotemia and acid-base disturbances; significant coagulation abnormalities Grade 4 = life-threatening consequences (e.g. vasopressor dependent and oliguric or anuric or ischemic colitis or lactic acidosis) Grade 5 = death
Sepsis	Check if applies. Has a confirmed infectious process AND two or more of the following: Fluid unresponsive hypotension Serum lactate level >2 mmol/L Need for vasopressors to maintain mean arterial pressure >65 mmHg
Sepsis Grade:	Grade 3 = blood cultures positive with signs or symptoms; treatment indicated Grade 4 = Life-threatening consequences; urgent intervention indicated Grade 5 = death
Bacteremia	Check if applies. Defined as positive cultures obtained from blood culture
Bacteremia Grade:	Grade 2 = blood cultures positive with no signs or symptoms
Catheter-associated urinary tract Infection (UTI)	Check if applies. All criteria must be met: Patient has indwelling urinary catheter within 7 days before urinary culture Positive urine culture that is $\geq 10^5$ microorganisms/mL of urine with no more than two species of microorganisms Urine culture has 10 WBC/HPF
Catheter-associated UTI Grade:	Grade 2 = localized, local intervention indicated Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; interventional radiology or operative intervention indicated Grade 4 = life-threatening consequences (e.g., septic shock, hypotension, acidosis, necrosis) Grade 5 = death secondary to infection
Anastomotic leak	Check if applies. Leakage due to breakdown of anastomosis in the intestine
Anastomotic leak Grade:	Grade 1 = Asymptomatic diagnostic finding; intervention not indicated Grade 2 = symptomatic; medical intervention indicated Grade 3 = severe symptoms; invasive intervention needed Grade 4 = life threatening consequences; urgent operative intervention indicated Grade 5 = death
Post-operative ileus	Check if applies.
Post-operative ileus Grade:	Grade 1 = asymptomatic, radiographic findings only Grade 2 = symptomatic; altered GI function (e.g., altered dietary habits); IV fluids indicated for < 24 h Grade 3 = symptomatic and severely altered GI function; IV fluids, tube feeding, or TPN indicated for ≥ 24 h

Grade 4 = life-threatening consequences
Grade 5 = death secondary to ileus

C. difficile Infection

Check if applies.

C. difficile infection Grade:

Grade 2 = localized, local intervention indicated
Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated;
interventional radiology or operative intervention indicated
Grade 4 = life-threatening consequences (e.g., septic shock,
hypotension, acidosis, necrosis)
Grade 5 = death secondary to infection

Hospital acquired pneumonia

Check if applies. HAP = hospital acquired pneumonia; indicate date
diagnosed
Definition below

Hospital Acquired Pneumonia: Confirmed by the presence of the following after 48 hours of hospitalization:

1. Purulent sputum
2. Associated systemic evidence of infection:
 - a. WBC > 11,000 or < 4,000
 - b. Fever > 100.4 degrees F / 38 degrees Celsius
3. Two or more serial chest radiographs with new or progressive and persistent infiltrate,
consolidation or cavitation.
4. BAL, mini-BAL or sterile endotracheal specimen with:
 - a. Limited number of epithelial cells
 - b. WBC (2-3+)
 - c. Dominant organism(s) identified on gram stain or culture with quantitative culture > 100,000
cfu/mL

Hospital Acquired Pneumonia Grade:

Grade 2 = localized, local intervention indicated
Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated;
interventional radiology or operative intervention indicated
Grade 4 = life-threatening consequences (e.g., septic shock,
hypotension, acidosis, necrosis)
Grade 5 = death secondary to infection

ARDS

Check if applies. ARDS = Acute respiratory distress syndrome. Indicate
date diagnosed
Definition below

ARDS: Berlin definition will be utilized

- Mild ARDS: 201 - 300 mmHg (\leq 39.9 kPa)
- Moderate ARDS: 101 - 200 mmHg (\leq 26.6 kPa)
- Severe ARDS: \leq 100 mmHg (\leq 13.3 kPa)
- New onset of bilateral infiltrates (patchy, diffuse, or homogenous) consistent with pulmonary edema
- No clinical evidence of left atrial hypertension

AKI

Check if applies. AKI = Acute kidney injury; indicate date diagnosed.
Defined for the purpose of this study as elevation of serum creatinine
greater or equal to 1.5 x ULN during hospitalization in patient without
antecedent renal dysfunction

AKI Grade:

Grade 1 = creatinine between upper limit of normal (ULN) and 1.5 x ULN
Grade 2 = creatinine between 1.5 to 3.0 x ULN
Grade 3 = creatinine between 3.0 to 6.0 x ULN

Grade 4 = creatinine > 6.0 x ULN
Grade 5 = death

DVT/PE: Check if applies. DVT/PE = Deep vein thrombosis/Pulmonary embolus; indicate date diagnosed

DVT/PE Grade: Grade 2 = intervention (e.g., anticoagulation, lysis, filter, invasive procedure) not indicated
Grade 3 = intervention (e.g., anticoagulation, lysis, filter, invasive procedure) indicated
Grade 4 = embolic event including pulmonary embolism or life-threatening thrombus
Grade 5 = death

Myocardial infarction (MI) Check if applies. Indicate date diagnosed. Definition below.

Myocardial infarction: detection of a rise of cardiac biomarker values (preferably troponin) with at least one of the following:

- Symptoms of ischemia
- New or presumed new significant ST-segment-T wave (ST-T) changes or new left bundle branch block
- Development of pathological Q waves in the EKG
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality
- identification of an intracoronary thrombus by angiography or autopsy

Myocardial infarction Grade: Grade 1 = asymptomatic arterial narrowing (on angiography) without ischemia
Grade 2 = asymptomatic and testing suggesting ischemia; stable angina
Grade 3 = symptomatic and testing consistent with ischemia; unstable angina; intervention indicated
Grade 4 = acute myocardial infarction
Grade 5 = death

Congestive heart failure (CHF) Check if applies. Indicate date diagnosed. Heart failure in which the heart is unable to maintain adequate circulation of blood in the bodily tissues or to pump out the venous blood returned

Congestive heart failure Grade: Grade 1 = asymptomatic with lab (e.g. BNP or cardiac imaging abnormalities)
Grade 2 = symptoms with moderate activity or exertion
Grade 3 = symptoms at rest or with minimal activity or exertion; hospitalization; new onset of symptoms
Grade 4 = life threatening consequences; urgent intervention indicated (i.e. continuous IV therapy or mechanical hemodynamic support)
Grade 5 = death due to CHF

Supraventricular
AV nodal arrhythmia Check if applies.

Arrhythmia Grade: Grade 1 = asymptomatic, intervention not indicated
Grade 2 = non-urgent medical intervention indicated
Grade 3 = incompletely controlled medically or controlled with device (e.g. pacemaker)
Grade 4 = life-threatening (e.g., arrhythmia associated with CHF, hypotension, syncope, shock)
Grade 5 = death

Ventricular arrhythmia	Check if applies.
Ventricular arrhythmia Grade	Grade 1 = asymptomatic, intervention not indicated Grade 2 = non-urgent medical intervention indicated Grade 3 = incompletely controlled medically or controlled with device (e.g. pacemaker) Grade 4 = life-threatening (e.g., arrhythmia associated with CHF, hypotension, syncope, shock) Grade 5 = death
Clavien-Dindo surgical complication	Check yes or no
Clavien-Dindo Grade	Grade 1 = Any deviation from the normal postoperative course without the need for (If multiple, choose highest grade) pharmacological treatment or surgical, endoscopic, and radiologic interventions. Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside. Grade 2 = Requiring pharmacological treatment with drugs other than such allowed for Grade 1 complications. Blood transfusions and total parenteral nutrition are also included. Grade 3a = Requiring surgical, endoscopic, or radiologic intervention. Intervention NOT under general anesthesia Grade 3b = Requiring surgical, endoscopic, or radiologic intervention. Intervention under general anesthesia Grade 4a = Life-threatening complication (including CNS complications) requiring ICU management. Single organ complication (including dialysis) Grade 4b = Life-threatening complication (including CNS complications)* requiring ICU management. Multiorgan dysfunction Grade 5 = Death of a patient (*brain hemorrhage, ischemic stroke, subarachnoid bleeding, but excluding transient ischemic attacks)
Did the patient have this complication at the time of discharge?	Indicate yes or no
Secondary intervention	Select other secondary interventions performed related to appendicitis or acute cholecystitis during the initial hospitalization and date they occurred; free text if other intervention not listed
<u>Pathology</u> Intraoperative cultures taken	Indicate yes or no and whether cultures were positive or negative; if positive, free text organisms that were cultured
Final pathologic diagnosis	Free text pathology
<u>Pathologic AAST Appendicitis Severity Grade</u>	Criteria for each grade based on final pathologic findings
Grade I	Presence of neutrophils at the base of crypts, submucosa +/- in muscular wall
Grade II	Mucosa and muscular wall digestion; not identifiable on hematoxylin and eosin stain (H&E)
Grade III	Gross perforation or focal dissolution of muscular wall
Grade IV-V	Gross perforation

Pathologic AAST Acute Cholecystitis Severity Grade

Grade I

Criteria for each grade based on final pathologic findings

Acute inflammatory changes in the GB wall without necrosis or pus

Grade II

Above plus pus in the GB lumen; necrosis of GB wall; intramural abscess; epithelial sloughing; no perforation

Grade III-V

Necrosis with perforation of the GB wall (non-iatrogenic)

30-day Outcomes:

Return to ED within 30 days

Check if patient returned to ED within 30 days of index hospitalization (with or without admission) for abdominal complaints

Number of appendicitis or gallbladder-related ED visits within 30 days of index hospitalization discharge

Number of times patient returned to the ED for appendix or gallbladder-related indications; include date of each visit

Readmission within 30 days

Check if applies. Indicate date and reason for readmission. Free text reason for readmission

Reoperation within 30 days

Check if applies. Indicate date and reason for reoperation. Free text type of reoperation performed

30-day Complications

Check all complications and grades that occurred within 30 days after discharge from index hospitalization (see definitions above); include date of each complication selected

Clavien-Dindo surgical complication

Check yes or no

Clavien-Dindo Grade

Grade 1 = Any deviation from the normal postoperative course without the need for (If multiple, choose highest grade) pharmacological treatment or surgical, endoscopic, and radiologic interventions. Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside.
Grade 2 = Requiring pharmacological treatment with drugs other than such allowed for Grade 1 complications. Blood transfusions and total parenteral nutrition are also included.
Grade 3a = Requiring surgical, endoscopic, or radiologic intervention. Intervention NOT under general anesthesia
Grade 3b = Requiring surgical, endoscopic, or radiologic intervention. Intervention under general anesthesia
Grade 4a = Life-threatening complication (including CNS complications) requiring ICU management. Single organ complication (including dialysis)
Grade 4b = Life-threatening complication (including CNS complications)* requiring ICU management. Multiorgan dysfunction
Grade 5 = Death of a patient (*brain hemorrhage, ischemic stroke, subarachnoid bleeding, but excluding transient ischemic attacks)

Did the patient have this complication at the time of discharge

Indicate yes or no

after 30-day readmission?

Secondary intervention

Select other secondary interventions performed related to appendicitis or acute cholecystitis within 30 days of index hospitalization discharge and date they occurred (do not code if already coded in previous sections); free text if other intervention not listed

30-day Hospitalization LOS

Readmission length of stay in days

30-day ICU LOS

Readmission length of ICU stay (in days)

Mortality within 30 days of index hospitalization

Indicate yes or no

DATA COLLECTION SHEET

Management of Acute Appendicitis and Cholecystitis During the COVID-19 Pandemic: An EAST Multicenter Contemporaneous Cohort Study

Site ID:

Patient Number (6-digit number starting with your Site ID, ie. 12-001, 12-002, 12-003, and 12-004.

Demographic Information:

Admit Date: _____ Admit Time: _____ Discharge Date: _____

Age: _____ Sex: _____ Race: _____

Weight (kg): _____ Height (cm): _____

Pregnancy status: Y/N; If yes, weeks' gestation _____

Preoperative Diagnosis (circle one): acute cholecystitis, acute appendicitis

Comorbidities (check all that apply):

Hypertension: _____

Diabetes mellitus: _____ If yes, Type (Insulin-dependent, non-insulin dependent, unsure)

 With end organ damage

 Without end organ damage (retinopathy, neuropathy, brittle diabetes)

Peripheral vascular disease: _____

Coronary artery disease: _____

Congestive heart failure _____ If yes, Estimated EF: (55-70%; 40-54%, 35-39%, <35%)

Current smoker: _____

Alcohol abuse: _____

Substance abuse: _____

Chronic pulmonary disease: _____

COPD: _____

 On home oxygen: _____

 Liters/min _____

History of myocardial infarction: _____

Peripheral vascular disease _____

CVA: _____

Dementia: _____

Connective tissue disease: _____

Peptic ulcer disease: _____

Mild liver disease: _____

(without portal hypertension, includes chronic hepatitis)

Moderate or severe liver disease: _____

Hemiplegia: _____

Moderate/severe renal disease: _____

Prior abdominal operations: _____

Current steroid use: _____

Current chemotherapy: _____

Other immunosuppressants: _____

Tumor without metastases: _____

(exclude if >5 y from diagnosis)

Leukemia (acute or chronic): _____
Lymphoma: _____
Metastatic solid tumor: _____
HIV/AIDS: _____

Hospital Characteristics:

Type of hospital (Select all that apply: University hospital, community teaching, community non-teaching, university affiliated, public, private)

Total number of all COVID-19 positive patients treated to date: _____

Total number of surgical COVID-19 positive patients treated to date: _____

Number of designated COVID units in your hospital: _____

Admission Physiology:

Temperature: _____ initial HR: _____ Initial SBP: _____ Initial DBP: _____

Duration of Symptoms (from symptom onset until ED triage): _____

Alvarado Score:

Migration of pain (1 point)
Anorexia (1 point)
Nausea (1 point)
Tenderness in right lower quadrant (2 points)
Rebound pain (1 point)
Elevated temperature (1 point)
Leukocytosis (2 points)
Shift of white blood cell count to the left (1 point)

Total score: _____

Clinical AAST Appendicitis severity grade: _____

Grade 1, 2, and 3 = pain, leukocytosis and RLQ tenderness
Grade 4 = pain, leukocytosis, and RLQ tenderness; palpable mass
Grade 5 = generalized peritonitis

Clinical AAST Cholecystitis severity grade: _____

Grade 1, 2 = pain, leukocytosis, and RUQ pain with or without Murphy's sign
Grade 3 = localized peritonitis in RUQ
Grade 4 = localized peritonitis at multiple locations, abdominal distention, symptoms of bowel obstruction
Grade 5 = generalized peritonitis

Previous episodes of pain (Y/N), If yes, How many _____

COVID symptoms: (Symptomatic, Asymptomatic)

COVID severity: (Mild, moderate, severe/critical)

Admission Lab values:

WBC: _____ Date/Time Collected: _____
Hgb: _____ Date/Time Collected: _____
Tbili: _____ Date/Time Collected: _____
Dbili: _____ Date/Time Collected: _____
ALP: _____ Date/Time Collected: _____
AST: _____ Date/Time Collected: _____
ALT: _____ Date/Time Collected: _____
Amylase: _____ Date/Time Collected: _____
Lipase: _____ Date/Time Collected: _____
D-dimer: _____ Date/Time Collected: _____
LDH: _____ Date/Time Collected: _____
Procalcitonin: _____ Date/Time Collected: _____

COVID test results: _____ Date/Time Collected: _____
(Positive/Negative/Unknown)

Repeat Lab values (peak):

WBC: _____ Date/Time Collected: _____
Hgb: _____ Date/Time Collected: _____
Tbili: _____ Date/Time Collected: _____
Dbili: _____ Date/Time Collected: _____
ALP: _____ Date/Time Collected: _____
AST: _____ Date/Time Collected: _____
ALT: _____ Date/Time Collected: _____
Amylase: _____ Date/Time Collected: _____
Lipase: _____ Date/Time Collected: _____
D-dimer: _____ Date/Time Collected: _____
LDH: _____ Date/Time Collected: _____
Procalcitonin: _____ Date/Time Collected: _____

Repeat COVID test results: _____ Date/Time Collected: _____

Number of total COVID tests completed: _____

Type of COVID test/manufacturer (for each): _____

Management Variables:

Preoperative Procedures (Check all that apply):

Preoperative HIDA scan (Y/N) Date ____
Preoperative Ultrasound (Y/N) Date ____
Preoperative ERCP (Y/N) Date ____
Preoperative MRCP (Y/N) Date ____
Preoperative EUS (Y/N) Date ____
Preoperative CT Scan (Y/N) Date ____
Preoperative MRI (Y/N) Date ____
Other Date ____

HIDA Scan Findings

 Acute cholecystitis
 Normal filling of the gallbladder

Ultrasound Findings (check all that apply):

Cholelithiasis
Pericholecystic Fluid
Wall thickening
CBD Diameter _____
CBD stones

Normal appendix
Non-compressible blind ending structure
Appendicolith
Appendiceal diameter _____
Unable to visualize
Inconclusive
Other findings: _____

Preoperative ERCP findings (Check all that apply):

CBD stones
Pancreatic duct stones
Other findings: _____

Preoperative MRCP findings (Check all that apply):

CBD stones
Dilated ducts _____
Obstruction
Other findings: _____

Preoperative EUS findings (Check all that apply):

CBD Stones
Other findings: _____

Preoperative CT Findings (Check all that apply):

Cholelithiasis
Pericholecystic Fluid
Wall thickening
CBD Diameter _____
CBD stones

Normal appendix
Non-compressible blind ending structure
Perforated appendix
Regional soft tissue inflammation, phlegmon or abscess
Appendicolith
Appendiceal diameter _____
Unable to visualize
Inconclusive
Other findings: _____

Preoperative MRI Findings (Check all that apply):

Cholelithiasis
Pericholecystic Fluid
Wall thickening
CBD Diameter _____
CBD stones

Normal appendix
Non-compressible blind ending structure
Perforated appendix

Regional soft tissue inflammation, phlegmon or abscess

Appendicolith

Appendiceal diameter _____

Unable to visualize

Inconclusive

Other findings: _____

Image AAST Appendicitis severity grade _____

Grade 1 = inflammatory changes localized to appendix +/- appendiceal dilation +/- contrast nonfilling

Grade 2 = appendiceal wall necrosis with contrast nonenhancement +/- air in appendiceal wall

Grade 3 = appendiceal wall necrosis with contrast nonenhancement +/- air in appendiceal wall and with local periappendiceal fluid +/- contrast extravasation

Grade 4 = regional soft tissue inflammatory changes, phlegmon or abscess

Grade 5 = diffuse abdominal or pelvic inflammatory changes +/- free intraperitoneal fluid or air

Image AAST Acute Cholecystitis grade ____

Grade 1 = wall thickening, distention, gallstones or sludge, pericholecystic fluid; non-visualization of the gallbladder on HIDA scan

Grade 2 = air in gallbladder lumen, wall or biliary tree; focal mucosal defect without frank perforation

Grade 3 = HIDA with focal transmural defect, extraluminal fluid collection or radiotracer but limited to RUQ

Grade 4 = Abscess in RUQ outside of gallbladder, bilioenteric fistula; gallstone ileus

Grade 5 = Free intra-peritoneal bile

Initial Treatment strategy (Check all that apply):

Antibiotics only

Percutaneous drainage with pre-operative antibiotics > 1 hr before procedure

Percutaneous drainage without pre-operative antibiotics >1 hr before procedure

Appendectomy with pre-operative antibiotics > 1 hr before procedure

Appendectomy without pre-operative antibiotics > 1 hr before procedure

Cholecystectomy with pre-operative antibiotics >1 hr before procedure

Cholecystectomy without pre-operative antibiotics >1 hr before procedure

Other

Preoperative antibiotics used (Y/N)

Duration of antibiotics <24 or >= 24h

Duration of preoperative antibiotics (Days) _____

Indication for treatment (therapeutic, empiric, perioperative SCIP)

Class of preoperative antibiotics (Circle all that apply)

Penicillin

1st generation cephalosporin

2nd generation cephalosporin

3rd generation cephalosporin

4th generation cephalosporin

beta lactam

Fluoroquinolone

Vancomycin

Clindamycin

Macrolide

Aminoglycoside

Flagyl

Tetracycline

Sulfonamide

Piperacillin/tazobactam (Zosyn)

Amoxicillin/clavulanate (Augmentin)
Ampicillin/sulbactam (Unasyn)

Initial Intervention

Date/time of Intervention _____

Time from ED triage to initial intervention ____

Initial operative approach: Laparoscopic single incision (Y/N)
 Laparoscopic three incision (Y/N)
 Laparoscopic four incision (Y/N)
 Percutaneous drainage (Y/N)
 Open, subcostal incision
 Open, RLQ incision
 Open, midline incision
 Open, other incision
 Robotic
 Not applicable
 Other

Intraoperative IOC (Y/N)

Intraoperative ERCP (Y/N)

Intraoperative EUS (Y/N)

Final operative approach: Laparoscopic single incision (Y/N)
 Laparoscopic three incision (Y/N)
 Laparoscopic four incision (Y/N)
 Percutaneous drainage (Y/N)
 Open, subcostal incision
 Open, RLQ incision
 Open, midline incision
 Open, other incision
 Robotic
 Not applicable
 Other

Final Operation (Check one):

- Cholecystectomy
- Subtotal fenestrating cholecystectomy
- Subtotal reconstituting cholecystectomy
- Percutaneous drainage without cholecystectomy
- Cholecystectomy with common bile duct exploration
- Appendectomy
- Ileocecectomy
- Right hemicolectomy
- Percutaneous drainage without appendectomy

Intraoperative findings (Check one):

- For cholecystitis:
 - Normal gallbladder with stones

Normal gallbladder without stones
Acutely inflamed gallbladder, intact
Perforated gallbladder with local contamination
Perforated gallbladder with abscess or phlegmon
Perforated gallbladder with purulent contamination away from gallbladder
Gangrenous gallbladder, intact
Gangrenous gallbladder with local contamination
Gangrenous gallbladder with abscess or phlegmon
Gangrenous gallbladder with purulent contamination away from gallbladder
Other

For appendicitis:

Normal appearing appendix
Acutely inflamed appendix, intact
Perforated appendix, with evidence of local contamination
Perforated appendix, with abscess or phlegmon in region of appendix
Perforated appendix, with addition of generalized purulent contamination away from appendix
Gangrenous appendix, intact
Gangrenous appendix, with evidence of local contamination
Gangrenous appendix, with addition of generalized purulent contamination away from appendix
Abscess
Serous abdominal/pelvic fluid
Purulent abdominal/pelvic fluid
Other

Operative AAST Appendicitis Severity Grade: ____

Grade 1 = Acutely inflamed appendix, appendiceal wall intact

Grade 2 = Gangrenous appendix, appendiceal wall intact

Grade 3 = Above, with evidence of local contamination

Grade 4 = Above, with abscess or phlegmon in region of appendix

Grade 5 = Above, with addition of generalized purulent contamination away from appendix

Operative AAST Acute Cholecystitis Severity Grade: ____

Grade 1 = Inflammatory changes localized to the GB; wall thickening; distension; gallstones

Grade 2 = Distended GB with pus or hydrops; necrosis or gangrene of wall; not perforated

Grade 3 = Perforated GB wall (non-iatrogenic) with bile outside the GB but limited to RUQ

Grade 4 = Pericholecystic abscess; bilioenteric fistula; gallstone ileus

Grade 5 = Above, plus generalized peritonitis

Intraoperative adverse event (iAE) (Y/N)

iAE Grade:

1 – injury requiring no repair within the same procedure (cauterization, use of prothrombotic material, small vessel ligation)

2 – injury requiring surgical repair, without organ removal or a change in the planned procedure (e.g. any suture repair, patch repair)

3 – injury requiring tissue or organ removal with completion of the originally planned procedure

4 – injury requiring a significant change (excluding minimally invasive to open conversions) and/or incompleteness of the originally planned procedure

5 – missed intraoperative injury requiring reoperation within 7 days

6 – intraoperative death

iAE required transfusion of ≥ 2 units pRBC (Y/N)

Operative duration (min, skin to skin): _____

Surgical drains (Y/N)

Postoperative Procedures

Postoperative ERCP (Y/N) Date/Time: _____

CBD stones (Y/N)

Other findings: _____

Postoperative MRCP (Y/N) Date/Time: _____

CBD stones (Y/N)

Other findings: _____

Postoperative Antibiotic use:

Post-operative antibiotic use (Y/N)

Post-operative antibiotic duration? <24 or >= 24h

Duration of post-operative antibiotics (Days) _____

Class of post-intervention antibiotics (Check all that apply):

Penicillin

1st generation cephalosporin

2nd generation cephalosporin

3rd generation cephalosporin

4th generation cephalosporin

beta lactam

Fluoroquinolone

Vancomycin

Clindamycin

Macrolide

Aminoglycoside

Flagyl

Tetracycline

Sulfonamide

Piperacillin/tazobactam (Zosyn)

Amoxicillin/clavulanate (Augmentin)

Ampicillin/sulbactam (Unasyn)

Outcomes:

Index hospitalization discharge date: _____

Hospital LOS: _____ ICU LOS: _____

Ventilator Days: _____ Mortality (circle one): YES / NO

Disposition (home, rehab facility, skilled nursing facility, LTAC): _____

Complications (check all that apply):

Surgical Site Infection: _____ Date: _____

Superficial

Deep

Organ space

SSI Grade:

Grade 1 = localized, local intervention indicated

Grade 2 = oral intervention indicated

Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; interventional radiology or operative intervention indicated

Grade 4 = life-threatening consequences (e.g., septic shock, hypotension, acidosis, necrosis)

Grade 5 = death secondary to infection (National Cancer Institute (NCI) Common Terminology Criteria for Adverse Events (CTCAE))

Intra-abdominal abscess: _____ Date: _____
Location: _____

Intra-abdominal abscess Grade

Grade 2 = oral intervention indicated (e.g. antibiotic, antifungal, etc.)

Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; invasive intervention indicated

Grade 4 = life-threatening consequences; urgent intervention indicated

Grade 5 = death

Wound complications: _____ Date: _____

Wound complication Grade:

Grade 1 = Incisional separation of < = 25% of wound, no deeper than superficial fascia

Grade 2 = Incisional separation >25% of wound with local care; asymptomatic hernia

Grade 3 = Symptomatic hernia without evidence of strangulation; fascial disruption/dehiscence without evisceration; primary wound closure or revision by operative intervention indicated; hospitalization or hyperbaric oxygen indicated

Grade 4 = Symptomatic hernia with evidence of strangulation; fascial disruption with evisceration; major reconstruction flap, grafting, resection, or amputation indicated

Grade 5 = Death

Bleeding: _____ Date: _____

Bleeding Grade: _____

Grade 1 = hematoma with minimal symptoms, invasive intervention, not indicated

Grade 2 = hematoma with minimally invasive evacuation or aspiration indicated

Grade 3 = transfusion, interventional radiology, or operative intervention

Grade 4 = bleeding with life-threatening consequences or major urgent intervention

Grade 5 = death secondary to hemorrhage

Bile leak: _____ Date: _____

Retained stones: _____ Date: _____

Multi-organ failure: _____ Date: _____

Multi-organ failure Grade

Grade 3 = shock with azotemia and acid-base disturbances; significant coagulation abnormalities

Grade 4 = life-threatening consequences (e.g. vasopressor dependent and oliguric or anuric or ischemic colitis or lactic acidosis)

Grade 5 = death

Sepsis: _____ Date: _____

Sepsis Grade:

Grade 3 = blood cultures positive with signs or symptoms; treatment indicated

Grade 4 = Life-threatening consequences; urgent intervention indicated

Grade 5 = death

Bacteremia: _____ Date: _____

Bacteremia Grade: _____

Grade 2 = blood cultures positive with no signs or symptoms

Catheter-associated UTI: _____ Date: _____

Catheter-associated UTI Grade: _____

Grade 2 = localized, local intervention indicated

Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; interventional radiology or operative intervention indicated

Grade 4 = life-threatening consequences (e.g., septic shock, hypotension, acidosis, necrosis)

Grade 5 = death secondary to infection

Anastomotic leak: _____ Date: _____

Anastomotic leak Grade: _____

Grade 1 = Asymptomatic diagnostic finding; intervention not indicated

Grade 2 = symptomatic; medical intervention indicated

Grade 3 = severe symptoms; invasive intervention needed

Grade 4 = life threatening consequences; urgent operative intervention indicated

Grade 5 = death

Post-operative ileus: _____ Date: _____

Post-operative ileus Grade: _____

Grade 1 = asymptomatic, radiographic findings only

Grade 2 = symptomatic; altered GI function (eg, altered dietary habits); IV fluids indicated for < 24 h

Grade 3 = symptomatic, severely altered GI function; IV fluids, tube feeding, or TPN indicated for ≥ 24 h

Grade 4 = life-threatening consequences

Grade 5 = death secondary to ileus

C. difficile Infection: _____ Date: _____

C. difficile infection Grade: _____

Grade 2 = localized, local intervention indicated

Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; interventional radiology or operative intervention indicated

Grade 4 = life-threatening consequences (e.g., septic shock, hypotension, acidosis, necrosis)

Grade 5 = death secondary to infection

HAP: _____ Date: _____

HAP Grade: _____

Grade 2 = localized, local intervention indicated

Grade 3 = IV antibiotic, antifungal, or antiviral intervention indicated; interventional radiology or operative intervention indicated

Grade 4 = life-threatening consequences (e.g., septic shock, hypotension, acidosis, necrosis)

Grade 5 = death secondary to infection

ARDS: _____ Date: _____

ARDS Severity: _____

Mild ARDS: PaO₂/FiO₂ = 201-300 with PEEP or CPAP ≥ 5 cm H₂O

Moderate ARDS: PaO₂/FiO₂ = 101-200 with PEEP ≥ 5 cm H₂O

Severe ARDS: PaO₂/FiO₂ ≤ 100 with PEEP ≥ 5 cm H₂O

AKI: _____ Date: _____

AKI Grade: _____

- Grade 1 = creatinine between upper limit of normal (ULN) and 1.5 x ULN
- Grade 2 = creatinine between 1.5 to 3.0 x ULN
- Grade 3 = creatinine between 3.0 to 6.0 x ULN
- Grade 4 = creatinine > 6.0 x ULN
- Grade 5 = death

DVT/PE: _____ Date: _____

DVT/PE Grade: _____

- Grade 2 = intervention (e.g., anticoagulation, lysis, filter, invasive procedure) not indicated
- Grade 3 = intervention (e.g., anticoagulation, lysis, filter, invasive procedure) indicated
- Grade 4 = embolic event including pulmonary embolism or life-threatening thrombus
- Grade 5 = death

Myocardial Infarction: _____ Date: _____

Myocardial Infarction Grade: _____

- Grade 1 = asymptomatic arterial narrowing (on angiography) without ischemia
- Grade 2 = asymptomatic and testing suggesting ischemia; stable angina
- Grade 3 = symptomatic and testing consistent with ischemia; unstable angina; intervention indicated
- Grade 4 = acute myocardial infarction
- Grade 5 = death

Congestive heart failure: _____ Date: _____

Congestive heart failure Grade

- Grade 1 = asymptomatic with lab (e.g. BNP or cardiac imaging abnormalities)
- Grade 2 = symptoms with moderate activity or exertion
- Grade 3 = symptoms at rest or with minimal activity or exertion; hospitalization; new onset of symptoms
- Grade 4 = life threatening consequences; urgent intervention indicated (i.e. continuous IV therapy or mechanical hemodynamic support)
- Grade 5 = death due to CHF

Supraventricular
AV nodal arrhythmia: _____ Date: _____

Arrhythmia Grade _____

- Grade 1 = asymptomatic, intervention not indicated
- Grade 2 = non-urgent medical intervention indicated
- Grade 3 = incompletely controlled medically or controlled with device (e.g. pacemaker)
- Grade 4 = life-threatening (e.g., arrhythmia associated with CHF, hypotension, syncope, shock)
- Grade 5 = death

Ventricular arrhythmia: _____ Date: _____

Ventricular arrhythmia Grade: _____

- Grade 1 = asymptomatic, intervention not indicated
- Grade 2 = non-urgent medical intervention indicated
- Grade 3 = incompletely controlled medically or controlled with device (e.g. pacemaker)
- Grade 4 = life-threatening (e.g., arrhythmia associated with CHF, hypotension, syncope, shock)
- Grade 5 = death

Clavien-Dindo surgical complication (Y/N)
Clavien-Dindo Grade: _____

Grade 1 = Any deviation from the normal postoperative course without the need for (If multiple, choose highest grade) pharmacological treatment or surgical, endoscopic, and radiologic interventions. Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside.

Grade 2 = Requiring pharmacological treatment with drugs other than such allowed for Grade 1 complications. Blood transfusions and total parenteral nutrition are also included.

Grade 3a = Requiring surgical, endoscopic, or radiologic intervention. Intervention NOT under general anesthesia

Grade 3b = Requiring surgical, endoscopic, or radiologic intervention. Intervention under general anesthesia

Grade 4a = Life-threatening complication (including CNS complications) requiring ICU management. Single organ complication (including dialysis)

Grade 4b = Life-threatening complication (including CNS complications) requiring ICU management. Multiorgan dysfunction

Grade 5 = Death of a patient (*brain hemorrhage, ischemic stroke, subarachnoid bleeding, but excluding transient ischemic attacks)

Did the patient have this complication at the time of discharge?

Secondary intervention: _____ Date: _____

Indication/Type:

Failure of medical management
Percutaneous drainage
Lysis of adhesions
SBO
Bile leak
Duct injury
Retained stone
Surgical repair of bile leak
Surgical repair of bile duct injury
Surgical repair of enteric or appendiceal stump leak
Incisional Hernia repair (includes port site hernia)
Small bowel resection
Large bowel resection
Colonoscopy or upper endoscopy
ERCP
ERCP + sphincterotomy
ERCP + sphincterotomy + biliary stent
Appendectomy (laparoscopic)
Appendectomy (open)
Other _____

Pathology

Intraoperative cultures taken (Y/N)

Cultures positive (Y/N) If yes, cultured organisms _____

Percutaneous cultures (Y/N)

Cultures positive (Y/N) If yes, cultured organisms _____

Final pathologic diagnosis: _____

Pathologic AAST Appendicitis Severity Grade (Criteria for each grade based on final pathologic findings): ____
 Grade 1 = Presence of neutrophils at the base of crypts, submucosa +/- in muscular wall
 Grade 2 = Mucosa and muscular wall digestion; not identifiable on hematoxylin and eosin stain (H&E)
 Grade 3 = Gross perforation or focal dissolution of muscular wall
 Grade 4-5 = Gross perforation

Pathologic AAST Acute Cholecystitis Severity Grade (based on final pathologic findings): ____
 Grade 1 = Acute inflammatory changes in the GB wall without necrosis or pus
 Grade 2 = Above plus pus in the GB lumen; necrosis of GB wall; intramural abscess; epithelial sloughing; no perforation
 Grade 3-5 = Necrosis with perforation of the GB wall (non-iatrogenic)

30-day Outcomes

Return to ED (within 30 days of index hospitalization) for abdominal complaints? (Y/N)

Number of Appendicitis-related ED visits within 30 days of index hospitalization discharge: ____
 Date of each visit

Number of Gallbladder-related ED visits within 30 days of index hospitalization discharge: ____
 Date of each visit

Readmission within 30 days: ____ Date: ____
 Reason for readmission: ____

Reoperation within 30 days: ____ Date: ____
 Reason for reoperation: ____

Surgical Site infection: ____ Date: ____
 Superficial
 Deep
 Organ space

SSI Grade:
 Intra-abdominal abscess: ____ Date: ____
 Wound complications: ____ Date: ____
 Wound complication Grade: ____
 Bleeding: ____ Date: ____
 Bleeding Grade: ____
 Bile leak: ____ Date: ____
 Retained stones: ____ Date: ____
 Multi-organ failure: ____ Date: ____
 Multi-organ failure Grade: ____
 Sepsis: ____ Date: ____
 Sepsis Grade: ____
 Bacteremia : ____ Date: ____
 Bacteremia Grade: ____
 Catheter-associated UTI: ____ Date: ____
 Catheter-associated UTI Grade: ____
 Anastomotic leak: ____ Date: ____
 Anastomotic leak Grade: ____
 Post-operative ileus: ____ Date: ____
 Post-operative ileus Grade: ____
 C. difficile infection: ____ Date: ____
 C. difficile infection Grade: ____
 HAP: ____ Date: ____
 HAP Grade: ____
 ARDS: ____ Date: ____

ARDS Severity: _____
AKI: _____ Date: _____
AKI Grade: _____
DVT/PE: _____ Date: _____
DVT/PE Grade: _____
Myocardial Infarction: _____ Date: _____
Myocardial Infarction Grade: _____
Congestive heart failure: _____ Date: _____
Congestive heart failure Grade: _____
Supraventricular arrhythmia: _____ Date: _____
SV arrhythmia Grade: _____
Ventricular arrhythmia: _____ Date: _____
Ventricular arrhythmia Grade: _____

Clavien-Dindo surgical complication (Y/N)
Clavien-Dindo Grade: _____

Did the patient have this complication at the time of discharge (Y/N)

Secondary intervention within 30 days of index hospitalization discharge (Y/N) (Do not code if already coded in previous sections)

Secondary intervention (check all that apply)

- Failure of medical management
- Percutaneous drainage
- Lysis of adhesions
- SBO
- Bile leak
- Duct injury
- Retained stone
- Surgical repair of bile leak
- Surgical repair of bile duct injury
- Surgical repair of enteric or appendiceal stump leak
- Incisional Hernia repair (includes port site hernia)
- Small bowel resection
- Large bowel resection
- Colonoscopy or upper endoscopy
- ERCP
- ERCP + sphincterotomy
- ERCP + sphincterotomy + biliary stent
- Appendectomy (laparoscopic)
- Appendectomy (open)
- Other _____

30 day hospitalization LOS (days) _____

30-day ICU LOS _____

Mortality within 30 days of index hospitalization discharge (Y/N)