1. **Aim/Purpose of this Guideline**
   This guideline is for the management of acute cholecystitis in adults. It has been benchmarked against national guidelines to provide a detailed guidance of clinical management of acute cholecystitis in line with best practice guidelines. This guideline applies to all healthcare professionals involved in the treatment of acute cholecystitis.

2. **The Guidance**
   The following pathway should be followed.
ACUTE CHOLECYSTITIS TREATMENT PATHWAY

**Diagnosis**

A – Local inflammation
- Murphy’s sign
- RUQ mass / pain / tenderness

B – Systemic inflammation
- Fever
- Elevated CRP or WCC

C – Imaging
- Characteristic findings (pericholecystic fluid, wall thickening)

Suspected: One item in A + one item in B
Definite: One item in A + B + C

**Detailed History & Examination**

History of gallstones
Medication and drug intake
Recent intervention (e.g. ERCP / stent)
History of biliary stricture / malignancy
Co-morbidities (respiratory, cardiac, diabetes, high BMI)

**Investigations**

a) FBC, U+Es, LFTs, amylase, CRP
b) Blood cultures
c) Upper abdominal ultrasound

**Immediate Management**

A Ensure patent airway
B Oxygen – target 94-98% saturation (88-92% if COPD)
C Intravenous fluids
  - Hartmanns solution
  - Administer 30ml/kg for hypotension or lactate ≥4mmol/l
  - 5-10mls/kg/h first 24 hours until goals met
  - Goals to meet:-
    - Heart rate <120/min
    - Mean arterial pressure = 65-85mmHg
    - Urine output = 0.5-1ml/kg/h
  Urinary catheter – if evidence of oliguria or anuria

D/E Antibiotics
  Amoxicillin IV 500mg 8 hourly + Gentamicin
  Add metronidazole IV 500mg 8 hourly if anaerobes suspected
  If penicillin allergy: Vancomycin + Gentamicin +/- metronidazole
Is Systemic Inflammatory Response Syndrome (SIRS) Present?
Any 2 of the following:
- Respiratory rate >20
- Heart rate >90
- WCC <4 or >12
- Temp <36°C or >38°C

Presence of SIRS on admission is a predictor of SEVERE cholecystitis and requires senior surgical review.

Severity Assessment (TG13 classification) - Assess at admission, 24 hours and 48 hours
Severe: At least one organ dysfunction* URGENT (<24 h) cholecystectomy or radiological drainage

Moderate: Any one of the following: - EARLY (<48h) cholecystectomy or radiological drainage
- WCC >18
- Palpable RUQ mass
- Duration >72 hours
- Marked local inflammation (gangrenous, abscess, peritonitis, emphysematous)

Mild: Do not meet above criteria Cholecystectomy within 7 days or as OP

Urgent senior surgical & ITU outreach review if any of below:-

<table>
<thead>
<tr>
<th>Clinical signs</th>
<th>Bloods</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Airway not maintained</td>
<td>pH &lt;7.1 or &gt;7.7</td>
</tr>
<tr>
<td>B Resp. rate &gt;35/min</td>
<td>Sodium &lt;110 or &gt;170mmol/l</td>
</tr>
<tr>
<td></td>
<td>paO₂ &lt;6.7kPa</td>
</tr>
<tr>
<td>C HR&lt;40 or &gt;150/min</td>
<td>Potassium &lt;2.0 or &gt;7.0mmol/l</td>
</tr>
<tr>
<td></td>
<td>Calcium &gt;3.75mmol/l</td>
</tr>
<tr>
<td></td>
<td>Glucose &gt;44.4mmol/l</td>
</tr>
<tr>
<td></td>
<td>Severity grading</td>
</tr>
<tr>
<td>D Coma (GCS &lt;8)</td>
<td>Severe cholecystitis</td>
</tr>
</tbody>
</table>

Consideration of HDU involvement where:-
- Persistent SIRS >48h
- Elderly (aged >75yrs)
- Obese (BMI>35)
- Moderately severe cholecystitis

*Organ dysfunction definitions:-
Cardiovascular - Hypotension requiring inotropes
Respiratory - Type 1 or 2 respiratory failure
Renal - Oliguria or creatinine >177umol/L
Hepatic - INR >1.5
Haematological - Platelets <100 (10^9/L)
Neuro - Impaired consciousness
3. SPECIFIC GUIDELINES REGARDING MANAGEMENT

3.1. Ownership
- All patients with a suspected or definite diagnosis of acute cholecystitis should be admitted under the acute general surgery team.
- Current evidence suggests that laparoscopic cholecystectomy is the most clinically and cost-effective treatment for acute cholecystitis and should ideally be performed within the first 72 hours after the onset of symptoms. Surgery is still considered safe up to 7 days following onset of symptoms.

3.2. Imaging
- Gold standard first line investigation is USS abdomen
- CT indications:
  - Diagnostic uncertainty
  - Assess for complications of acute cholecystitis (e.g. liver abscess / perforation)
  - Where patient fails to improve despite initial treatment
- MRCP indications:
  - Where common bile duct stone suspected
  - Suspected Mirizzi
- On table cholangiogram indications:
  - History of abnormal LFTs or dilated CBD
  - Assess anatomy of biliary tree

3.3. Cholecystectomy
- **SEVERE**: Patient should be offered urgent cholecystectomy where deemed surgically fit otherwise urgent radiological biliary drainage with percutaneous cholecystostomy.
- **MODERATE**: As above
- **MILD**: Patients considered fit for surgery should be offered cholecystectomy during their index admission. This should be performed within 72 hours, however surgery is still considered safe up to 7 days from onset of symptoms. Where this is not achievable patients should have a date for subsequent surgery identified prior to discharge or outpatient review as appropriate.

3.4. Percutaneous cholecystostomy tube
- Patients considered for this procedure require discussion with the Consultant interventional radiologist.
- Contrast cholecystostogram is optional. Removal should be routinely at 6 weeks.

3.5. Acalculous cholecystitis
- This can account for around 10% of cases of acute cholecystitis. Initial management should follow the pathway above.

3.6. References
- AUGIS. Pathway for the management of acute gallstone diseases. AUGIS 2015.
- NICE. Gallstone disease: diagnosis and initial management. 2014 (CG188)
4. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>All</th>
</tr>
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<tbody>
<tr>
<td>Lead</td>
<td>Mr Michael Clarke</td>
</tr>
<tr>
<td>Tool</td>
<td>Patient documentation and Rolling audit</td>
</tr>
<tr>
<td>Frequency</td>
<td>Adult acute cholecystitis patients who are reviewed by specialist teams. Audit 6 monthly</td>
</tr>
<tr>
<td>Reporting arrangements</td>
<td>Involved specialties governance committees. Repeated non-compliance to be reported via Datix</td>
</tr>
</tbody>
</table>
| Acting on recommendations and Lead(s) | Hospital Working Group  
Michael Clarke (Consultant upper GI surgeon) - Chair  
Mohamed Abdelrahman (ST3 General Surgery)  
Ian Finlay (Consultant upper GI surgeon)  
Hyder Hussaini (Consultant gastroenterologist)  
Bill Stableforth (Consultant gastroenterologist)  
Madeline Strugnell (Consultant radiologist)  
Dushyant Shetty (Consultant radiologist)  
John Hancock (Consultant interventional radiologist)  
Mike Spivey (Consultant in Intensive Care) |
| Change in practice and lessons to be shared | Required changes to practice will be identified and actioned within 6 months. A lead member of the team will be identified to take each change forward where appropriate. Lessons learned or changes to practice will be shared with all stakeholders. |

5. Equality and Diversity

5.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the "Equality, Diversity & Human Rights Policy" or the Equality and Diversity website.

5.2. Equality Impact Assessment
The Initial Equality Impact Assessment Screening Form is at Appendix 2.
# Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Clinical Guideline for Management of acute cholecystitis in Adults.</th>
</tr>
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<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>23/02/2016</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>23/02/2016</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>23/02/2019</td>
</tr>
</tbody>
</table>
| Directorate / Department responsible (author/owner): | Mr Michael Clarke (Consultant Upper GI and Bariatric Surgeon)  
Mr Mohamed Abdelrahman (Upper GI Spr) |
| Contact details: | Mr Michael Clarke (01872 252373) |
| Brief summary of contents | This guideline is for the management of acute cholecystitis in adults. This guideline applies to all healthcare professionals involved in the treatment of acute cholecystitis. |
| Suggested Keywords: | cholecystitis |
| Executive Director responsible for Policy: | Medical Director |
| Date revised: | None |
| This document replaces (exact title of previous version): | Nil |
| Approval route (names of committees)/consultation: | Hospital working group  
Michael Clarke (Consultant upper GI surgeon) - Chair  
Ian Finlay (Consultant upper GI surgeon)  
Hyder Hussaini (Consultant gastroenterologist)  
Bill Stableforth (Consultant gastroenterologist)  
Madeleine Strugnell (Consultant radiologist)  
Dushyant Shetty (Consultant radiologist)  
John Hancock (Consultant interventional radiologist)  
Mike Spivey (Consultant in Intensive Care)  
Divisional Governance Committee |
| Divisional Manager confirming approval processes | Divisional Director  
Duncan Bliss |
| Name and Post Title of additional signatories | Not required |
| Name and Signature of Divisional/Directorate Governance Lead confirming approval by specialty and divisional management meetings | {Original Copy Signed} |
| Signature of Executive Director giving approval | {Original Copy Signed} |
| Publication Location (refer to Policy on Policies – Approvals and Ratification): | Internet & Intranet  
✓ Intranet Only |
| Document Library Folder/Sub Folder | Clinical / General Surgery |
| Links to key external standards | None |
| Related Documents: | Nil |
| Training Need Identified? | No |
## Version Control Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
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<tbody>
<tr>
<td>01 09 15</td>
<td>V1.0</td>
<td>Draft for consultation</td>
<td>Michael Clarke – Consultant Upper GI and Bariatric Surgeon</td>
</tr>
<tr>
<td>23 Feb 16</td>
<td>V2.0</td>
<td>Approved for implementation</td>
<td>Michael Clarke – Consultant Upper GI and Bariatric Surgeon</td>
</tr>
</tbody>
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**All or part of this document can be released under the Freedom of Information Act 2000**

**This document is to be retained for 10 years from the date of expiry.**

**This document is only valid on the day of printing**

**Controlled Document**

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### Appendix 2. Initial Equality Impact Assessment Form

<table>
<thead>
<tr>
<th>Name of Service, strategy, policy or project to be assessed (hereafter referred to as policy)</th>
<th>Clinical Management of Acute Cholecystitis in Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directorate and service area: General Surgery</td>
<td>Is this a new or existing Policy? New</td>
</tr>
<tr>
<td>Name of individual completing assessment: Mr Michael Clarke</td>
<td>Telephone: 01872252373</td>
</tr>
</tbody>
</table>

1. **Policy Aim**
   - Who is the strategy / policy / proposal / service function aimed at?
     
     To provide detailed guidance on the clinical management of acute cholecystitis in line with best practice guidelines.

2. **Policy Objectives**
   - To provide a consistent approach to the management of acute cholecystitis at RCHT sites.
   - To maintain patient safety and improve outcomes for patients experiencing acute cholecystitis whilst inpatients at RCHT sites.

3. **Policy – intended Outcomes**
   - Consistent management of acute cholecystitis at RCHT sites.
   - Prompt and safe management of acute cholecystitis and follow up care.

4. **How will you measure the outcome?**
   - Audit
   - Datix Reporting
   - Review of nursing/medical documentation as required

5. **Who is intended to benefit from the policy?**
   - All patients who experience acute cholecystitis in hospital at RCHT sites.

6a) **Is consultation required with the workforce, equality groups, local interest groups etc. around this policy?**
   - Yes

   b) **If yes, have these *groups been consulted?**
   - Yes

   C. **Please list any groups who have been consulted about this procedure.**
   - General surgery team (Audit meeting). Consultants (Radiology, Gastroenterology, Microbiology, Intensive care)
7. The Impact
Please complete the following table.

Are there concerns that the policy could have differential impact on:

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Rationale for Assessment / Existing Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
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<tr>
<td>Sex (male, female, transgender / gender reassignment)</td>
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<tr>
<td>Race / Ethnic communities / groups</td>
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<tr>
<td>Disability - Learning disability, physical disability, sensory impairment and mental health problems</td>
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<td></td>
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<tr>
<td>Religion / other beliefs</td>
<td></td>
<td></td>
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<tr>
<td>Marriage and civil partnership</td>
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<tr>
<td>Pregnancy and maternity</td>
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<td></td>
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<tr>
<td>Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian</td>
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</tr>
</tbody>
</table>

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation- this excludes any policies which have been identified as not requiring consultation. or
- Major service redesign or development

8. Please indicate if a full equality analysis is recommended. No

9. If you are not recommending a Full Impact assessment please explain why.

Signature of policy developer / lead manager / director
Michael Clarke, Consultant Upper GI and Bariatric Surgeon

Date of completion and submission
23rd February 2016

Names and signatures of members carrying out the Screening Assessment
1. 2.

Keep one copy and send a copy to the Human Rights, Equality and Inclusion Lead, c/o Royal Cornwall Hospitals NHS Trust, Human Resources Department, Knowledge Spa, Truro, Cornwall, TR1 3HD

A summary of the results will be published on the Trust’s web site.

Signed ________________

Date ________________