CLINICAL GUIDELINE FOR MANAGEMENT OF ACUTE PANCREATITIS IN ADULTS

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

2. The Guidance
   See overleaf
### ACUTE PANCREATITIS TREATMENT PATHWAY

<table>
<thead>
<tr>
<th>Definition</th>
<th>2 out of 3 of the following criteria:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Clinical:</td>
<td>Upper abdominal pain</td>
</tr>
<tr>
<td>2) Laboratory:</td>
<td>Serum amylase &gt; 3 times of upper normal limit</td>
</tr>
<tr>
<td>3) Imaging:</td>
<td>Imaging proven (CT/MRI/USS)</td>
</tr>
</tbody>
</table>

#### Detailed History & Examination
- Previous pancreatitis
- History of gallstones
- Alcohol history
- Medication and drug intake
- Hyperlipidaemia
- Trauma
- Recent intervention (eg. ERCP)
- Co-morbidities (respiratory, cardiac, diabetes, high BMI)
- Family history

#### Investigations
- a) FBC, U+Es, LFTs, amylase, CRP, clotting, calcium and triglycerides +/- blood cultures.
- b) Arterial blood gas (to assess hypoxia or metabolic acidosis)
- c) Chest X-Ray (assess for effusion or ARDS)
- d) Upper abdominal ultrasound (assess aetiology)

#### Immediate Management

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>A</td>
<td><strong>Ensure patent airway</strong></td>
</tr>
<tr>
<td>B</td>
<td><strong>Oxygen</strong> – target 94-98% saturation (88-92% if COPD)</td>
</tr>
<tr>
<td>C</td>
<td><strong>Intravenous fluids</strong></td>
</tr>
<tr>
<td></td>
<td>- Hartmanns solution</td>
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<tr>
<td></td>
<td>- Administer 30ml/kg for hypotension or lactate ≥ 4mmol/l</td>
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<tr>
<td></td>
<td>- 5-10mls/kg/h first 24 hours until goals met</td>
</tr>
<tr>
<td></td>
<td>- Goals to meet :-</td>
</tr>
<tr>
<td></td>
<td>- Heart rate &lt; 120/min</td>
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<tr>
<td></td>
<td>- Mean arterial pressure = 65-85mmHg</td>
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<tr>
<td></td>
<td>- Urine output = 0.5-1ml/kg/h</td>
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<tr>
<td></td>
<td><strong>Urinary catheter</strong> – hourly urine output monitoring</td>
</tr>
<tr>
<td>D/E</td>
<td><strong>Nil by mouth initially</strong></td>
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<tr>
<td></td>
<td>Antibiotics – RARELY indicated. See below (section 2)</td>
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<tr>
<td></td>
<td><strong>Nasogastric tube</strong> – <em>Only if vomiting or ileus suspected</em></td>
</tr>
</tbody>
</table>

Clinical Guideline for Management of Acute Pancreatitis in Adults
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 pancreatitis and requires senior surgical review and discussion with ITU outreach.

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

Clinical signs: Bloods
A: Airway not maintained
   pH < 7.1 or > 7.7
B: Resp. rate > 35/min
   Sodium < 110 or > 170mmol/l
   paO₂ < 6.7kPa
   Potassium < 2.0 or > 7.0mmol/l
C: HR < 40 or > 150/min
   Calcium > 3.75mmol/l
   Systolic blood pressure < 80mmHg
   Glucose > 44.4mmol/l
   MAP < 60mmHg
   Diastolic blood pressure > 120mmHg
   Anuria
D: Coma (GCS < 8)
   Severe pancreatitis

Severity Assessment (ATLANTA classification) – Assess at admission, 24 hours and 48 hours.

Severe: Persistent (> 48 hrs) organ failure*, local complications (e.g. necrosis, peripancreatic fluid collections, pseudocyst, splenic & portal vein thromboses) or exacerbation of coexistent disease

Moderately severe: As above but transient only (< 48 hours)

Mild: No organ failure, local complications or exacerbation of coexistent disease

NB: If SIRS or organ failure present at admission then classify as SEVERE. If resolved at 48 hours can be reclassified as moderately severe.

Consideration of HDU involvement where:-
- Persistent SIRS > 48h
- Elderly (aged > 70yrs)
- Obese (BMI > 35)
- Moderately severe pancreatitis

*Organ failure 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
SPECIFIC GUIDELINES REGARDING MANAGEMENT

1) Ownership

Initial

All patients should initially be admitted under the acute general surgical team on their index admission UNLESS known chronic alcohol-related pancreatitis without significant amylase rise, local complications or requirement for continuous patient controlled intravenous opiates (PCA) – these patients should instead be admitted under the medical gastroenterology team.

Subsequent

- **ALL** inpatients with diagnosed acute gallstone pancreatitis will be subsequently referred to the Upper GI Surgery team using the Maxims internal referral system ‘Acute Gallstone Pancreatitis Inpatient Service’

- Information relating to the patient’s medical history and results of biochemical studies and radiology should be available

- Referrals will be reviewed each weekday morning on the daily upper GI surgery ward round and patients’ ongoing care taken over by the upper GI surgery team

- Where patients are admitted over a weekend it is expected that they will stay in hospital for upper GI review on Monday, or if over a bank holiday weekend, for review on the next normal working day

- Since all referrals are recorded on the Maxims referral system, where patients take their own discharge against medical advice, these patients will be contacted by telephone and both the GP and patient contacted by post.

- Inpatients will be reviewed within 24 hours of referral on a weekday.

- Where a more expeditious review is required the referring team should contact the upper GI surgery team directly through switchboard

2) Antibiotic Therapy

Antibiotics should **NOT** be routinely given to patients with pancreatitis, even in the presence of necrosis, except in these circumstances:

- Extra-pancreatic infection (e.g. pneumonia, urinary tract infection)
- Suspected cholangitis
- USS proven cholecystitis
- Suspected INFECTED pancreatic necrosis

**Extra-pancreatic infection**
Treat according to source of infection as per Trust antimicrobial guidelines
Cholangitis / cholecystitis
Amoxicillin IV 500mg 8 hourly + Gentamicin
Add metronidazole IV 500mg 8 hourly if empyema or anaerobes suspected
If penicillin allergy: Vancomycin + Gentamicin +/- metronidazole

Infected Pancreatic Necrosis
Meropenem IV 1g 8 hourly

3) Imaging

- Gold standard first line investigation is USS abdomen
- CT indications:
  - Diagnostic uncertainty
  - Failure to respond to initial treatment or clinical deterioration (Optimal timing for CT is AT LEAST 72-96 hours after onset of symptoms)
- MRCP: This is only indicated in patients with abnormal LFTs and common bile duct dilatation that either progressively worsen or fail to settle, where a common bile duct stone is suspected.

4) Nutrition

- Oral nutrition is safe to start in mild pancreatitis once abdominal pain settling and inflammatory markers improving
- Enteral feeding is the gold standard for feeding in moderately severe/severe acute pancreatitis.
- Nasogastric tube feeding is tolerated in most patients as first line
- Nasojejunal feeding is reserved for those unable to tolerate nasogastric feed
- Parenteral nutrition should only be used as a second line where nasojejunal feed not tolerated.
- CREON – this should be considered in patients with diarrhoea where pancreatic insufficiency suspected and/or faecal elastase abnormal

5) Use of ERCP and PTC for biliary drainage

Inpatient biliary drainage by ERCP or PTC (percutaneous transhepatic cholangiopancreatography) should be considered for:

- Severe gallstone pancreatitis with cholangitis (URGENT <24h)
- Gallstone pancreatitis with obstructing common bile duct stone, where surgical bile duct exploration not considered appropriate
• Gallstone pancreatitis with non-obstructing common bile duct stone, where surgical bile duct exploration not considered appropriate

Outpatient elective biliary drainage with ERCP should be considered for:-

• Gallstone pancreatitis with non-obstructing common bile duct stone where not technically achievable during the index admission due to pancreatic swelling and surgical bile duct exploration not considered appropriate

• Definitive treatment for gallstone pancreatitis where not surgically fit

All requests for ERCP should be discussed with a Consultant gastroenterologist specialising in ERCP. All requests for PTC should be discussed with a Consultant interventional radiologist.

NB Patients with gallstone pancreatitis, who underwent ERCP and are fit for surgery, should have a cholecystectomy, as ERCP doesn't prevent recurrence of cholecystitis or biliary colic.

6) Intervention in necrotising pancreatitis

Fine needle aspiration is NOT indicated routinely because clinical and imaging signs are accurate predictors of infected necrosis in the majority.

Image-guided percutaneous drainage should be used first line with surgical necrosectomy reserved for treatment failure.

Indications for intervention (endoscopic / radiological / surgical) include:-

• Clinical suspicion of, or documented, infected necrosis with clinical deterioration and once walled-off (wait at least 4 weeks from onset of pancreatitis)

• Ongoing organ failure for several weeks in absence of infected necrosis but walled off (wait at least 4 weeks)

• Ongoing gastric outlet, intestinal or biliary obstruction due to mass effect (ideally >4-8 weeks after onset of pancreatitis)

• Disrupted pancreatic duct (ideally >8 weeks after onset of pancreatitis)

• Persistent symptoms in walled off necrosis without infection (ideally > 8 weeks)

7) Discussion with hepatopancreaticobiliary unit (Derriford Hospital)

Patients with severe necrotising pancreatitis that fail to respond to first line radiological and/or endoscopic treatment, or in whom surgical necrosectomy is being considered, should be discussed with the regional HPB centre at Derriford Hospital.
8] **Timing of cholecystectomy**

The indication for and appropriate timing of surgery, outpatient review or other investigations will be decided & documented in the notes by the upper GI surgery team. In general:-

- For mild biliary pancreatitis, cholecystectomy with on-table cholangiogram should be performed during the index admission or within two weeks of admission.

- In patients with moderately severe/severe acute pancreatitis with peripancreatic collections, cholecystectomy with on-table cholangiogram should be delayed until the collections either resolve or persist beyond 6 weeks.

**Where surgery is deemed appropriate during the index admission:-**
Arrangements will be made with the CEPOD theatre list coordinator and the patient’s details entered into the electronic CEPOD theatre booking system

**Where surgery is deemed appropriate within 2 weeks of inpatient admission:-**

- An assessment of suitability for West Cornwall or Royal Cornwall Hospital will be made by the upper GI surgery team. Where uncertainty exists, the CEPOD anaesthetist will assess the patient and make that decision

- All patients must have a Group and Screen prior to discharge

- The patient will be placed on the ‘add to waiting list’ electronic referral system, to maintain an electronic record, with the date of surgery documented in order to ensure that pre-operative assessment clinic (POAC) can triage the need for further tests, or book face to face assessment.

- The patient will be informed of the proposed date of surgery prior to discharge

**Where surgery should be delayed longer than 2 weeks for clinical reasons, the patient will, dependent on the advice of the upper GI surgeon, either:-**

- Have an outpatient clinic appointment booked within 6 weeks of discharge and the date will be made available to the patient prior to discharge OR

- Have a suitable date for surgery arranged, the patient informed of this prior to discharge and an ‘add to waiting list’ electronic form completed (including this date of surgery), enabling the Pre-Operative Assessment Clinic (POAC) to identify the need for further triage or face to face review prior to surgery

**During a week where there is no Consultant upper GI surgeon either on call or covering the CEPOD list:-**

- It is expected that those patients requiring surgery during their index admission will instead undergo surgery on a planned ‘hot gallbladder list’ on Friday morning delivered by an upper GI surgeon. Patients will be booked for this by completing an ‘add to waiting list’ form.

- Where deemed appropriate to undergo surgery within 2 weeks of admission, patients will be assessed for suitability for WCH or RCH by the upper GI surgeon and if necessary by the
CEPOD anaesthetist, with surgery performed either on a Friday morning 'hot gallbladder list' or WCH day case operating list. An 'add to waiting list' form will be completed as part of this process.

9) Idiopathic pancreatitis - investigation

In patients where no aetiology has been identified, the following investigations should be performed in sequential order:-

a) Repeat abdominal USS (at 6 weeks)
b) If no gallstones then for IgG4 – to exclude autoimmune pancreatitis
c) If above normal then for MRCP
d) If above normal then for endoluminal ultrasound (EUS)

10) Alcohol-related pancreatitis

ALL patients require assessment of harmful drinking and alcohol dependence

For acute alcohol-related pancreatitis treat according to above pathway

For chronic alcohol-related pancreatitis diagnosis requires:-
- Person’s symptoms
- Imaging to determine pancreatic structure (CT scan first line investigation)
- Tests of pancreatic exocrine and endocrine function

If steatorrhoea or poor nutrition – for pancreatic enzyme supplements

If pain only symptom – no enzyme supplements

Patients with pain:-
- Offer surgery if large duct (obstructive) pancreatitis
- Offer coeliac plexus block, splanchnicectomy or surgery if small duct (non-obstructive) chronic pancreatitis and pain poorly controlled

References

### 3. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>All</th>
</tr>
</thead>
<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 pancreatitis 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)
- Jog Simantini (Consultant microbiologist)
- Neil Powell (Consultant microbiologist)

| 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. |

### 4. Equality and Diversity

4.1. 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.

**4.2. 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 pancreatitis in Adults.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>18/05/2017</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>18/05/2017</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>18/05/2020</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 pancreatitis in adults. This guideline applies to all healthcare professionals involved in the treatment of acute pancreatitis. |
| Suggested Keywords:    | pancreatitis                              |
| Target Audience      | RCHT      | PCH     | CFT | KCCG  |
|                      | ✔                     |         |     |      |
| Executive Director responsible for Policy: | Medical Director |
| Date revised:         | 18/05/2017               |
| This document replaces (exact title of previous version): | Nil |
| Approval route (names of committees)/consultation: | **Hospital working group**  
Michael Clarke (Consultant upper GI surgeon)  
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)  
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Jog Simantini (Consultant microbiologist)  
Neil Powell (Consultant microbiologist)  
|
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>
</tr>
</thead>
<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>
<tr>
<td>18/05/17</td>
<td>V3</td>
<td>Incorporated changes regarding subsequent ownership of patients as well as timing of cholecystectomy</td>
<td>Michael Clarke Consultant Upper GI Surgeon</td>
</tr>
</tbody>
</table>

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): Clinical Management of Acute Pancreatitis in Adults</th>
<th>Is this a new or existing Policy?</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directorate and service area: General Surgery</td>
<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 pancreatitis in line with best practice guidelines.

2. Policy Objectives*

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

3. Policy – intended Outcomes*

- Consistent management of acute pancreatitis at RCHT sites.
- Prompt and safe management of acute pancreatitis 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 pancreatitis 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><strong>Age</strong></td>
<td></td>
<td>x</td>
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<tr>
<td><strong>Sex</strong> (male, female, transgender / gender reassignment)</td>
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<td>x</td>
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<td><strong>Race / Ethnic communities /groups</strong></td>
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<td>x</td>
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<tr>
<td><strong>Disability</strong> -</td>
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<tr>
<td>Learning disability, physical disability, sensory impairment and mental health problems</td>
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<td>x</td>
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<tr>
<td><strong>Religion / other beliefs</strong></td>
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<td>x</td>
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<tr>
<td><strong>Marriage and civil partnership</strong></td>
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<tr>
<td><strong>Pregnancy and maternity</strong></td>
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<tr>
<td><strong>Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian</strong></td>
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</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
23.02.16

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 ________________