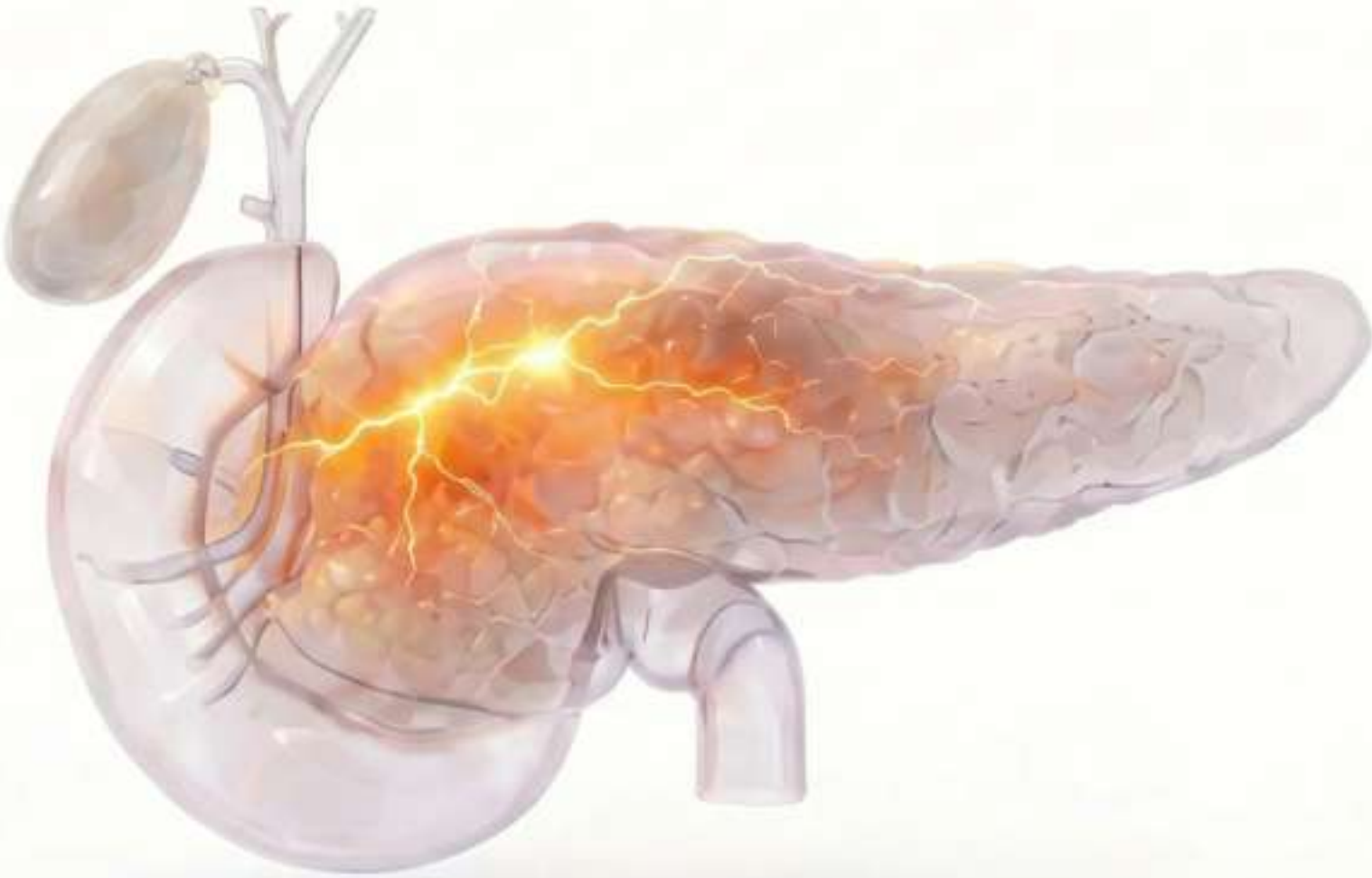
CHRONIC PANCREATITIS

National Standard Treatment Guideline



Ministry of Health
Republic of Maldives

ADB

JFPR
Japan Fund for Prosperous and Resilient Asia and the Pacific

From the People of Japan

World Health Organization
Maldives

National Standard Treatment Guidelines

- Acid Peptic Disease
- Acute Anxiety
- Acute Pancreatitis
- Acute Psychosis
- Acute kidney Injury
- Arrhythmia
- Chronic Liver Disease
- Chronic Pancreatitis
- Chronic kidney disease
- Congenital Heart Diseases
- Dementia
- Depression
- Diabetes Mellitus Type 1
- Diabetes Mellitus Type 2
- Gestational Diabetes
- Epilepsy
- Heart Failure
- Hyponatremia
- Hypernatremia
- Hypokalemia
- Hyperkalemia
- Interstitial Lung Disease
- Liver Failure
- Obesity
- Obstructive Sleep Apnoea
- Osteoarthritis
- Ovarian Cancer
- Pneumonia
- Stroke
- Upper Gastrointestinal bleed
- Unstable Angina

Version No	Version Date	Description of change
1	8 November 2025	Initial release

DOCUMENT NUMBER: MOH-QA/G/25/222-0

Technical Lead and Editor

Dr. Sangeeta Sharma
Professor, Neuropsychopharmacology, Institute of Human Behaviour & Allied Sciences (IHBAS) & President (Honorary), Delhi Society for Promotion of Rational Use of Drugs (DSPRUD), New Delhi, India

Technical Contributors and Reviewers for STGs

Maldivian Contributors

INTERNAL MEDICINE

Dr. Fathimath Nadia
Senior Consultant in Internal Medicine,
Indira Gandhi Memorial Hospital (IGMH), Male', Maldives

Dr. Moosa Murad
Senior Consultant in Internal Medicine,
Indira Gandhi Memorial Hospital (IGMH), Male', Maldives

Dr. Ibrahim Hassan
Senior Specialist Registrar Internal Medicine,
Medical Director of Kulhudhuffushi Regional Hospital.

Dr. Aminath Munaza
Consultant in Internal Medicine, Hulhumale' Hospital

Dr. Mihuna Ibrahim
Consultant in Internal Medicine, Hulhumale' Hospital

Dr. Ahmed Zooshan
Consultant in Internal Medicine, Indhira Gandi Memorial Hospital

Dr. Shivir Sharma Dahal
Consultant in Internal Medicine, ADK Hospital

Dr. Quraisha Haneef
Consultant in Internal Medicine, ADK Hospital.

Dr. Muhammad Asad UR Rehman Khan
Consultant in Internal Medicine, Tree Top Hospital.

ENDOCRINOLOGY

Dr. Ibrahim Faisal
Consultant in Endocrinology, Indhira Gandi Memorial Hospital.

Dr. Mariyam Niyaz
Consultant in sub specialist in Endocrinology,
Indhira Gandi Memorial Hospital.

Dr. Mohamed Shiruhan
Consultant in sub specialist in Endocrinology,
Indhira Gandi Memorial Hospital.

NEPHROLOGY

Dr. Ahmed Abdulla
Consultant Sub specialist in Nephrology,
Indhira Gandi Memorial Hospital.

RHEUMATOLOGY

Dr. Ibrahim Sujau
Consultant Sub specialist in Rheumatology,
Indhira Gandi Memorial Hospital.

Dr. Sariu Ali Didi
Consultant in Rheumatology, ADK Hospital.

PSYCHIATRY

Dr. Shanooha Mansoor
Consultant in Psychiatry, Indhira Gandi Memorial Hospital.

Dr. Shooga Moosa
Consultant in Psychiatry, Indhira Gandi Memorial Hospital.

Dr. Abdulla Nazim
Consultant in Psychiatry, Indhira Gandi Memorial Hospital.

GASTROENTEROLOGY

Dr. Abdullah Isneen Hilmy
Consultant Sub specialist in Gastroenterology,
Indhira Gandi Memorial Hospital.

PULMONOLOGY

Dr. Mohamed Ismail
Consultant in Pulmonology, Indhira Gandi Memorial Hospital

ORTHOPEDICS

Dr. Ahmed Azim Abdul Shukoor
Consultant in Orthopedics, Hulhumale' Hospital

CARDIOLOGY

Dr. Mohamed Shaneez Najmy
Consultant in Cardiology, Indhira Gandi Memorial Hospital

Dr. Migdhaadh Shareef
Consultant in Cardiology, Indhira Gandi Memorial Hospital

Dr. Aishath Eleena
Consultant in Pediatric Cardiology, Indhira Gandi Memorial Hospital

EMERGENCY MEDICINE

Dr. Fahira Ahmed Rasheed
Consultant in Emergency Medicine,
Indhira Gandi Memorial Hospital

ENT

Dr. Ahmed Shifaz
Consultant in Otolaryngology,
Indhira Gandi Memorial Hospital

OBSTETRICS & GYNAECOLOGY

Dr. Hawwa Inaya Abduraheem
Consultant in Obstetrics and Gynaecology,
Hulhumale' Hospital

Dr. Aminath Juhaina Hameed
Consultant in Obstetrics and Gynaecology,
Hulhumale' Hospital

Dr. Nashwa Samir Hussein Abdulla
Consultant in Obstetrics and Gynaecology,
Medica Hospital

Dr. Shirmeen Mohamed
Consultant in Obstetrics and Gynaecology,
Indhira Gandi Memorial Hospital

PAEDIATRICS

Dr. Abbasa Abdul Hamid
Consultant sub specialist in Paediatric Neurology, Hulhumale' Hospital

Dr Ismail Ejaz Ali
Consultant in Paediatrics, ADK Hospital

Dr.Nusaiba Farouk Hassan
Consultant in Paediatrics, Indhira Gandi Memorial Hospital

Dr. Amany Naseer
Consultant in Paediatrics and Medical Director of
Addu Equatorial Hospital

RADIOLOGY

Dr. Basma Ibrahim Sobir
Consultant in Radiology, Indhira Gandi Memorial Hospital

DENTAL

Dr. Nadeema Rasheed
Consultant in Orthodontics,
Indhira Gandi Memorial Hospital.

MEDICAL OFFICERS

Dr. Suha Abdul Shakoor
Medical Officer, B. Atoll Hospital

Dr. Aishath Maurisha
Medical Officer, Gan Regional Hospital

Dr. Mohamed Hishaam
Medical Officer, Shaviyani Atoll Hospital

Dr. Aishath Shurooq Waheed
Medical Officer, Shaviyani Atoll Hospital

DSPRUD contributors

ENDOCRINOLOGY

Dr. SV Madhu
Director Professor, Department of Endocrinology, Center for Diabetes, Endocrinology and Metabolism, UCMS & GTB Hospital, New Delhi

NEPHROLOGY

Dr. Anil Yadav
Additional Medical Superintendent (Admin), Department of Medicine, UCMS & GTB Hospital, New Delhi.

Dr. Likhita V
Senior Resident and Postgraduate Nephrology Trainee, CMC Vellore.

PSYCHIATRY

Dr. R.K. Chadda
Former Professor & Head, Department of Psychiatry, AIIMS, New Delhi; Consultant, Amrita Hospital, Faridabad, Haryana.

Dr. Amit Khanna
Associate Professor, Department of Psychiatry, IHBAS, New Delhi.

NEUROLOGY

Dr. Suman Kushwaha
Professor, Department of Neurology, IHBAS, New Delhi.

Dr. Mridula Rastogi
Assistant Professor, Department of Neurology, IHBAS, New Delhi.

Dr. Manoj Kumar Sharma
Professor, Department of Hepatology, Institute of Liver and Biliary Sciences (ILBS), New Delhi.

Dr. Monika Jain
Head, Gastroenterology, Balaji Action Hospital, New Delhi.

Dr. Ekta Gupta
Professor, Dept of Clinical Virology, Nodal Officer WHO CC, ILBS, New Delhi

PULMONOLOGY

Dr. Anup R Warrier
Senior Consultant, Infectious Disease Specialist, Aster Medicity, Kochi, Kerala, India.

Dr. Amit Mandal
Pulmonologist & ICU Specialist, Senior Director, Paras Hospital, Panchkula, Haryana, India.

Dr. Manvir Bhatia
Founder, Neurology & Sleep Centre; Vice President, Indian Society of Sleep Research

Dr. Ashok Rajput
Chief Consultant & Pulmonologist, Morpheus Lung & Sleep Clinic, CK Birla Hospital, New Delhi.

Dr. Rajendra Prasad
Director Medical Education & Professor, Respiratory Medicine, Era University, Lucknow, Uttar Pradesh, India.

Dr. Nikhil Gupta
Associate Professor, Department of Medicine, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, India.

ORTHOPEDICS

Dr. Sumit Sural
Director Professor & Head, Department of Orthopedics, MAMC & LN Hospital, New Delhi.

Dr. N.V. Kamat
Former Director General Health Services, Govt. of NCT Delhi; Executive Vice President, DSPRUD

CARDIOLOGY

Dr. M.S.S. Mukharjee
Senior Interventional Cardiologist, Pulse Heart Center, Hyderabad

Dr. Neeraj Nishchal
Additional Professor, Department of Medicine, AIIMS, New Delhi.

Dr. Prerna Garg
Senior Resident, Cardiology, AIIMS, New Delhi

Dr. R. Krishna Kumar
Pediatric Cardiology, Amrita Hospital, Kochi

Dr. Aashima Dabas
Professor, Pediatrics, LN Hospital, New Delhi

EMERGENCY MEDICINE

Dr. Vanitha Rajagopalan
Assistant Professor, Critical & Intensive Care, Department of Anesthesiology, AIIMS, New Delhi

OBS & GYNAE ONCOLOGY

Dr. Amita Suneja
Former Director Professor, Department of Obstetrics & Gynaecology, UCMS & GTB Hospital, Delhi.

Dr. Poonam Joon
Deputy Medical Superintendent, Head of Department Obstetrics & Gynaecology, Sanjay Gandhi Memorial Hospital; Secretary, DSPRUD, New Delhi

Endorsed by

Uza. Thasleema Usman
Commissioner of Quality Assurance
Ministry of Health, Male', Maldives

Published by

Quality Assurance and Regulations Division
Ministry of Health, Male,
Republic of Maldives

GUIDELINES DEVELOPMENT METHODOLOGY

The development of the Maldives Standard Treatment Guidelines (STGs) followed a structured, evidence-informed, and consensus-driven methodology adapted from internationally accepted guideline-development standards and the Delhi Society for Promotion of Rational Use of Drugs (DSPRUD) model. The process combined systematic evidence retrieval, critical appraisal, contextual adaptation, and multidisciplinary expert review to ensure feasibility, clinical relevance, and national ownership.

1. Determining Scope and Priority Conditions

Priority clinical conditions were identified through consultation with national programme managers, specialty clinicians, and health-system stakeholders. Selection criteria included: (i) major causes of morbidity and mortality, (ii) observed variation in clinical practice or prescribing patterns, (iii) potential to improve patient outcomes, and (iv) the feasibility of implementation across health-facility levels in Maldives. The final list of diseases reflected national epidemiology, service-delivery capacity, and essential-medicine availability.

2. Identification of Existing Evidence and Source Guidelines

A targeted search strategy was used to identify high-quality existing clinical guidelines. Searches were conducted across international guideline repositories (e.g., WHO, NICE, SIGN and other intergovernmental bodies, international and national guideline repositories, specialty societies and professional associations.

3. Quality Appraisal of Source Guidelines

Retrieved guidelines were screened for transparency of development, methodological rigour, clarity of recommendations, applicability to health-system reality, editorial independence. Guidelines were included if they met the Institute of Medicine (IOM) definition of a clinical guideline and addressed treatment or management of priority conditions. Guidelines that did not meet minimum quality standards, review articles, diagnostic criteria, or technical standards were excluded.

4. Adoption, Adaptation, and Contextualization

The guideline-development team employed an adopt–adapt–contextualize model:

- **Adoption**: High-quality recommendations that aligned with Maldivian health-system realities were retained without modification.
- **Adaptation**: Recommendations were modified when local considerations such as diagnostic capacity, medicine availability, workforce skills, referral pathways, or cost constraints affected feasibility.

- **Contextualization**: Where evidence was absent or inconclusive, conditional recommendations were formulated based on expert consensus, with explicit consideration of pragmatism, safety, and local workflows.
  Medicines were selected in alignment with the Maldives National Essential Medicines List (NEML), based on suitability, efficacy, safety, and availability.

5. Expert Consensus and Multidisciplinary Input

Draft recommendations were initially prepared by experts from the DSPRUD, India, providing a strong methodological foundation for the process. Building on this, a collaborative and participatory process brought together clinicians from internal medicine, paediatrics, obstetrics-gynaecology, surgery, emergency medicine, endocrinology, cardiology, general practitioners, and public health representing different levels of healthcare. Consensus was achieved through moderated discussions, iterative revisions, and resolution of divergent views. For topics lacking strong evidence, recommendations were derived from expert clinical judgment grounded in extensive practice experience.

6. Drafting, Peer Review, and Validation

Each guideline section was organized in a standard format including key clinical features, essential investigations, non-pharmacological management, pharmacological therapy (with step-up/step-down options where relevant), referral criteria, paediatric considerations, and follow-up requirements. Drafts were peer-reviewed by senior clinicians and national experts. Reviewer comments were systematically integrated to strengthen clarity, accuracy, and applicability.

7. Addressing Conflicts of Interest

All contributors declared the absence of conflicts of interest. Individuals with potential or perceived conflicts were excluded from authorship or decision-making roles.

8. Updating and Future Revisions

The STGs were conceptualized as a living document. Future updates will incorporate new scientific evidence, changes in essential-medicine availability, national programme priorities, and user feedback from clinicians. Periodic review cycles will ensure the continued relevance and reliability of recommendations.

9. Distinctive Features of the Guidelines

Developed through a collaborative process involving a large group of multidisciplinary experts from different levels of healthcare, the guidelines incorporate the following distinctive features:

- **Diagnostic Assumption and Confirmation**: While assuming that an initial diagnosis has been established by the healthcare provider, the guidelines provide essential information for confirming diagnoses. This includes a comprehensive overview of major signs and symptoms, descriptions of confirmatory tests, and clear guidance on practices that are prohibited, discouraged, or unreliable—promoting evidence-based medicine supported by relevant references.
- **Comprehensive Treatment Approach**: The guidelines offer a systematic, up-to-date framework for managing medical conditions across the continuum of care. They begin at the primary care level and extend to secondary and tertiary care, incorporating protocols for treatment response assessment and referral criteria as integral components.
- **Diverse Treatment Modalities**: Recommendations encompass both non-pharmacological and pharmacological interventions and surgical intervention where applicable, providing flexibility for individualized treatment plans. Cautionary notes are included where necessary to ensure safe and effective use of therapies.
- **Assessment and Referral Criteria**: Clear criteria and goals for evaluating patient response to treatment are provided, along with guidance on when referral to higher levels of care is warranted ensuring continuity and comprehensiveness in patient management.

ACKNOWLEDGEMENTS

The Government of the Republic of Maldives is committed to ensuring universal access to quality health services for all citizens. The Constitution of Maldives mandates the progressive realization of rights, including the right to good standards of health care for the population. In line with this national commitment, standardized quality health services are regarded as the foundation of a strong and equitable healthcare system.

This important work would not have been possible without the cooperation and support of many individuals and institutions. We express our sincere appreciation to the Honourable Minister of Health, Abdullah Nazim Ibrahim, for his leadership, commitment, and continuous guidance throughout the development process. We are grateful to WHO and ADB for their significant contribution, support, and technical assistance.

Our heartfelt gratitude is extended to the technical lead and editor, Dr. Sangeeta Sharma, Professor, Neuropsychopharmacology, IHBAS and President, Delhi Society for Promotion of Rational Use of Drugs (DSPRUD), and her team. We express our deepest appreciation to the Maldivian and DSPRUD experts and contributors who played a pivotal role in this process. Their technical expertise and dedication to adapt the standards to the Maldivian context have been instrumental in the development and finalization of these guidelines. The time, experience, generous sharing of knowledge and insights contributed by all parties have not only enriched the work but also have been invaluable in making these standards practical, locally acceptable, and aligned with the needs of the resident population.

It is important to acknowledge the immense efforts, involvement, timely coordination, collaboration, and dedication of the Quality Assurance and Regulation Division team who made it possible for these Clinical Treatment Guidelines to come into existence.

Uza. Thasleema Usman

Commissioner of Quality Assurance
Ministry of Health, Male', Maldives

CHRONIC PANCREATITIS

QUICK REFERENCE GUIDE

Chronic pancreatitis (CP): Progressive, irreversible fibro-inflammatory disease of the pancreas causing permanent exocrine and endocrine dysfunction. By cause: Alcohol-related, idiopathic, genetic (e.g., PRSS1/SPINK1/CFTR variants), obstructive (ductal stones/strictures), autoimmune (type 1 immunoglobulin G4-related; type 2). By imaging severity: Cambridge (endoscopic retrograde cholangiopancreatography (ERCP/ magnetic resonance cholangiopancreatography (MRCP) or "early" vs "established" (calcific/ductal changes). By function: With or without exocrine pancreatic insufficiency (EPI) and diabetes mellitus due to pancreatic disease (type 3c).

Causes, Risk factors & Triggers

- Alcohol use, tobacco use, genetic variants, autoimmune disease, ductal obstruction, hypertriglyceridemia, hypercalcemia, medications (e.g., valproate, azathioprine), recurrent acute pancreatitis, malnutrition.

Evaluation for Diagnosis

- **Clinical features:** Recurrent or persistent epigastric pain radiating to back, greasy stools, weight loss, bloating; diabetes symptoms.
- **Physical examination:** Nutritional status (body mass index (BMI)/mid-upper arm circumference), tenderness, jaundice, signs of deficiency (glossitis, edema).
- **Laboratory investigations:** Basic: complete blood count, liver function tests, fasting plasma glucose/post-prandial glucose, glycated hemoglobin (HbA1c), calcium, triglycerides, albumin. EPI: fecal elastase-1 (FE-1) <200 mcg/g suggests EPI (severe <100 mcg/ g).Consider immunoglobulin G4 if autoimmune pancreatitis suspected.

Imaging (choose by availability)

- First line: contrast-enhanced computed tomography (CT) - calcifications, ductal dilatation, atrophy, pseudocyst.
- If CT equivocal or early disease: magnetic resonance imaging (MRI) with MRCP -ductal irregularities/strictures; endoscopic ultrasound (EUS) for subtle parenchymal changes and tissue sampling when needed.

Confirmation of diagnosis

- History and imaging changes and/or low FE-1 (when available). No single perfect test in early CP.

Classification / severity assessment

- **Imaging severity:** Cambridge (mild/ moderate/severe) on ERCP/MRCP/EUS.
- **Functional severity:** presence of EPI and/or diabetes (type 3c).
- **Pain burden:** numeric rating scale, frequency, opioid exposure.
- **Nutrition:** weight/BMI trend, micronutrient deficits.
- **Complications:** pseudocyst, biliary obstruction, splenic vein thrombosis, bone disease.

Differential Diagnosis

- Pancreatic cancer, autoimmune pancreatitis, recurrent acute pancreatitis without chronic changes, peptic ulcer disease, biliary colic, chronic mesenteric ischemia, functional dyspepsia, irritable bowel syndrome, celiac disease, chronic diarrhea of other causes.

Management goals & principles

- Relieve pain; improve quality of life.
- Correct maldigestion; optimize nutrition with locally available foods.
- Prevent, detect, and treat complications (diabetes, bone disease, pseudocysts, biliary obstruction).
- Absolute abstinence from alcohol; tobacco cessation.
- Stepwise, resource-tiered care; clear referral pathways.

Approach to management

- **Primary care:** recognize CP/EPI, start analgesia per World Health Organization **(WHO)** ladder, nutrition counselling, start pancreatic enzymes if EPI likely, screen glucose, identify red flags, arrange referral.
- **Secondary care:** ultrasound, basic labs; initiate/titrate pancreatic enzyme replacement therapy (PERT), optimize analgesia (add adjuvants), manage diabetes; refer if refractory or complicated.
- **Tertiary care:** advanced imaging (CT/MRCP/EUS), endotherapy (endoscopic retrograde cholangiopancreatography - ERCP for stones/strictures), celiac plexus block, surgical evaluation within multidisciplinary team.

Non-pharmacological interventions

- **Diet:** small, frequent, lower-fat meals; adequate protein; medium-chain triglycerides if available; avoid alcohol completely; stop tobacco.
- **Nutrition support:** micronutrient supplementation (fat-soluble vitamins A/D/E/K, calcium, magnesium, zinc, vitamin B12) guided by availability; weigh monthly until stable.
- **Education:** timing of PERT with meals/snacks; stool/pain diary; sick-day rules.
- **Psychosocial:** brief interventions for substance use; depression screening; community support groups.
- **Bone health:** vitamin D/calcium; weight-bearing activity; dual-energy X-ray absorptiometry (DEXA) when accessible.

Pharmacological therapy

- **Pain Step 1:** Paracetamol (acetaminophen) 500-1000 mg orally every 6-8 h; max 3 g/day; caution in liver disease.
- **Pain Step 2:** Non-steroidal anti-inflammatory drug (NSAID) e.g., ibuprofen 400 mg orally every 8 h with food; add proton-pump inhibitor (PPI) protection if risk; avoid in renal/GI risk.
- **Adjuvants for neuropathic pain:** Amitriptyline 10-25 mg at night; or pregabalin 25-75 mg at night titrate; monitor sedation.
- **Pain Step 3 (reserve):** Tramadol 50-100 mg orally every 6-8 h; short courses; avoid early strong opioids; monitor dependence/constipation.

- **PERT for EPI:** Pancrelipase (lipase units) 40,000-50,000 with main meals; 20,000-25,000 with snacks; orally during/after meals; up-titrate to symptom control; add PPI if poor response.
- **Acid suppression (adjunct to PERT or dyspepsia):** PPI e.g., omeprazole 20-40 mg once or twice daily; reassess need regularly.
- **Diabetes (type 3c):** Individualize; metformin if tolerated and nutritional status adequate; early insulin often required; avoid hypoglycemia; coordinate with diet/PERT.
- **Antioxidants:** Consider only if available and pain refractory; benefit modest and inconsistent.
- **Antibiotics:** Only for proven infection (infected collections, cholangitis); NOT for routine CP pain.
- **Bile acid therapy:** Not indicated for CP; use per separate indications.

Assessment of response, review & follow-up (step-up/step-down triggers)

- **Pain:** numeric rating scale ≤3 with fewer flares; if uncontrolled → step up ladder, add adjuvants, consider EUS-guided celiac block/tertiary referral.
- **Stools/EPI**: formed stools, no visible fat; if steatorrhea persists - increase PERT dose, check timing, add PPI, review adherence.
- **Nutrition:** weight stable/rising; if falling → diet intensification, treat nausea, consider enteral support.
- **Diabetes:** HbA1c around individual target (~7% if safe), no severe hypoglycemia; if uncontrolled → adjust therapy/endocrinology input.
- **Micronutrients/bone:** correct deficiencies; DEXA if available; fractures → escalate care.
- **Follow-up cadence:** 2-4 weeks after changes, then every 3-6 months once stable (shorter intervals in primary care early on).

Referral (tiered, based on infrastructure)

- **Urgent to gastroenterology/endoscopy/surgery:** refractory pain despite optimized therapy; obstructive jaundice; suspected malignancy; enlarging/complicated pseudocyst; recurrent hospitalizations; biliary/duodenal obstruction; gastrointestinal bleeding; severe malnutrition despite support.
- **Send:** one-page summary, prior imaging/labs, treatments tried and doses, PERT regimen, comorbidities, allergies, contact details.

Complications (monitor and act early)

- Pseudocysts, biliary obstruction/cholangitis, splenic vein thrombosis with gastric varices, diabetes (type 3c), osteoporosis/osteopenia, fat-soluble vitamin deficiencies, increased pancreatic cancer risk.
- Monitoring: ultrasound (or CT/MRCP if indicated), liver tests, fasting glucose/HbA1c, weight/BMI, micronutrients; bone health periodically.

Patient education & instructions to patient/caregiver

- **Do:** absolute abstinence from alcohol; tobacco cessation; take PERT with every meal/snack; eat small, frequent, nutrient-dense, lower-fat meals; hydrate; keep a pain/stool/weight log; attend scheduled labs and imaging; maintain bone health (vitamin D/ calcium, activity); report new/ worsening symptoms early.
- **Don't:** skip enzymes; self-escalate opioids; delay care for jaundice, fever, vomiting, bleeding, rapid weight loss, or uncontrolled sugars.
- **Warning signs:** severe or new-pattern pain, jaundice, fever/chills, persistent vomiting, blood in stool/vomit, rapid weight loss, recurrent hypoglycemia or very high sugars.

CHRONIC PANCREATITIS

INTRODUCTION

Chronic pancreatitis is an irreversible fibro-inflammatory disease of the pancreas causing fibrosis and loss of exocrine and endocrine function. Usual onset is 35-55 years with recurrent epigastric pain, maldigestion, steatorrhea, and diabetes. Alcohol is the leading adult risk factor; genetics, autoimmune disease, hypertriglyceridemia, and drugs also play roles. Incidence is ~5-12/100,000 person-years with rising prevalence; idiopathic cases account for ~13-21% in parts of East/Southeast Asia. Damage can't be reversed, but early, standardized care - analgesia, nutrition, pancreatic enzyme replacement, and timely endoscopic or surgical intervention reduces pain, prevents malnutrition, and limits complications.

SCOPE OF THIS GUIDELINE

These recommendations apply to adults with CP, and are intended for use by physicians, nurses, allied health professionals, and administrators working across primary, secondary, and tertiary care settings. They provide guidance on initial assessment, diagnosis, management, follow-up, and referral to ensure timely, evidence-based, and context-appropriate care. Surgical procedures are not described in detail in this document; emphasis is placed on medical and supportive management, alongside early recognition of complications that require higher-level intervention.

Intended users

They are for physicians, nurses, allied health staff, and administrators working in primary, secondary, and tertiary care. Use them for initial assessment, diagnosis, management, follow-up, and referral.

Applicability by level of care

- **Primary care:** Work with basic clinical evaluation and routine labs (biochemistry, hematology). Prioritize pain control, nutrition, enzyme access where possible, and clear referral when red flags appear.
- **Secondary care:** Similar constraints as primary, with limited diagnostics and no endoscopic/surgical services in many sites. Stabilize symptoms, optimize nutrition, start/adjust enzymes and analgesia, and refer to tertiary care per criteria.
- **Tertiary care:** Comprehensive evaluation and multidisciplinary management, including advanced imaging and higher-level interventions when indicated.

Clear referral criteria, complication prevention and promoting multidisciplinary collaboration involving physicians, dietitians, pain specialists, and surgeons can help mitigate constraints at primary and secondary care levels.

DEFINITION

Chronic pancreatitis is a progressive, irreversible inflammatory disease of the pancreas characterized by permanent structural damage, including fibrosis, ductal irregularities, and loss of acinar and islet cells. These changes result in progressive impairment of both exocrine and endocrine functions, leading to maldigestion, malabsorption, and diabetes mellitus in advanced stages. Sometimes CP may be diagnosed incidentally without pain.

RISK FACTORS AND TRIGGERS

The TIGAR-O framework organizes common chronic pancreatitis risk factors into six categories, facilitating systematic evaluation and their management:

- **Toxic-metabolic:** Chronic alcohol consumption and smoking are the leading toxic-metabolic causes accounting for up to 70% of adult CP cases, alongside hypercalcemia, hyperlipidemia, and certain medications (e.g., azathioprine; described below). These factors induce repeated pancreatic injury and inflammation.
- **Idiopathic:** When no identifiable cause is found after thorough evaluation, the pancreatitis is deemed idiopathic. This category highlights the need for ongoing surveillance and advanced imaging or genetic testing in select cases.
- **Genetic:** Hereditary mutations (PRSS1, SPINK1, CFTR, CTRC) confer increased susceptibility by altering enzyme activation or ductal function. Genetic testing is recommended for patients with a family history or early-onset disease.
- **Autoimmune**: Autoimmune pancreatitis, marked by elevated IgG4 levels and characteristic imaging findings, responds well to corticosteroid therapy but can mimic other forms of CP if unrecognized.
- **Recurrent and severe acute pancreatitis:** Episodes of acute pancreatitis that are recurrent or of high severity can progress to chronic disease through ongoing inflammation and fibrosis.
- **Obstructive:** Pancreatic duct obstruction by strictures, stones, or tumors leads to upstream ductal hypertension, injury, and chronic inflammation.
- **Drug-Induced Pancreatitis:** Some drugs like azathioprine, didanosine, valproate, tetracyclines, and corticosteroids can cause chronic pancreatitis via direct toxicity, hypersensitivity, or metabolic disruption. Symptoms may appear weeks to months after starting therapy. Diagnosis hinges on timing, ruling out other causes, and improvement after stopping the drug.

EVALUATION FOR DIAGNOSIS

Evaluation Type	Test/Procedure	Expected Findings	Comments
Clinical assessment	History & physical exam	Chronic/intermittent epigastric painranging from a dull ache to severe, disabling discomfort that often worsens after meals; Epigastric tenderness, weight loss, steatorrhea	Strong clinical suspicion
Laboratory tests	CBC, fasting blood glucose	Elevated or low counts indicating inflammation or anemia	First-line blood test
	Serum amylase and lipase	May be normal or mildly elevated in CP	Not specific for chronic disease
	Liver function tests (LFT)	Elevated ALT/AST if biliary involvement	Screens for gallstone disease
	Fasting blood glucose	Hyperglycemia indicates endocrine insufficiency	Monitors diabetes risk
	Serum albumin and prealbumin, and fat-soluble vitamin levels (A, D, E, K).		
Functional testing	Fecal elastase	<200 mcg/g confirms exocrine insufficiency	Widely used functional test
	Fecal fat estimation	>7 g/day indicates fat malabsorption	Quantifies steatorrhea
	Serum trypsinogen	Low levels suggest exocrine dysfunction	Less commonly used
	Secretin stimulation test	Reduced or delayed bicarbonate response	Specialized test
Laboratory tests	Lipid panel	Elevated triglycerides	Identifies hyperlipidemic causes
	Serum calcium	Hypercalcemia may be an etiologic factor	Requires correction if high&evaluation for raised parathyroid hormone if high
	IgG4 serum antibody	Elevated in autoimmune pancreatitis	Supports AIP diagnosis
	ANA, rheumatoid factor (RF), ESR	Positive in systemic autoimmune conditions	Not done routinely; Helps evaluate autoimmune etiology
Cross-sectional imaging	Contrast-enhanced CT	Calcifications, pancreatic atrophy, ductal dilation	First-line imaging
	MRI/MRCP	Ductal irregularities, strictures, intraductal stones	Useful when CT inconclusive
Endoscopic imaging	Endoscopic ultrasound (EUS)	Early parenchymal changes, small stones	High sensitivity, biopsy guidance

Note: Pancreatitis is painless in around 10% to 20% of patients. When about 90% of pancreatic function is lost, patients will have signs of exocrine dysfunction manifesting as unintentional weight loss, steatorrhea, and fat-soluble vitamin malabsorption. New-onset diabetes is common as endocrine function declines.

CONFIRMATION OF DIAGNOSIS

- Diagnosis rests on clinical history, imaging, and pancreatic function testing; no single definitive test, especially early.
- History: months-years of persistent or intermittent epigastric pain radiating to the back, weight loss, steatorrhea. If suspected on history and exam, start a diagnostic workup.
- Choose tests based on local availability and the risk-benefit profile.
- First-line imaging: contrast-enhanced CT. Looks for pancreatic calcifications, ductal dilatation, parenchymal atrophy.
- When CT is equivocal or disease is early: MRI with MRCP: better view of ductal irregularities, strictures, small intraductal stones.
- Endoscopic ultrasound (EUS): detects subtle parenchymal changes; enables fine-needle biopsy when indicated.
- Exocrine pancreatic insufficiency: Fecal elastase <200 mcg/g supports the diagnosis.

DIFFERENTIAL DIAGNOSIS

Distinguish CP from pancreatic cancer, peptic ulcer disease, biliary colic, irritable bowel syndrome, gastroparesis, and mesenteric ischemia through targeted history, lab tests, and imaging.

Category	Differential Diagnoses
Most common	Pancreatic adenocarcinoma; Peptic ulcer disease; Biliary colic; irritable bowel syndrome (IBS)
Less common	Gastroparesis; Mesenteric ischemia; Gastroesophageal reflux disease (GERD); Small intestinal bacterial overgrowth (SIBO); Autoimmune gastritis

MANAGEMENT GOALS

The management of chronic pancreatitis involves both the prevention and treatment of complications through a multidisciplinary approach. Key focus areas include:

- Relieve pain, improve quality of life.
- Correct maldigestion, optimize nutrition with locally available foods.
- Prevent and manage complications, including diabetes and osteoporosis.
- Promote alcohol abstinence, smoking cessation, and healthy diet.
- Provide psychological support and patient education.
- Ensure regular follow-up and timely referral to higher care.

MANAGEMENT PRINCIPLES

- Treat CP-related symptoms, confirm attribution before long-term therapy.
- Stepwise pain control (WHO ladder); avoid early opioids.
- Nutrition first: high-protein meals; supplement fat-soluble vitamins and micronutrients when labs are limited.
- Diabetes in CP: screen routinely and manage per resources; refer uncontrolled cases.
- Clear referral triggers for complications and suspected malignancy (Establish clear criteria for referral to tertiary care (e.g., refractory pain, obstructive jaundice, suspected malignancy, large pseudocysts, recurrent admissions).

PHARMACOLOGICAL THERAPY

1. **Analgesics:** Stepwise approach to treatment of pain should be taken for pain control beginning with paracetamol and/or NSAIDs, escalate to opioids as per WHO analgesic ladder, with monitoring for adverse effects.

   Give Tab. Tramadol 50 mg twice a day only in patients in whom all other reasonable therapeutic options have been exhausted.

   In patients with pain requiring opioid therapy, adjunctive agents to minimize the use of opioid analgesia and treat coexisting depression can be used. Adjunctive agents include antidepressants or pregabalin or gabapentin.

2. **Pancreatic Enzyme Replacement Therapy (PERT)** in patients with exocrine pancreatic insufficiency: Pancrelipase 40000-50,000 USP Units with each meal and half the dose with snacks; Pancreatic enzyme supplements come in various forms (including delayed release, enteric coated and non-enteric coated), which contain varying concentrations of lipase, protease and amylase.

   The effectiveness is monitored clinically by an improvement in stool consistency, loss of visible fat in the stool, improvement in fat-soluble vitamin levels and gain in muscle strength and body weight.

Note: Once the appropriate dose of pancreatic enzymes is determined, patients should be instructed on how to take the pancreatic enzymes. Advise the patient to take the dose with the first bite of a meal. However, if consuming a meal takes more than 20 minutes, recommend taking half the number of capsules with the first bite and the other half in the middle of the meal to maximize digestion.

Although 90,000 USP units of lipase per meal (~10% of normal output) may theoretically correct steatorrhoea, full digestive normalization is uncommon. Some patients need less due to residual pancreatic or gastric lipase activity, while others may require more for symptom control.

3. **Co-administer a proton-pump inhibitor (PPI)** with high-dose regimens to avoid denaturation of lipase, if the non-enteric-coated preparation is chosen. Omeprazole: 40-60 mg/day (e.g., 20 mg twice daily or 40 mg once daily) Or Pantoprazole: 40-80 mg/day (e.g., 40 mg twice daily) Or Esomeprazole: 40-80 mg/day (e.g., 40 mg twice daily) Or Lansoprazole: 30-60 mg/day (e.g., 30 mg twice daily).
4. **Antioxidants:** Consider vitamin E 400 IU daily and combinations of vitamins A, C, E for pain relief; it may reduce pain and can be considered for clinical use, especially early in the course of disease.
5. Vitamin D supplementation in patients with substantial steatorrhoea may require fat-soluble vitamin D analogues (calciferol).
6. **Glycemic Control:** Glucose intolerance is common in chronic pancreatitis, while overt diabetes usually appears later. Annual fasting glucose monitoring is advised. Most cases require insulin, with heightened risk of hypoglycaemia; oral agents may be considered(for details, see guidelines on Diabetes Mellitus)

NON-PHARMACOLOGICAL INTERVENTIONS

1. Advise complete alcohol cessation and smoking cessation programs.
2. Promote locally available high-protein foods (fish, eggs, legumes). Encourage small, frequent meals to reduce pain and improve digestion and low-fat meals with medium-chain triglyceride supplementation depending on the degree of the severity of fat malabsorption; generally, intake of 20 g/day or less is sufficient; the size and content of meals also vary.
3. Supplement with multivitamins where enzyme replacement or fat-soluble vitamin monitoring is unavailable.
4. Dietary modification includes small meals low sugar, use of 'coconut oil' as the source of fat and restriction of sugars/ refined carbohydrates if the patient has impaired glucose tolerance.
5. Consider pain counseling or cognitive-behavioral therapy.

ASSESSMENT OF RESPONSE

Domain	What to assess	Tools / Metrics	Target / Goal	Review frequency*	Action if not at target
Pain control	Intensity, frequency, opioid use, sleep	Numeric Rating Scale (0-10), analgesic days/ months	NRS ≤3, minimal rescue meds	2-4 weeks after change; then 3-6 months	Step up WHO ladder, add adjuvants, consider celiac block/EUS/ tertiary referral
Functional status & QoL	Daily activities, work, mood	PGIC, EQ-5D/ WHOQOL-BREF	Improved vs baseline	1-3 months	Reassess pain, depression, nutrition; MDT review
Nutritional status	Weight/BMI, MUAC (if resources limited)	Weight trend, BMI, MUAC	Weight stable or raised; BMI ≥18.5	Monthly till stable; then 3-6 months	Diet optimization, PERT titration, treat nausea, consider enteral support
Exocrine insufficiency	Steatorrhea, stool frequency, bloating	Symptom diary; fecal elastase (if available)	Formed stools, no visible fat, reduce bloating	4-8 weeks after PERT change	Increase PERT dose, add acid suppression, reinforce timing with meals
PERT adherence & dosing	Dose per meal/ snack, timing	Capsule count; education check	≥40-50k lipase main meals; ½ dose snacks, taken with/after food	Each visit	Re-educate, simplify regimen, address cost/ availability
Glycemic control (type 3c)	Fasting/PP sugars, hypoglycemia	FPG/PPG, A1c (q3-6 months), SMBG	A1c individualized (~7% if safe); no severe hypos	1-3 months	Adjust insulin/ orals, nutrition review, endocrine referral if unstable
Micronutrients	Fat-soluble vitamins, minerals	Clinical signs; labs if available (A, D, E, K, B12, Zn, Mg)	No deficiency; serum 25-OH-D ≥30 ng/mL (if checked)	6-12 months	Supplement per deficiency; add calcium/vit D
Bone health	Osteoporosis risk	FRAX; DEXA if available	T-score > −2.5; no fragility fractures	12-24 months	Vitamin D/ calcium; bisphosphonates per guidance; endocrine referral
Substance use	Alcohol, tobacco	AUDIT-C; brief intervention record	Complete abstinence; tobacco cessation	Every visit	Brief intervention, pharmacothera py, referral to de-addiction
Adverse effects of therapy	Opioids, adjuvants, PPIs, enzymes	AE checklist, constipation score	No clinically significant AEs	Each visit	De-escalate/ rotate drugs; manage AEs; consider non-opioid strategies

Complications surveillance	Pseudocyst, biliary/duodenal obstruction, malabsorption	Alarm symptoms; US/CT/MRCP if indicated	No red flags	3-6 months or symptom-triggered	Urgent imaging; refer for EUS/ ERCP/surgical eval
Metabolic labs	CBC, CMP, fasting lipids (if needed)	Hemoglobin, LFTs, albumin, electrolytes	Within reference or improving	3-6 months	Address anemia, electrolyte issues; investigate malnutrition
Infection/ pancreatitis flares	ER visits, admissions	Count in last 6-12 months	Declining trend	3-6 months	Optimize pain/ PERT, manage triggers, escalate level of care
Education & self-management	Diet, PERT timing, sick-day rules	Teach-back, checklist	Correct teach-back	Each visit	Re-educate; written plan; involve caregiver
Follow-up reliability	Attendance, access to meds	Visit adherence; refill records	On-time visits; no stock-outs	Each visit	Simplify regimen, link to schemes, social work referral

***Adjust frequency by level of care and symptom burden: closer intervals during active symptoms; 3-6-monthly once stable.**

REVIEW, FOLLOW-UP, AND TREATMENT ADJUSTMENT

- Annual review of clinical status, with interim evaluation if symptoms worsen.
- Repeat imaging (ultrasound, CT, or MRCP) yearly or sooner if indicated.
- Adjust pancreatic enzyme replacement therapy (PERT) dosing based on symptoms, stool quality, and nutritional status.
- Rotate or escalate analgesic regimens in a stepwise manner as per the WHO ladder.
- Consider endoscopic or surgical intervention for persistent pain, structural complications, or failed medical management.

REFERRAL FOR SPECIALIST CONSULTATION

Referral trigger	Minimal assessment before referral	Priority	Destination	Send with referral
Pain refractory despite optimized medical therapy (adequate pancreatic enzyme replacement therapy, nutrition, WHO stepwise analgesia)	Confirm PERT dose/ timing, analgesics tried and doses, adherence check, red flags	Urgent if severe or opioid-escalating	Gastroenterology ± pain service	Summary of therapies tried, pain scores, meds list, allergies, comorbidities
Suspected structural complications: pseudocyst, ductal stricture, biliary obstruction, suspected malignancy	Focused exam, basic labs if available (CBC, LFTs), ultrasound if available; document alarm symptoms (weight loss, jaundice)	Urgent	Gastroenterology/ endoscopy; Surgical oncology if malignancy suspected	Imaging reports, lab results, symptom timeline, weight trend
Severe malnutrition despite counselling and supplements	Weight, BMI or MUAC trend, stool features, PERT dosing, dietary recall	Semi-urgent	Gastroenterology ± nutrition; Surgery if obstruction suspected	Anthropometry charts, diet plan used, PERT regimen, micronutrient therapy given
Need for endoscopic or surgical intervention (pain control, drainage, ductal decompression)	Document indication and prior stabilization attempts; baseline labs if feasible	Urgent (if obstructive symptoms, infection, or uncontrolled pain)	Advanced endoscopy unit; Pancreatic surgery team	Indication clearly stated, prior imaging, labs, treatment history, consent discussion notes
Recurrent admissions or complications not controllable locally	Record frequency, triggers, response to prior care	Semi-urgent	Gastroenterology; consider multidisciplinary team	Discharge summaries, medication changes, complications log
Limited specialist access: prioritize by severity, urgency, and expected benefit	Use simple triage: red flags (jaundice, uncontrolled pain, rapid weight loss), failure of outpatient care	Priority-based queue	Nearest tertiary center	One-page referral note: problem list, what's been done, key results, unanswered questions

COMPLICATIONS

Chronic pancreatitis is associated with a range of local and systemic complications that require proactive monitoring and timely management.

Complication	Key signs / red flags	Monitoring tests & suggested frequency*	First-line management (primary/secondary)	Referral triggers & destination with referral
Pseudocyst	Persistent/ worsening epigastric pain, early satiety, vomiting, fever	USG every 4-8 weeks if symptomatic; CT/ MRCP if enlarging or unclear	Analgesia, hydration, nutrition; observe if <6 cm and asymptomatic	Size ≥6 cm, growth, infection, bleeding, gastric/duodenal/biliary obstruction - get Advanced endoscopy /

Biliary obstruction	Jaundice, dark urine, pale stools, pruritus, cholangitis (fever, RUQ pain)	LFTs (bilirubin, ALP, GGT) monthly if symptomatic; USG; MRCP if available	Stabilize; treat cholangitis (antibiotics, fluids)	Rising bilirubin, cholangitis, ductal dilatation refer for ERCP-capable GI unit / HPB surgery
Splenic vein thrombosis	LUQ pain, splenomegaly, gastric variceal bleed (melena, hematemesis)	USG Doppler/CT at suspicion; CBC periodically	Avoid unnecessary anticoagulation; manage anemia; beta-blocker if portal hypertensive gastropathy (per local protocol)	Any upper GI bleed, symptomatic varices refer to Tertiary GI/ hepatology; consider EGD, IR
Diabetes mellitus (type 3c)	Polyuria, polydipsia, weight loss, hypoglycemia risk	FPG/PPG each visit early; HbA1c every 3-6 months	Medical nutrition therapy; start/adjust insulin or orals per resources; SMBG education	Recurrent hypoglycemia, A1c uncontrolled, uncertainty about regimen - refer to Endocrinology/GI
Osteopenia/ osteoporosis	Bone pain, height loss, fractures	Baseline 25-OH-D; DEXA if available q1-2 y; calcium, vitamin D annually	Vitamin D/calcium; weight-bearing exercise; treat malabsorption; optimize PERT	Fragility fracture, T-score ≤−2.5, refractory deficiency - refer to Endocrinology/ orthopedics
Pancreatic cancer risk	New or changing pain, unexplained weight loss, new jaundice, back pain, depression	Symptom-triggered labs (LFTs), imaging (USG then CT/MRCP/ EUS if red flags)	Fast-track evaluation; avoid delays	Any red flag or mass/ duct cutoff on imaging refer to HPB oncology/ GI for EUS/CT and MDT review

*Adjust frequency by level of care and symptom burden: closer intervals during active symptoms; 3-6-monthly once stable.

PROGNOSIS

- Chronic pancreatitis is progressive and irreversible; outcomes depend on cause, stage at diagnosis, complications, and treatment adherence.
- Pain may fade in some; others have persistent symptoms.
- Many develop exocrine and endocrine insufficiency over time leading to maldigestion, malnutrition, and diabetes.
- Long-standing disease raises risks of pseudocysts, biliary obstruction, splenic vein thrombosis, osteoporosis, and pancreatic cancer.
- Prognosis worsens with ongoing alcohol or tobacco use, frequent flares, and poor nutrition.
- With lifestyle modification, timely complication management, and multidisciplinary care, good quality of life is achievable.

Key prognostic factors

- Etiology (alcohol-related disease has poorer outcomes without abstinence).
- Severity and frequency of acute exacerbations.
- Timely, adequate nutrition support, pancreatic enzyme therapy, and pain control.
- Early detection and treatment of complications.
- Adherence to lifestyle modification and regular follow-up.
- Bottom line: strict risk-factor control and timely interventions help many patients maintain good functional status despite the chronic course.

Surveillance for Pancreatic Cancer

- Flag patients with high-risk features for surveillance:smoking history, long disease duration, diabetes, obesity, IPMN, PanIN, family history of pancreatic cancer, or pathogenic variants (p16/FAMM, BRCA1/BRCA2, STK11/Peutz-Jeghers, MSH2/MLH1, APC/FAP, PALB2, PRSS1/SPINK1, TP53).
- Start with serum CA 19-9.If elevated or if clinical suspicion persists despite a normal result proceed to imaging.
- Preferred imaging for early neoplastic changes: endoscopic ultrasound (EUS) or MRI/MRCP.
- Aim: detect malignancy earlier, when it is more treatable.

PREVENTION AND HEALTH PROMOTION

Prevention of chronic pancreatitis focuses on eliminating risk factors and promoting lifestyle habits that protect pancreatic health.

Primary prevention

- Absolute abstinence from alcohol and smoking cessation.
- Balanced, low-fat, nutrient-dense diet with adequate protein and micronutrients.
- Prompt diagnosis and treatment of acute pancreatitis to limit progression.
- Manage metabolic risks: hypertriglyceridemia and hypercalcemia.
- Offer genetic counseling when hereditary risk is suspected.

Secondary prevention

- Early detection and treatment of malnutrition, diabetes, osteoporosis, and cancer risk.
- Address causes of recurrent acute pancreatitis promptly to prevent further damage.
- Regular follow-up to adjust pain control, nutrition, and enzyme therapy.

Health promotion and system actions

- Community education on harms of alcohol and tobacco.
- Culturally tailored counseling on diet, medication adherence, and follow-up.
- Use mass media, religious gatherings, and community leaders to amplify messages.
- Train primary healthcare workers to spot early symptoms and risk factors and to refer on time.

PATIENT EDUCATION

- Educate patients and caregivers on disease nature, the importance of abstaining from alcohol and smoking, adherence to PERT and dietary modifications, and recognition of warning signs such as severe pain flare, steatorrhea, weight loss, jaundice, or hyperglycemia.
- Patients should be regularly followed up for appearance of any specific nutrient deficiency, especially deficiency of fat-soluble vitamins, and adequate supplements should be given, if required.

Instructions to the Patient/Caregiver

Do's	Don'ts
Stay abstinent: no alcohol, no tobacco ever.	Don't drink alcohol or use tobacco in any form.
Meals: small, frequent, nutrient-dense, low-fat; drink enough water.	Don't skip enzymes with meals/snacks or "save" doses.
PERT: take enzymes with every meal/snack exactly as prescribed.	Don't self-start high-dose painkillers or opioids.
Medicines: carry an updated list; take on time.	Don't follow very high-fat or fad diets that worsen symptoms.
Track symptoms: keep a daily log of pain (0-10), stool form/ greasiness, weight.	Don't ignore persistent diarrhea, greasy stools, or weight loss.

Follow-ups: attend scheduled visits for labs (glucose/ HbA1c, liver tests), nutrition checks, and imaging when advised.	Don't stop diabetes medicines without medical advice.
Nutrition: ensure adequate protein; use vitamin/mineral supplements if prescribed especially vitamins A, D, E, K, calcium.	Don't repeat imaging/labs at multiple centers without sharing prior reports, carry copies to avoid delays and costs.
Bone health: calcium + vitamin D, safe weight-bearing activity.	
Sick-day rules: continue PERT and diabetes meds; seek care early if you can't keep food down.	
Report early: any new or worsening symptoms, or side effects from medicines.	
When to seek urgent care	
Severe, unrelenting abdominal pain	
Yellow eyes/skin, very dark urine, pale stools	
Fever, chills, or blood in stool/vomit	
Rapid weight loss or new, unexplained weakness	
Recurrent low sugars or very high sugars if diabetic	

REFERENCES

1. Li X, et al. Incidence and prevalence of chronic pancreatitis: systematic analysis for the Global Burden of Disease Study. BMC Gastroenterol. 2024;24:3329.
2. Frost F, et al. Time trends in prevalence of chronic pancreatitis: a population-based study. Gut. 2016;65(11):1831-8.
3. Lee SH, et al. Idiopathic chronic pancreatitis in East Asia: prevalence and clinical characteristics. Pancreatology. 2021;21(5):827-33.
4. Whitcomb DC. Evidence-based clinical practice guidelines for chronic pancreatitis. Gastroenterol Clin North Am. 2022;51(3):599-615.
5. Drewes AM, et al. Chronic pancreatitis. Lancet. 2025;401(10363):130-40.
6. Yadav D, et al. Etiology and pathogenesis of chronic pancreatitis. UpToDate. 2024 [cited 2025 Sep 20]. Available from: https://www.uptodate.com
7. Vanek P, et al. Updates in the management of chronic pancreatitis. Gastroenterol Clin North Am. 2025;54(1):157-74.
8. Patient evaluation and follow-up recommendations for chronic pancreatitis. Clin Gastroenterol Hepatol. 2023;21(7):1560-72.
9. Barry K. Chronic pancreatitis: diagnosis and treatment. Am Fam Physician. 2018;97(6):385-93. Available from: https://www.aafp.org/pubs/afp/issues/2018/0315/p385.html
10. Gardner TB, Adler DG, Forsmark CE, Sauer BG, Taylor JR, Whitcomb DC. ACG clinical guideline: chronic pancreatitis. Am J Gastroenterol. 2020;115(3):322-39.
11. Löhr JM, et al. United European Gastroenterology evidence-based guidelines for the diagnosis and therapy of chronic pancreatitis (HaPanEU). United European Gastroenterol J. 2017;5(2):153-99.
12. Sheth SG, et al. American Society for Gastrointestinal Endoscopy guideline on the role of endoscopy in the management of chronic pancreatitis: summary and recommendations. Gastrointest Endosc. 2024;99(6).