

Nutrition in acute pancreatitis (A.P)

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Aim & Objectives

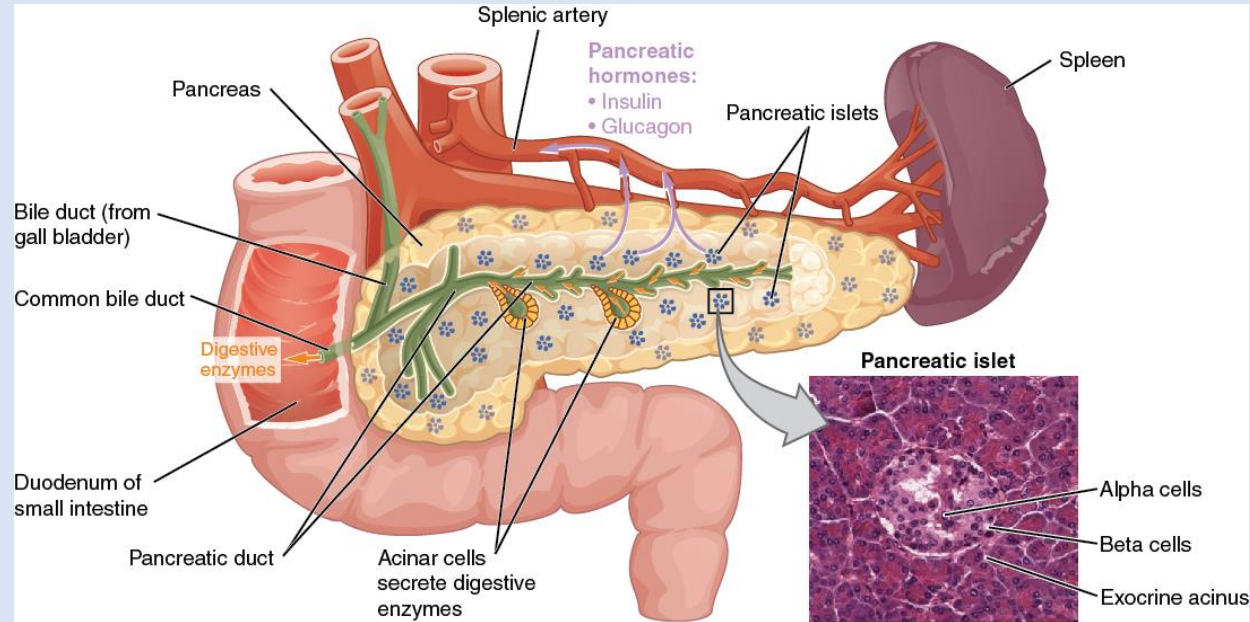
Aim

- To update Dietitians on nutritional management of patients with acute pancreatitis

Objectives

- To provide an overview of acute pancreatitis
- To assist Dietitians in recognising how to assess & manage dietary aspects of pancreatitis

The Pancreas



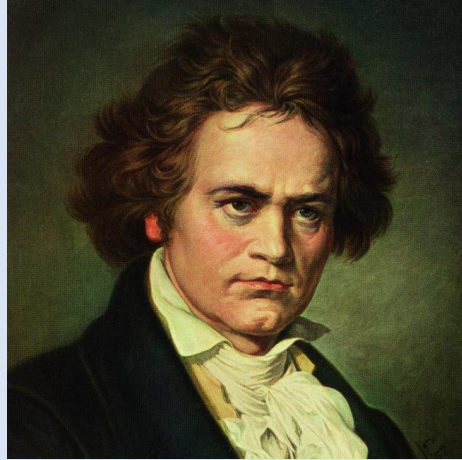
Bing images

Endocrine

- Cells arranged in diffusely distributed nests (islets)
- Only about 1% of weight, higher concentration in tail
- Insulin (anabolic hormone)
- Glucagon (induces hyperglycaemia)

Exocrine

- 95-98% of pancreas per weight
- Acinar, centroacinar, ductal cells
- 2.5L of exocrine fluid per day
- Nutrients in the intestines stimulate exocrine function
- Influenced by caloric content, nutrient composition, physical properties



Acute pancreatitis (AP)

An acute inflammatory process of the pancreas that frequently involves peri-pancreatic tissue and/or remote organ systems

(Atlanta, 2012)

Requires 2 of 3 features

1. Abdo pain suggestive of AP
2. Serum lipase (or amylase) activity
3. Imaging consistent with AP

(revised Atlanta classification, 2016)

Severity in AP

Mild – No organ failure or local/systemic complications

Moderately severe – Transient organ failure or local systemic complications (resolves within 48hrs)

Severe – Persistent organ failure, for more than 48hrs

(revised Atlanta, 2016)

Predicting severity

- Imrie Glasgow score
- APACHE II
- CRP
- CT – severity index

Sub-types

Clinical Aspects

Presentation

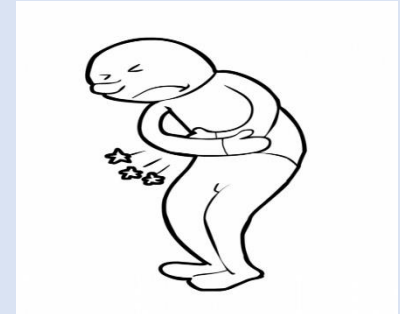
- Abdominal pain - obvious and severe
- Radiates towards back
- Vomiting and diarrhoea
- Shock

Aetiology

- Alcohol & gallstones (80%)
- Metabolic (Trigs)
- Microlithiasis
- Hereditary causes
- Autoimmune pancreatitis
- Duct obstruction (e.g. tumour)
- Medications
- Anatomical anomalies
(NICE, 2018)

Incidence

- Rising
- N.I – 530 cases/year
(NCEPOD, 2016)



Nutrition in AP

Mild AP

- Low mortality, uncomplicated disease
- Patient usually restarts diet within days
- **No benefit to feeding**
 - RCT (NG vs NPO), less abdo pain, better food tolerance in NG group (Petrov 2013)
 - Already malnourished patient?

Controversies in feeding

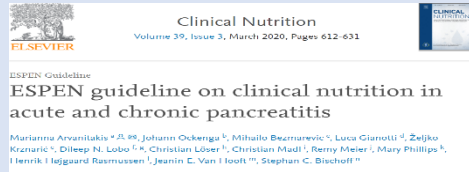
- Timing?
- How to feed?
- Feed types? ESPEN, 2020
- Pancreatic exocrine insufficiency?

Severe AP

- High mortality
- Complications, SIRS, increased metabolic demands
- Higher TEE, catabolic, negative nitrogen balance
- **Feeding considered essential**
- **Considerations**
 - Under-nutrition
 - Alcoholism
 - Obesity

Guidelines

ESPEN



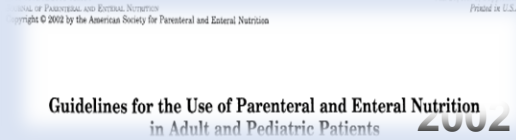
2020

2009

2006

2002

ASPEN



BSG

GUIDELINES

UK guidelines for the management of acute pancreatitis
UK Working Party on Acute Pancreatitis **2005**

Gut 2005;54(Suppl 1):ii1-ii9. doi: 10.1136/gut.2004.057020

INDI

13. Acute Pancreatitis

Abbreviations

AP=acute pancreatitis; BSL= blood sugar levels; ICU=intensive care unit; CT= computed tomography; CRP = C - reactive protein; EER=estimated energy requirement; EN=enteral tube feeding; NJ= naso-jejunal; PN=parenteral nutrition; TG=triglyceride; SIRS=systemic inflammatory response syndrome; MOF/MODS=multi-organ failure/multi-organ dysfunction syndrome; ASPEN=American Society for Parenteral and Enteral Nutrition; ESPEN=European Society for Clinical Nutrition and Metabolism; NICE=National Institute for Health and Clinical Excellence (UK); PENG=the Parenteral and Enteral Nutrition Group of the British Dietetic Association.

13.1 Objectives

1. To provide guidance on the assessment and estimation of nutritional requirements of patients with acute pancreatitis.

PENG



2018 &
2013

NICE



2018

NICE National Institute for Health and Care Excellence



NICE guideline

Published: 5 September 2018 [nice.org.uk/guidance/ng104](https://www.nice.org.uk/guidance/ng104)



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ESPEN Guideline

ESPEN guideline on clinical nutrition in acute and chronic pancreatitis

Marianna Arvanitakis ^a , Johann Ockenga ^b, Mihailo Bezmarevic ^c, Luca Gianotti ^d, Željko Krznarić ^e, Dileep N. Lobo ^{f, g}, Christian Löser ^h, Christian Madl ⁱ, Remy Meier ^j, Mary Phillips ^k, Henrik Højgaard Rasmussen ^l, Jeanin E. Van Hooft ^m, Stephan C. Bischoff ⁿ

When to feed?

- Early oral Vs delayed oral?
- Early EN Vs on-demand EN?
- Early EN Vs delayed EN?



When to feed?

- Ensure no *nil by mouth* & do not have food withheld unless there is a clear reason (NICE, 2018)
- Offer EN to anyone with severe or moderately severe A.P. - Start within 72 hours of presentation & aim to meet nutritional requirements A.S.A.P (NICE, 2018, ESPEN 2020, Rec B 24-72 hours)
- Other considerations: lay members & Committee (NICE, 2018)

Which route: EN or PN?

PN: quick, easy to start, well-tolerated, expensive

EN: safe, cheaper, likely better health outcomes

EN

- Safest first line
- Lower mortality
- Reduced pancreatic & systemic infections
- Lower hospital LOS
- Less severe adverse incident
- Less Sx interventions required

PN

- Where EN not possible or tolerated, central route
- Do not give lipid-containing PN if Trigs >12 mmol/L (ESPEN, 2009)

NICE 2018

- EN should be offered to anyone with moderate / severe A.P.
- Offer PN only if EN has failed or is Contra-indicated

ESPEN 2020

- With AP pts & inability to feed orally EN shall be preferred to PN (Rec A)
- PN should be administered when EN not tolerated / unable to tolerate targeted nutritional requirements (GPP)

Immuno-nutrition

Glutamine

- Should be infused where patients receiving PN. If PN indicated, consider parenteral glutamine
- No recommendations for enteral glutamine



Original article

Glutamine supplementation in acute pancreatitis: A meta-analysis of randomized controlled trials

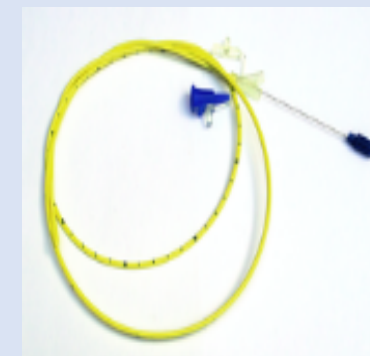
Varsha Asrani^{a,b}, Wai Keat Chang^a, Zhiyong Dong^c, Gil Hardy^d, John A. Windsor^a, Maxim S. Petrov^{a,*}

Meta-analysis of RCTs (12); n=505

Which EN route – NG / NJ?

EN route

- Majority of studies low or very low quality, imprecision & bias
- Jejunal feeding shown to be safe & NOT less effective than PN
- NO evidence to support belief that NG feeding is inappropriate
- Evidence debates benefits & harms, outcomes, quality of the evidence



Bing images

NICE 2018

- Not specified
- Clinical judgement & case-by-case basis

ESPEN 2020 (Rec B)

- NG first
- NJ in case of digestive intolerance

Type of EN

- Standard polymeric feed (ESPEN 2020, Rec A)
- Peptide feeds may ↓ but may not remove the need for PERT
- Both polymeric & semi-elemental formulas feasible, safe & well tolerated: small RCT, Tiengou et al. 2006 VS meta-analysis studies that show no difference between formulas but in severe AP with malabsorption, semi-elemental may be of interest.
- Lower feed rates over long periods may decrease the risk of overwhelming digestive capacity

	Kcal / 1000mls, Protein(g) /1000ml	Protein source	Fat Source		Osmolality Mosm/kg
			% MCT		
Peptamen (Nestle, UK)	1000 kcal 40g	Peptide	70.3%		265
Peptamen HN (Nestle, UK)	1330 kcal 66g	Peptide	69.4%		430
Vital 1.5 (Abbott, UK)	1501 kcal 67.5g	Peptide	63.6%		630
Perative (Abbott, UK)	1309kcal 67g	Peptide	37%		385
Survimed OPD (Fresenius, UK)	1000 kcal 45g	Peptide	51.4%		350
Survimed OPD HN (Fresenius, UK)	1330 kcal 67g	Peptide	51.9%		460
Nutrison Peptisorb (Nutricia, UK)	1000 kcal 40g	Peptide	47%		535
Nutrison MCT (Nutricia, UK)	1000 kcal 50g	Peptide	60.6%		315
Emsogen (Nutricia, UK)	880 kcal 25g	Amino acid	83%		Depends on dilution used
Elemental 028 Extra Liquid (Nutricia, UK)	860 kcal 25g	Amino acid	35%		725

Pancreatic Exocrine Insufficiency (PEI)

Deficiency in, or absence of, the 3 major groups of pancreatic enzymes: amylase, protease and lipase

- Prevent normal breakdown and digestion of food leading to nutrient **malabsorption**
- Lipase particularly vulnerable, so fat malabsorption occurs first and may be most evident
- Steatorrhoea becomes apparent when >90% function lost¹

Signs and symptoms of PEI

Steatorrhoea (pale, floating, oily stool)

Loose, watery stool

Undigested food in stools

Post-prandial abdominal pain

Nausea / colicky abdominal pain

Gastro-oesophageal reflux

Bloating / food intolerance

Malnutrition

Weight loss

Vitamin deficiencies (especially A, D, E, K)

Hypoglycaemia in diabetes

} **Late
symptoms**

PENG, British Dietetic Association . A Pocket Guide to Clinical Nutrition. 4th Edition. Chapter authors (Pancreatic Disease in Adults): Philips M, McGeeney L, Duggan S, Arregui-Fresnada I.

Use of PERT in A.P

- Should not be supplemented generally
- EXCEPT if obvious PEI (ESPEN, 2020)
- In BHSCT if pt unable to take PERT orally & has enteral feeding tube – tend to recommend Pancrex V powder 1-2g, 2hourly with feed (Pancrex V capsules are another option)
- If in doubt / need advice contact specialist RD

Other issues

Re-introducing diet

Following mild AP

- Once pain controlled, as soon as clinically tolerated, allow to start eating (ESPEN Rec A)
- Low fat, soft diet (ESPEN Rec A)
- Revert to oral fluids if pain worsens on eating

Following severe AP

- Insufficient evidence re: optimal timing / type of diet
- Start with small amounts CHO/protein-rich foods.
- Careful reintroduction of fat x3-6 days.
- Restart 'normal' diet.
- PERT may be required for some.
- Counsel re: alcohol avoidance.

Other Issues

Probiotics

Considered unsafe and are *not* recommended in severe AP due to risk of gut ischaemia and higher mortality (ESPEN, 2020)

Post D/C

- 20-50% develop new onset DM
- >40% ongoing abdominal symptoms
- 3-13% incidence of chronic pancreatitis
- “post traumatic stress” effects of prolonged ITU stay

NCEPOD “Treat the cause” A.P Report 2016

- 215 NHS hospitals England, Scotland & NI
- 712 questionnaires & casenotes over 6months, 2014
- Overall Mx of nutrition considered adequate in only 85% of cases & by 77% of clinicians
- NST in place: 87.5%
- Nutritional screening: 67.4%
- Referrals to dietitian & NST: 39%
- Supplemental nutrition considered: 43.2% (further 9% should have)

18 recommendations (1 nutrition related)

- ALL pts admitted with A.P should be assessed for risk of malnutrition (MUST) & provides basis for referral to dietitian or a NST & subsequent timely & adequate nutrition support (also supported by ESEPN, 2020, Rec B)
- Regional T&F Group, PHA
- Issues raised re: accuracy of MUST audits being reported
- Paper submitted re: lack of NST in regional HPB service

Case-study

- 53yr old, male, T/F from other hospital

Diagnosis: necrotising acute pancreatitis, developed pancreatic pseudo-cyst, for drainage in MIH.

PMHx: autism, DM secondary to pancreatitis

SHx: lives with Mum, non-smoker, no alcohol

DHx: risperidone

Usual wt: 90kg, BMI 29.4kg/m²

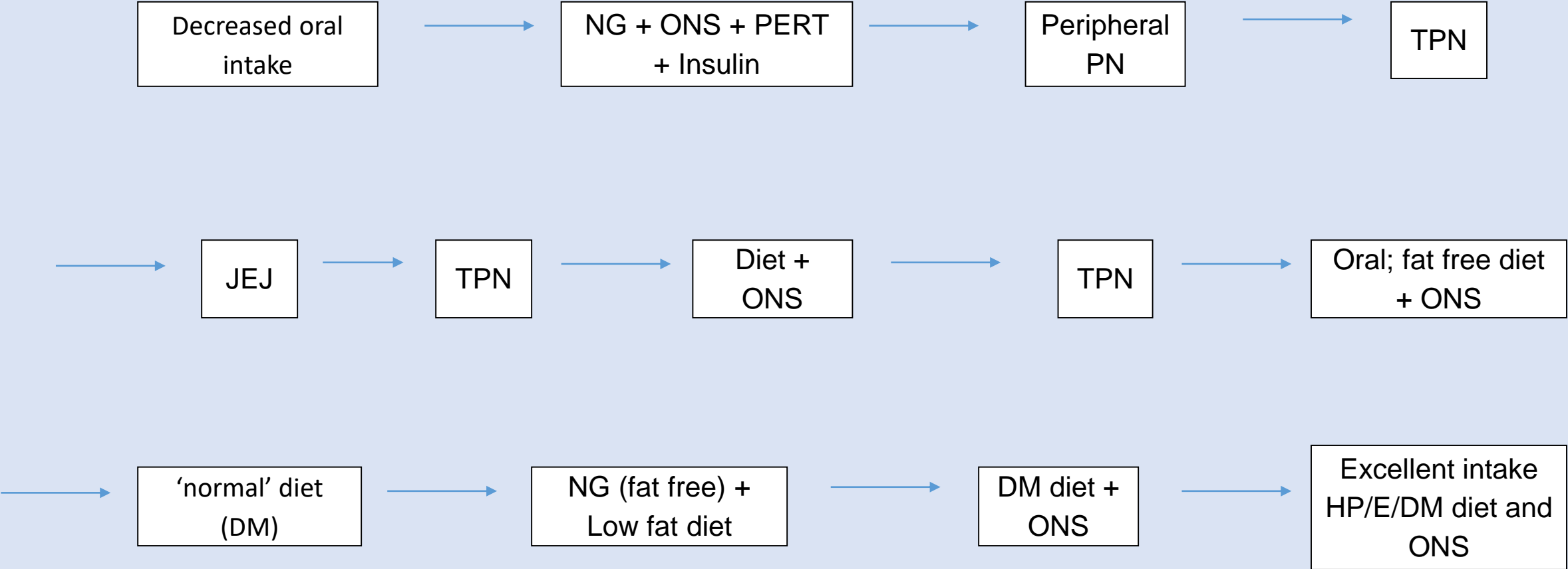
Prior to transfer:

- 3 month admission, had been NG fed for a period until dietary intake & ONS (Procal shot) established.
- CREON started (75,000iu with meals & 25,000iu with snacks).
- 12.7kg wt loss in ~2.5months (14.1% wt loss). BMI 25kg/m²

On transfer:

- c/o insulin by DSN.
- Poor oral intake due to intermittent N&V post drainage & developed HAP.
- Need for EN raised & risk of re-feeding highlighted however T/F back to referring hospital & care transferred to local RD.

Case-study 1



Take home messages

- Complex, many prolonged stays
- Roller-coaster / close monitoring with changing nutritional needs
- Aggressive nutritional support needed
- Polymeric / Semi-elemental feed
- Monitor need for PERT
- High risk of DM
- Contact specialist RD for advice if needed

Thank-you for listening!