Belfast Health and Social Care Trust

Nutrition in acute pancreatitis (A.P)

Karen Robinson
21st Nov 2022
Advanced Practitioner Dietitian – BHSCT
Karena.robinson@belfasttrust.hscni.net

Acknowledgements:

Sinead Duggan, Trinity College Dublin; Linda Crozier, BHSCT; Oonagh Griffin, SVUH , Dublin; Mary Phillips; Royal Surrey

Belfast Health and Social Care Trust

Aim & Objectives

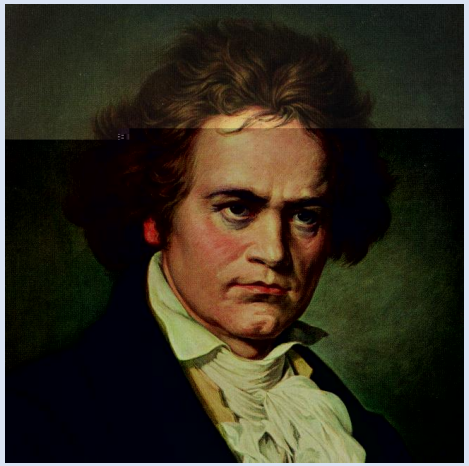
Aim

- To update Dietitians on nutritional management of patients with A.P

Objectives

- To provide an overview of A.P
- To assist Dietitians in recognising how to assess & manage dietary aspects of A.P

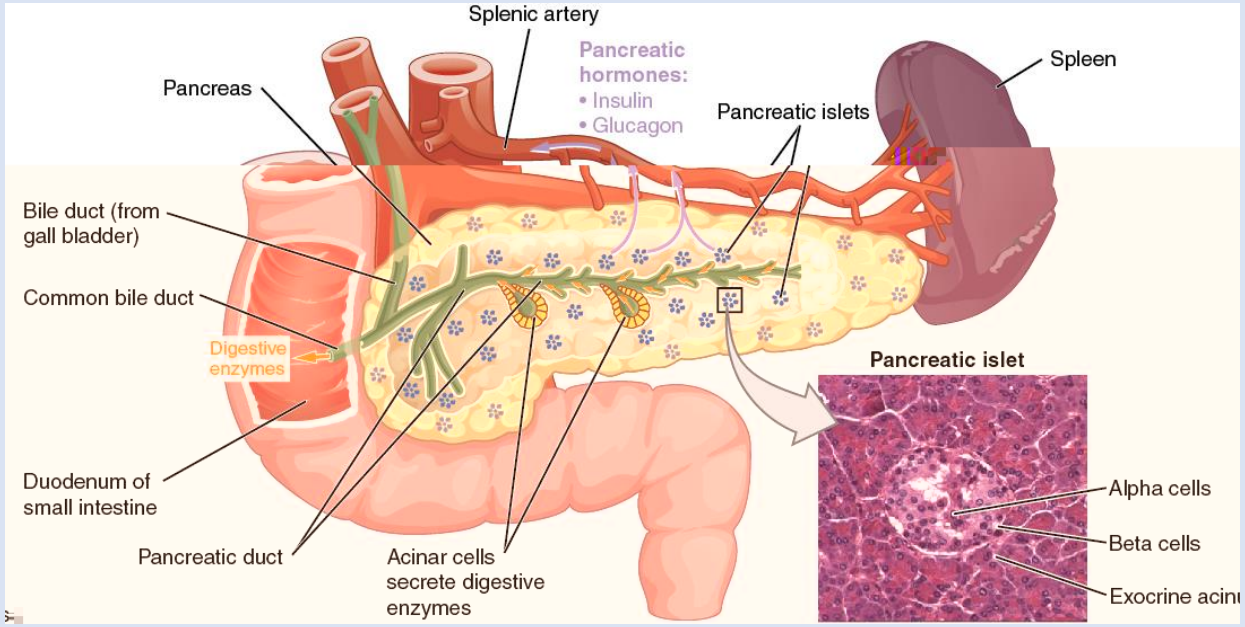
Belfast Health and Social Care Trust



Bing images

Belfast Health and Social Care Trust

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

Belfast Health and Social Care Trust

Acute pancreatitis (A.P)

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 A.P
2. Serum lipase (or amylase) activity
3. Imaging consistent with A.P

(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

Belfast Health and Social Care Trust

Clinical Aspects

Presentation

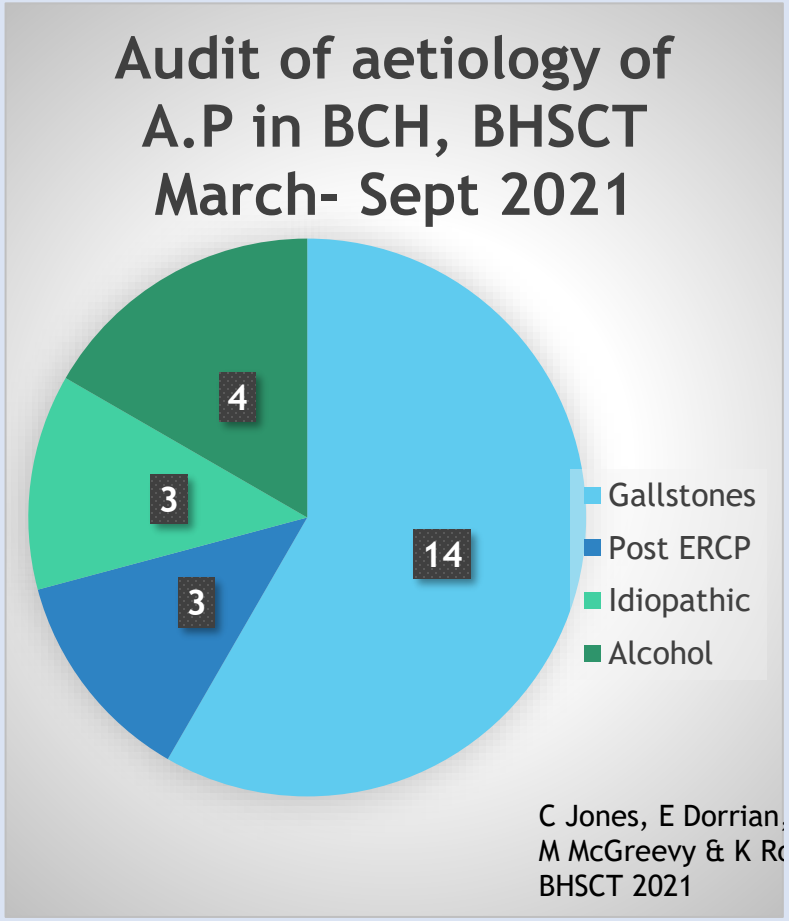
- Abdominal pain - obvious and severe
- Radiates towards back
- Vomiting and diarrhoea
- Shock

Aetiology

- Alcohol & gallstones (80%)
- Post ERCP
- 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)



Belfast Health and Social Care Trust

Nutrition in A.P

Mild A.P

- Low mortality, uncomplicated disease
- Patient usually re-starts 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?
- Pancreatic exocrine insufficiency?

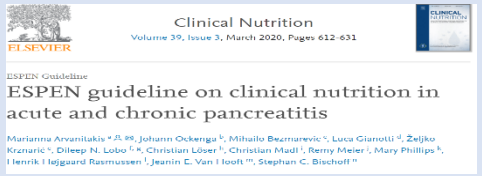
Severe A.P

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

Belfast Health and Social Care Trust

Guidelines

ESPEN


Clinical Nutrition
Volume 39, Issue 3, March 2020, Pages 612-631
ESPEN guideline on clinical nutrition in acute and chronic pancreatitis

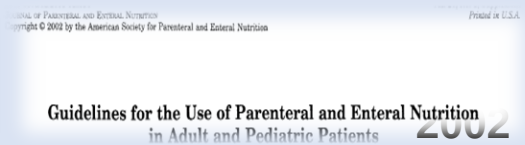
2020

2009

2006

2002

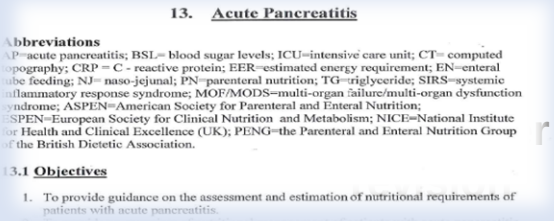
ASPEN


Guidelines for the Use of Parenteral and Enteral Nutrition in Adult and Pediatric Patients 2002

BSG


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

INDI


13. Acute Pancreatitis

Abbreviations

13.1 Objectives

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

PENG

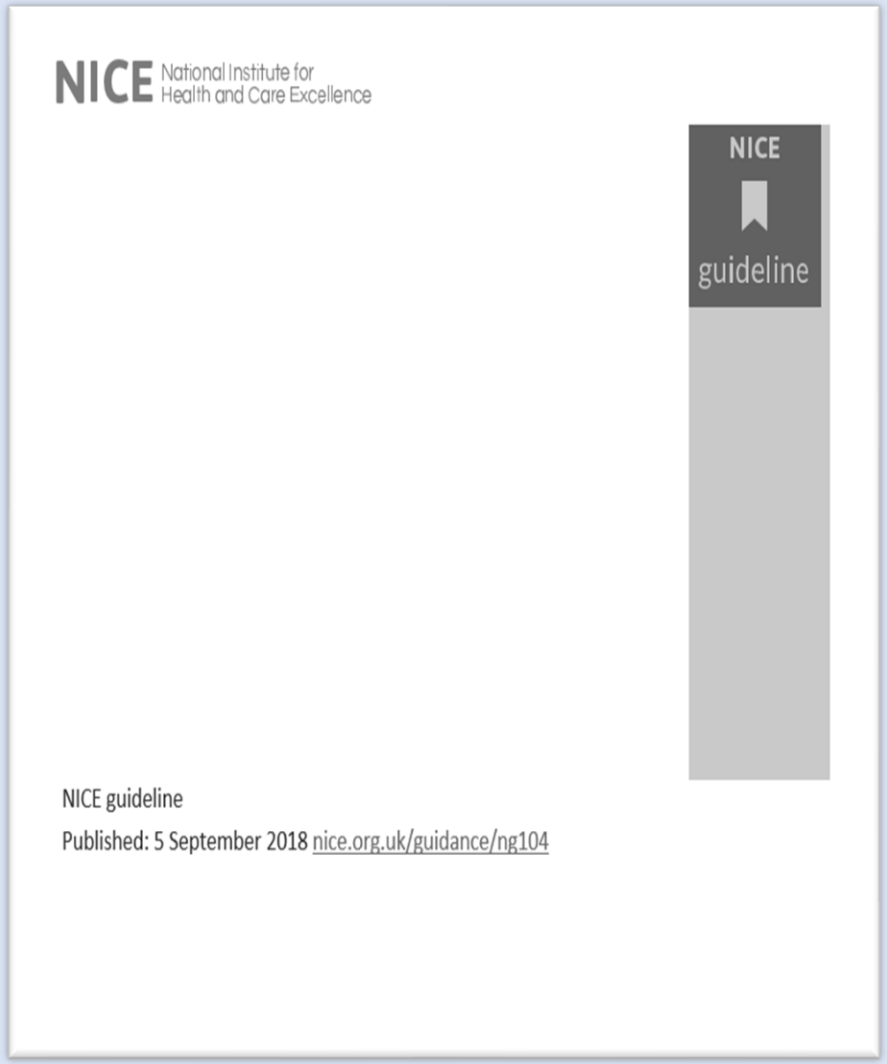
2018 & 2013

NICE


NICE guideline
Published: 5 September 2018 nice.org.uk/guidance/ng104

2018

Belfast Health and Social Care Trust



ELSEVIER

Clinical Nutrition

Volume 39, Issue 3, March 2020, Pages 612-631

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]

BMJ Open Gastroenterology

Consensus for the management of pancreatic exocrine insufficiency: UK practical guidelines

Mary E Phillips ,[1] Andrew D Hopper,[2] John S Leeds ,[3] Keith J Roberts ,[4] Laura McGeeney,[5] Sinead N Duggan,[6] Rajesh Kumar[7]

To cite: Phillips ME, Hopper AD, Leeds JS, *et al*. Consensus for the management of pancreatic exocrine insufficiency: UK practical guidelines. *BMJ Open Gastro* 2021;**8**:e000643. doi:10.1136/bmjgast-2021-000643

► Additional supplemental material is published online only. To view, please visit the journal online (http://dx.doi.org/10.1136/bmjgast-2021-000643).

Received 9 March 2021
Accepted 8 May 2021

ABSTRACT

Introduction Pancreatic exocrine insufficiency is a finding in many conditions, predominantly affecting those with chronic pancreatitis, pancreatic cancer and acute necrotising pancreatitis. Patients with pancreatic exocrine insufficiency can experience gastrointestinal symptoms, maldigestion, malnutrition and adverse effects on quality of life and even survival.

There is a need for readily accessible, pragmatic advice for healthcare professionals on the management of pancreatic exocrine insufficiency.

Methods and analysis A review of the literature was conducted by a multidisciplinary panel of experts in pancreatology, and recommendations for clinical practice were produced and the strength of the evidence graded. Consensus voting by 48 pancreatic specialists from across the UK took place at the 2019 Annual Meeting of the Pancreatic Society of Great Britain and Ireland annual scientific meeting.

Results Recommendations for clinical practice in the diagnosis, initial management, patient education and long term follow up were developed. All recommendations achieved over 85% consensus and are included within these comprehensive guidelines.

with improved survival and quality of life (QoL) in patients with PEI.[8–10]

PEI may be underdiagnosed and undertreated in the UK, as demonstrated in other European countries.[11] Patient support groups report management of PEI as the most common concern raised on their patient helpline (Pancreatic Cancer UK, 2015), and 'difficulty in managing GI problems, diet and digestion' are documented as the primary unmet need in patients with pancreatic cancer (PC).[12] In addition, patients with chronic pancreatitis (CP) feel unsupported by healthcare professionals (HCPs) in the management of PEI (Pancreatitis Supporters Network, 2015). Consequently, there is a need for readily accessible, pragmatic advice for both specialist and non-specialist HCPs. The aim of this article is to provide evidence-based guidance on the diagnosis and management of PEI, including differential diagnosis and follow-up. This article does not make detailed recommendations regarding the management of cystic fibrosis (CF) as this is

Belfast Health and Social Care Trust

Timing – when to feed?

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

Poll Questions –timing - when to feed?

Q1. When should oral diet be offered for a pt with acute pancreatitis (mild-moderate)?

- A) as soon as clinically tolerated
- B) within 24hours
- C) within 48hours
- D) within 72hours

Q2. When should EN be initiated for pts with moderately severe A.P in case of intolerance to oral intake?

- A) within 24hours
- B) within 48hours
- C) within 72hours
- D) within 1 week

Belfast Health and Social Care Trust

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 (& not tolerating oral) - 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)

Belfast Health and Social Care Trust

How to feed -which route?

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

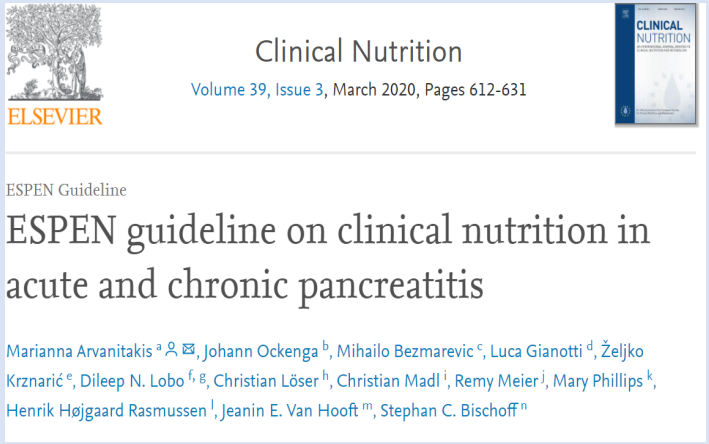
- With A.P pts & inability to feed orally EN shall be preferred to PN (Rec A)
- PN should be administered when EN not tolerated / unable to tolerate targeted nutritional requirements (GPP)

Belfast Health and Social Care Trust

Immuno-nutrition

Glutamine

- 0.2g/kg/day glutamine added to PN is indicated (GRADE B evidence), otherwise no role
- Meta-analyses of RCTs show reduced mortality rate in moderate pancreatitis, reduced complications and shorter length of stay. No data comparing optimal dose.
- No recommendations for enteral glutamine



Poll Question – which route to feed?

Q3. A 50 year old male is day 3 with moderately severe A.P. He has ongoing abdominal pain and nausea & is not meeting nutritional requirements orally (diet & ONS). What route of EN would you suggest?

- A) NG (nasogastric)
- B) NJ (nasojejunal)
- C) Either

Belfast Health and Social Care Trust

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

Belfast Health and Social Care Trust

Type of feeds

- Standard polymeric feed (ESPEN 2020, Rec A)
- EN should be peptide & MCT based (Phillips *et al.* 2021)
- 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

Belfast Health and Social Care Trust

	Kcal / 1000mls, Protein(g) /1000ml	Protein source	Fat Source % MCT	Osmolality Mosm/kg
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

Table adapted from Phillips, 2012

Pancreatic Exocrine Insufficiency (PEI)

- Definition: a reduction of pancreatic exocrine activity in the intestine at a level that prevents normal digestion (Hoffmeister *et al.* 2015; Toouli *et al*. 2010)

- ~ 30 enzymes produced by pancreas, focus on 3

- Amylase - CHO
- Protease (trypsin) - protein
- Lipase - fat

- Degree of PEI correlates with disease severity (Dumsay *et al.* 2004)

Belfast Health and Social Care Trust

Signs and symptoms of PEI

Steatorrhoea (pale, floating, oily stool)

Loose, watery stool

Undigested food in stools

Late symptoms

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

PENG, British Dietetic Association, A Pocket Guide to Clinical Nutrition (2018), 5th Edition. Table 19.7 Chapter authors (Pancreatic disease in adults): Philips, M; Freeman, K; McGeeney, L; Griffin, O; Dann, S.

Belfast Health and Social Care Trust

Use of PERT in A.P

- Should not be supplemented generally EXCEPT if obvious PEI (ESPEN, 2020)
- Likely high benefit in severe necrotising pancreatitis (Phillips *et al.* 2021)
- Peptide feeds require less PERT to achieve complete lipolysis (Phillips *et al.* 2021) but may not remove the need for PERT

- In BHSCT if pt unable to take PERT orally & has enteral feeding tube – tend to recommend powder form of PERT, 2hourly with feed
- If in doubt / need advice contact specialist RD

Belfast Health and Social Care Trust

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.

Belfast Health and Social Care Trust

Other Issues

- **Probiotics**

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

- **Nutritional Screening**

ALL patients with A.P should be screened (ESPEN, 2020 Grade B; NCEPOD, 2016)

Those with predicted severe A.P should always be considered at nutritional risk (ESPEN, 2020, Grade B;

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

Hasibeder *et al.* 2009

Belfast Health and Social Care Trust

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

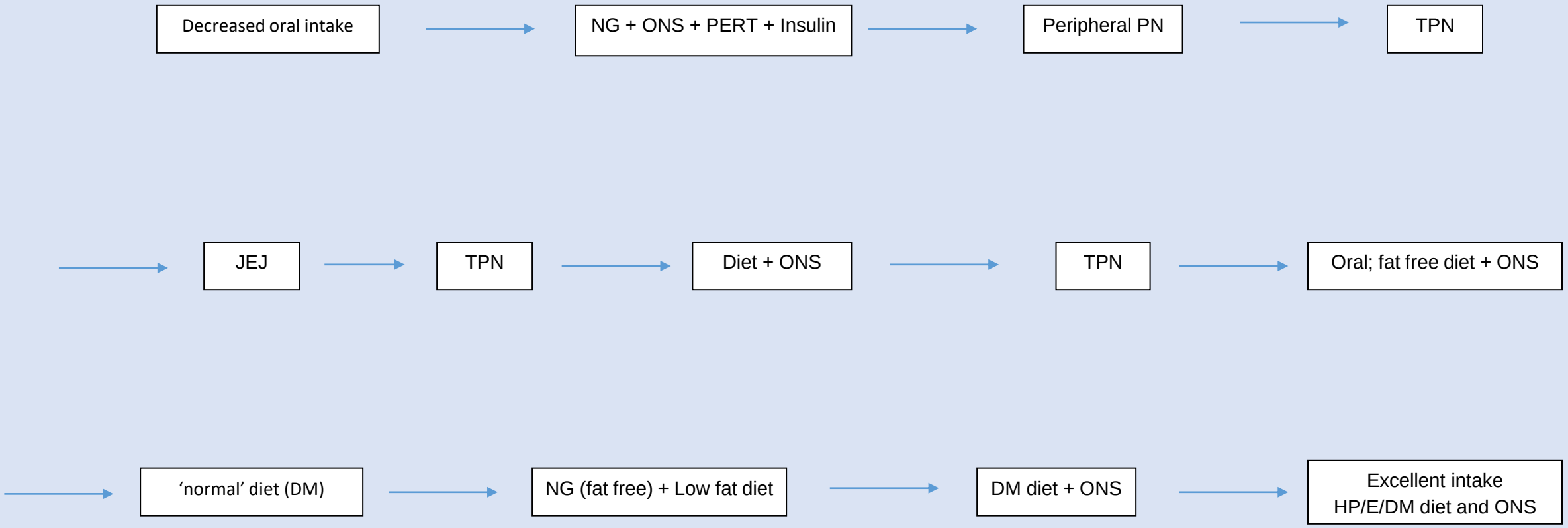
SHx: lives with Mum, non-smoker, no alcohol

DHx: risperidone

***Usual wt*:** 90kg, BMI 29.4kg/m2

Belfast Health and Social Care Trust

Case-study 1



Belfast Health and Social Care Trust

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

Belfast Health and Social Care Trust

Thank-you for listening!