Irish Society for Parenteral & Enteral Nutrition

ISPEN Study Day 7th January 2011

Carmel O'Hanlon, Clinical Specialist Dietitian, Beaumont Hospital

Discharging to Community on Home Artificial Nutrition Support

Home Enteral Nutrition

Indications/prevalence
Access
Funding

Incidence & prevalence

McNamara et al, 2001

- HEN becoming increasingly common.
- Estimated to be 700 patients on HEN in Ireland in 2001.

ESPEN-HAN Survey *(Clinical Nutrition* 2003; 22:261-266)

- Survey of 23 centres: Belgium, Denmark, France Germany, Italy, Poland, Spain, UK
- Newly registered patients over 1 year: 1397.
- Incidence: 163 patients per million inhabitants per year.

Home EN: Indications

NICE Guidelines 2006

- Consider enteral tube feeding in malnourished or patients at risk of malnutrition who have inadequate or unsafe oral intake and a functional GI tract.

Tube	Comment
Fine bore NG/ND/NJ	Should be changed every 6 weeks, or per manufacturer's recommendations. Check tube position regularly.
PEG	Inserted in endoscopy. For longer-term (>4-6 weeks) total/ supplemental EN. Early replacement if excessive wear or damage.
RIG	Low profile – sit flush at skin level. Inserted in radiology by radiologist. Use for patients: unsuitable for endoscopy; require low profile device; agitated patients.
Needle catheter jejunostomy	Use where post-pyloric access is required. Placed at time of laparotomy.
Percutaneous or Fluoroscopic gastrostomy with jejunal extension	Place through pre-existing gastrostomy stoma. Double lumen tubes are available (to decompress stomach and feed into jejunum).

MDT decision made to send patient home on enteral tube feeding

Is the patient is ready for home?

Yes

Apply for funding of feed and equipment

Pre-discharge education and training

Communicate with relevant stakeholders

Provide patient with discharge information pack, feed and equipment

Discharge management and monitoring

Patient on GMS going Home on Enteral Feeding

Apply to relevant budget holder for funding
e.g. Area Administrator; Appliance Officer
or General Manager in Appliance Office

↓

Discuss with enteral feeding company or PHN depending on local policy regarding collection/delivery of plastics

↓

PHN will need to order plastics every month

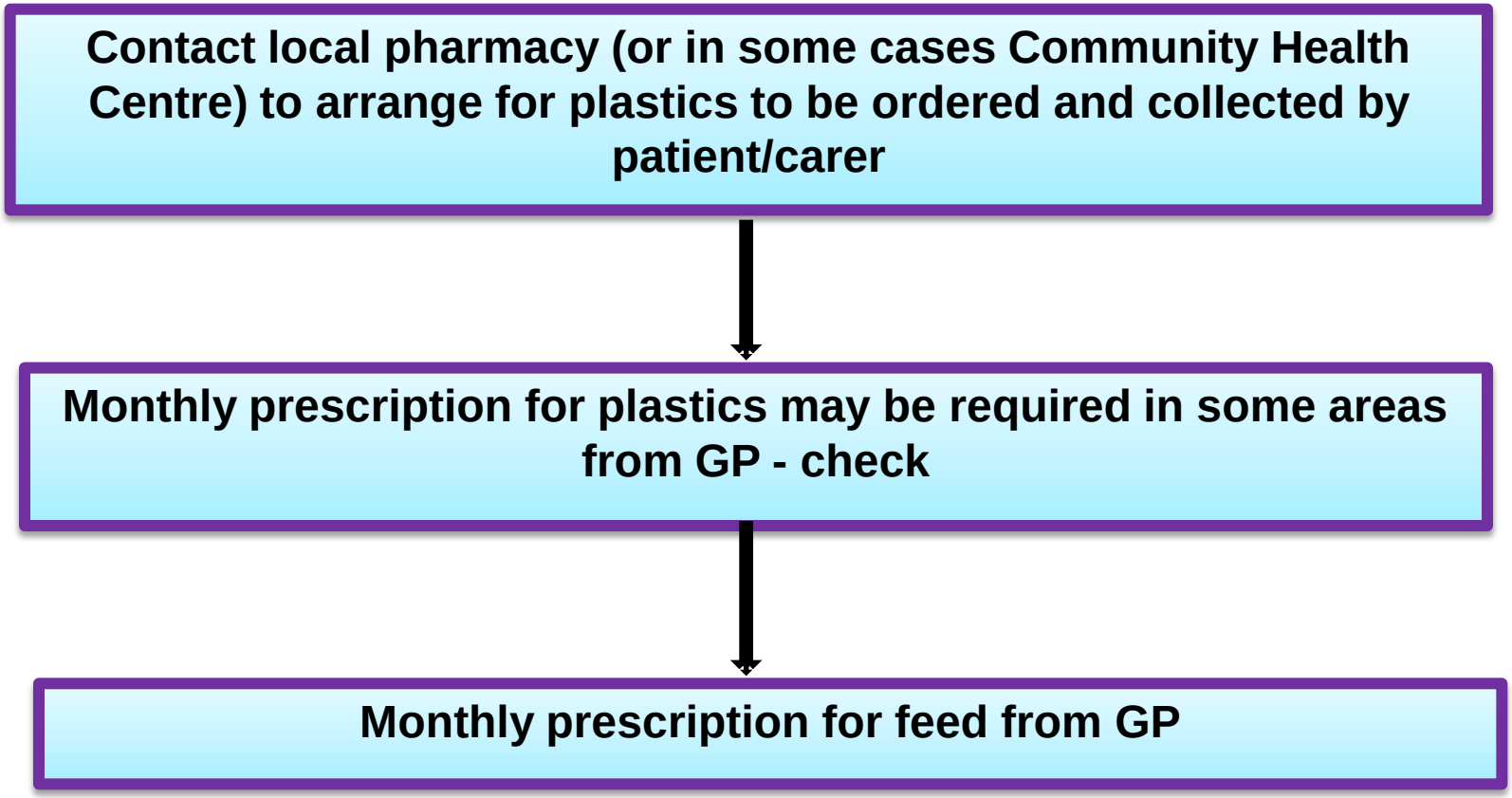
↓

Check the feed is GMS listed

↓

Patient needs to get monthly prescription for feed from GP

Patient on Long Term Illness Scheme going Home on Enteral Feeding



Patient on Drugs Payment Scheme going Home on Enteral Feeding

Apply to local Director of Community Care for funding for plastics

Patient should not have to pay any more than 120 Euro per calender month

Clarify if equipment will be delivered or collected
(usually from local health centre)

Check that the feed is covered by DPS

For further information check HEN Resource Pack

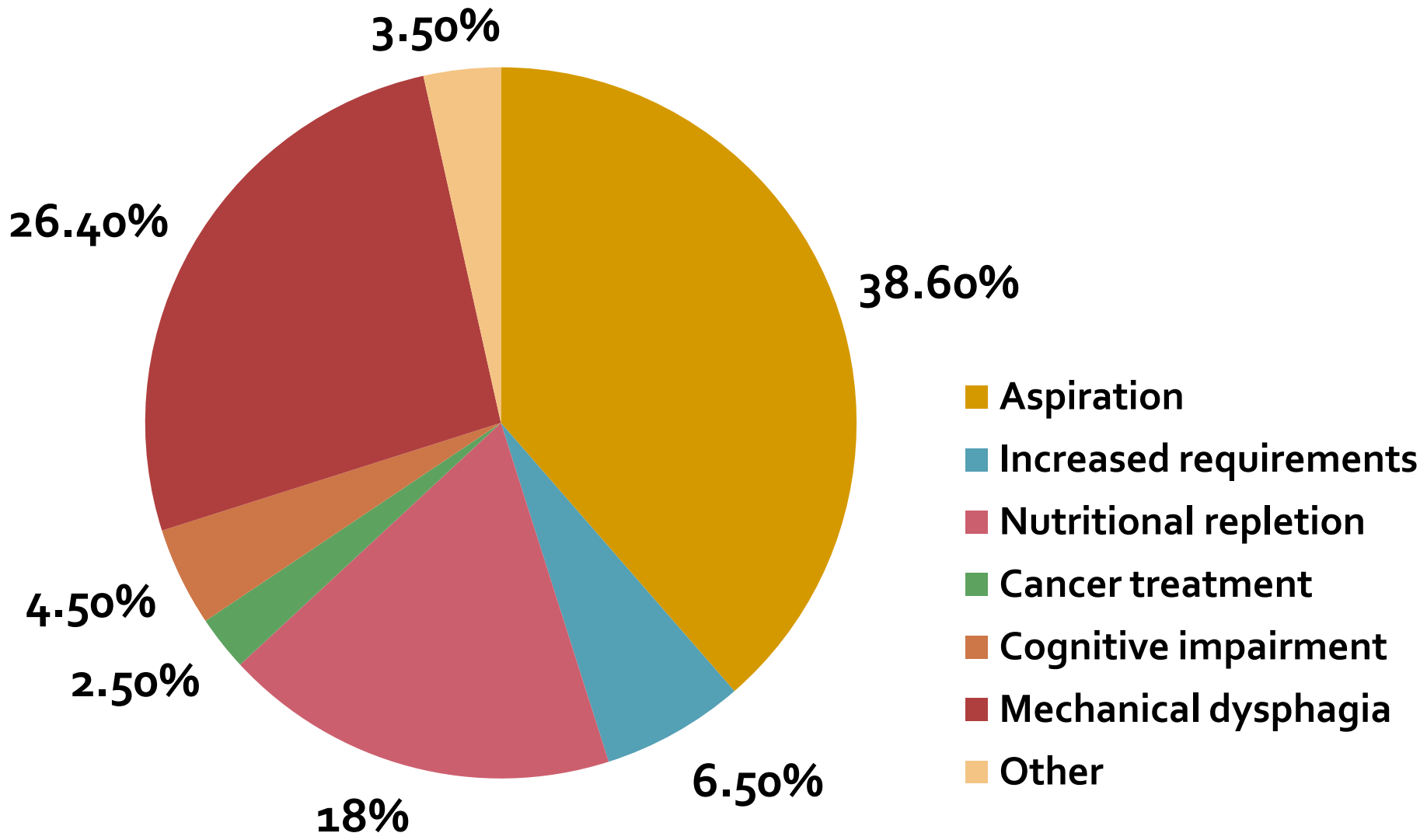
- INDI's HEN Resource Pack 2007
- http://www.indi.ie/docs/441_HEN_Resource_Pack_May_07.pdf

The Beaumont Hospital HEN Experience

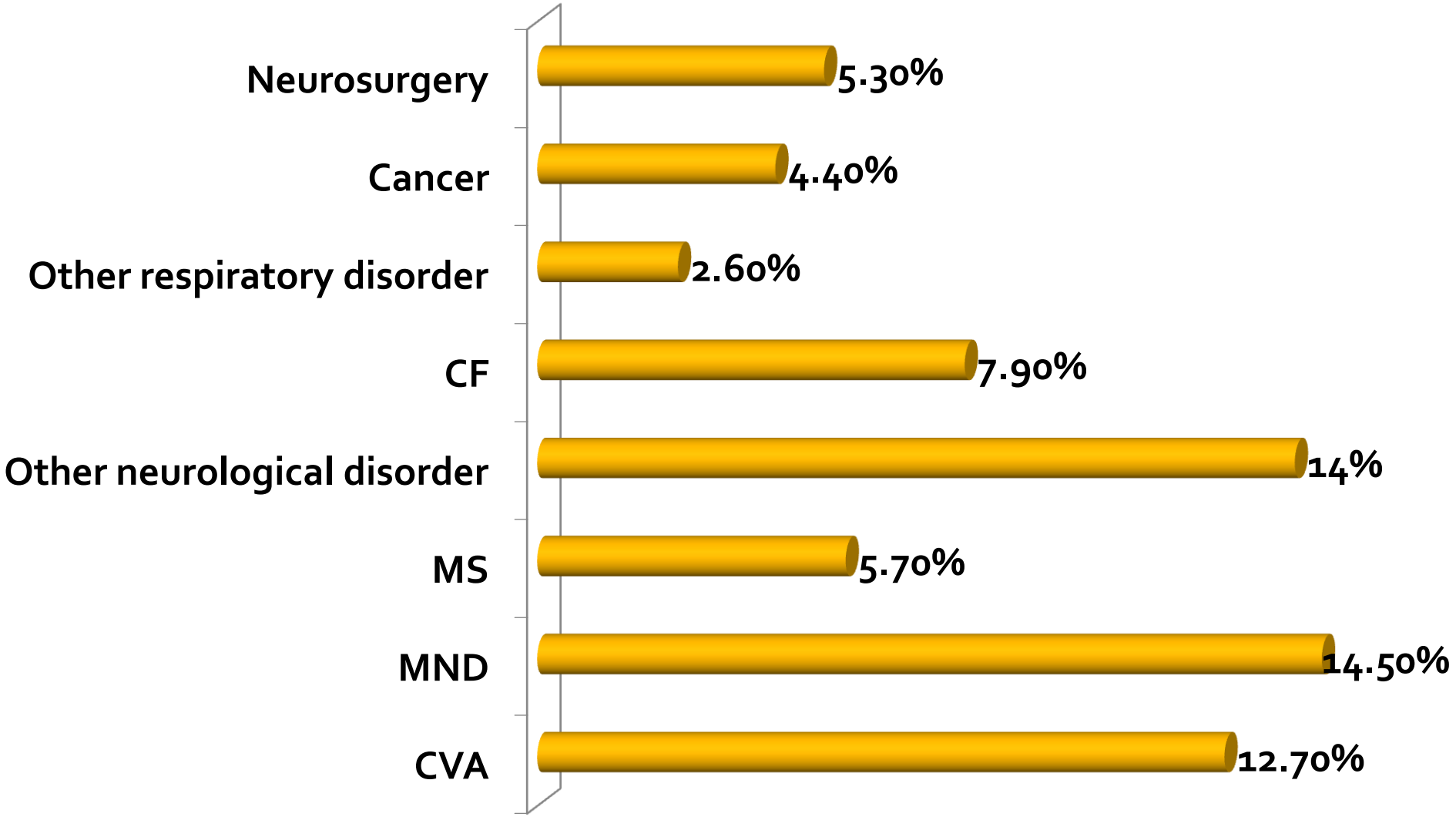
Beaumont HEN Database
from 2006

- Active Cases (November 2010): n=228
  - n=134 (58.8%) domiciliary home
  - n=94 (41.2%) nursing home
- Total registered since 2006: n=324

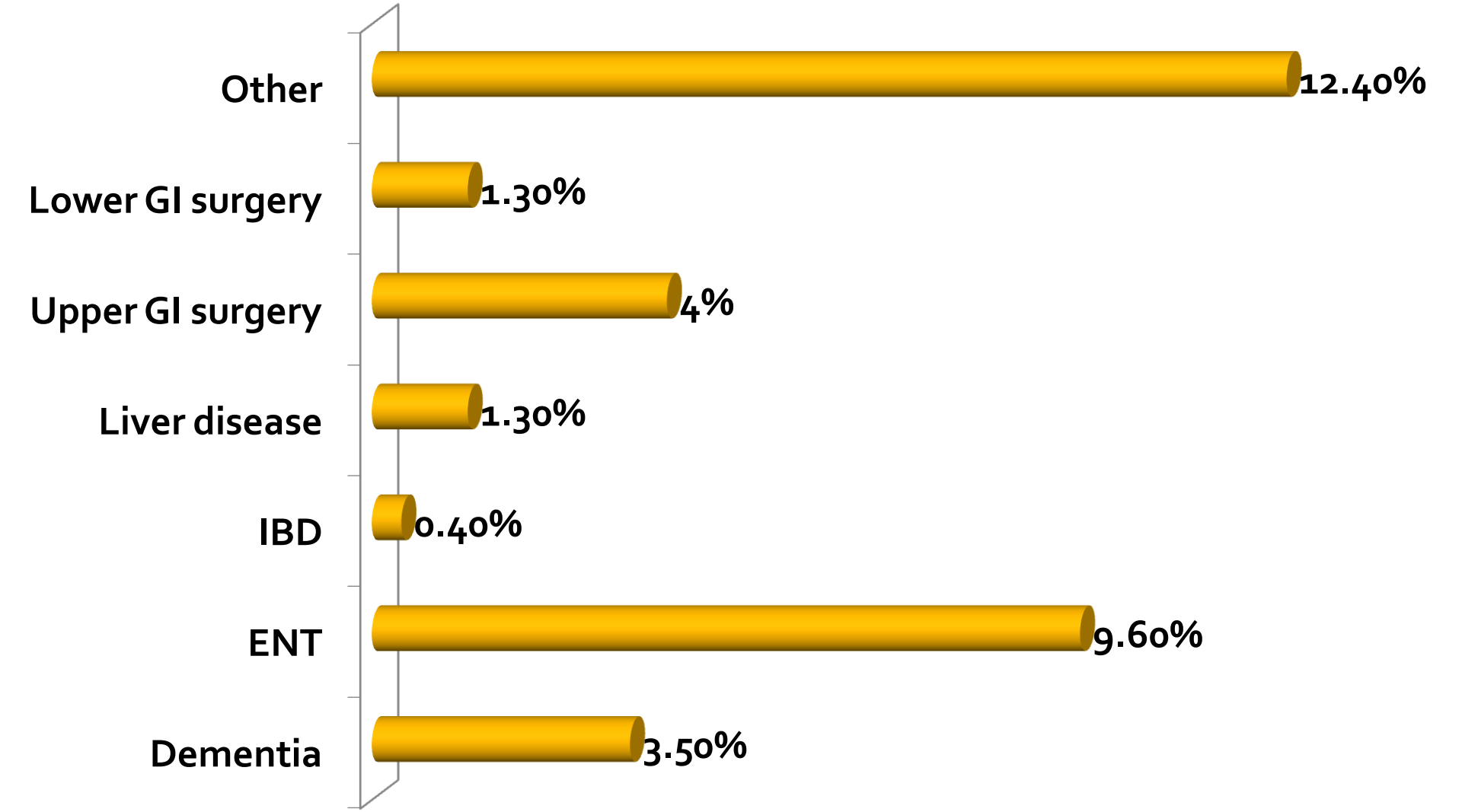
Beaumont HEN indications



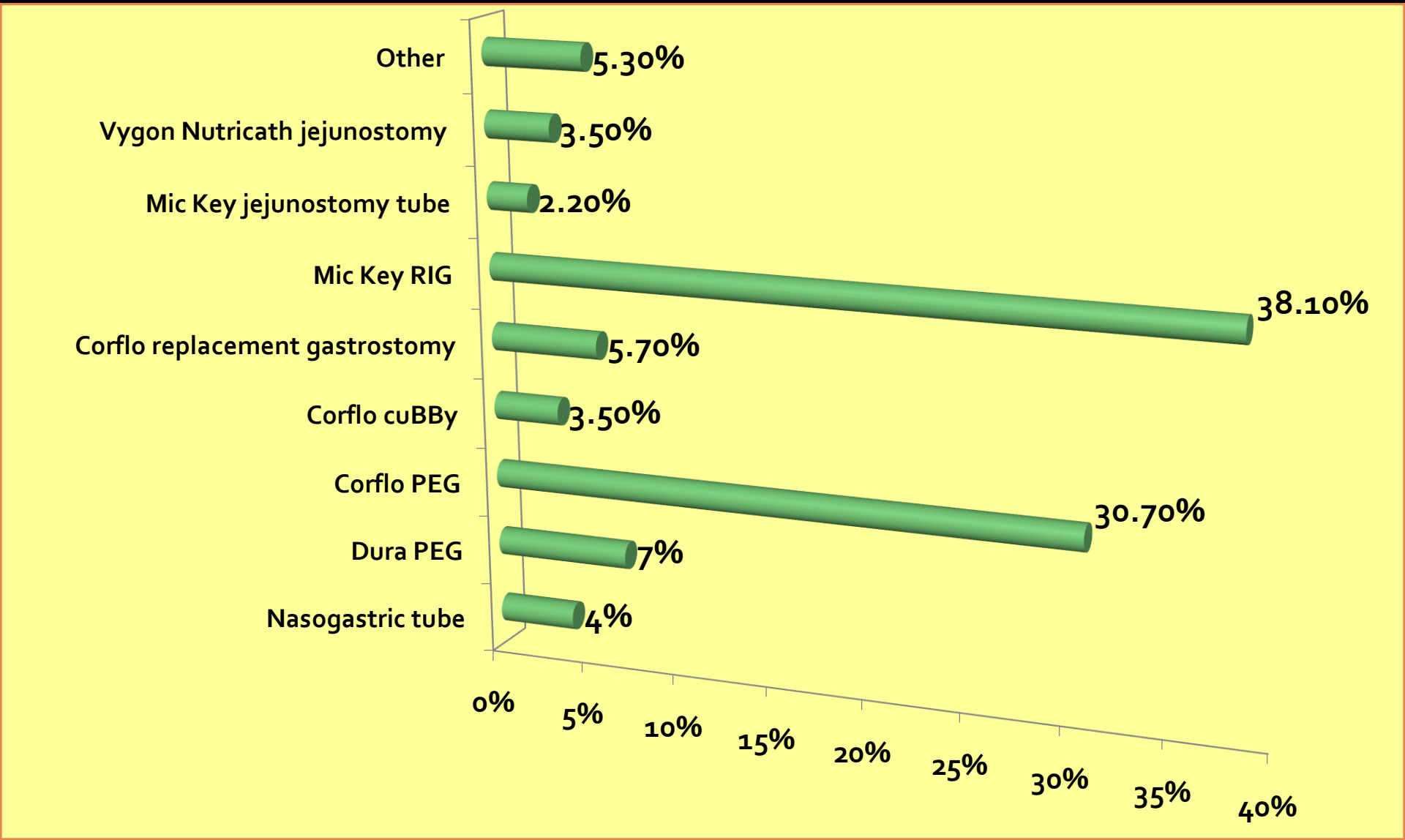
Beaumont HEN diagnoses



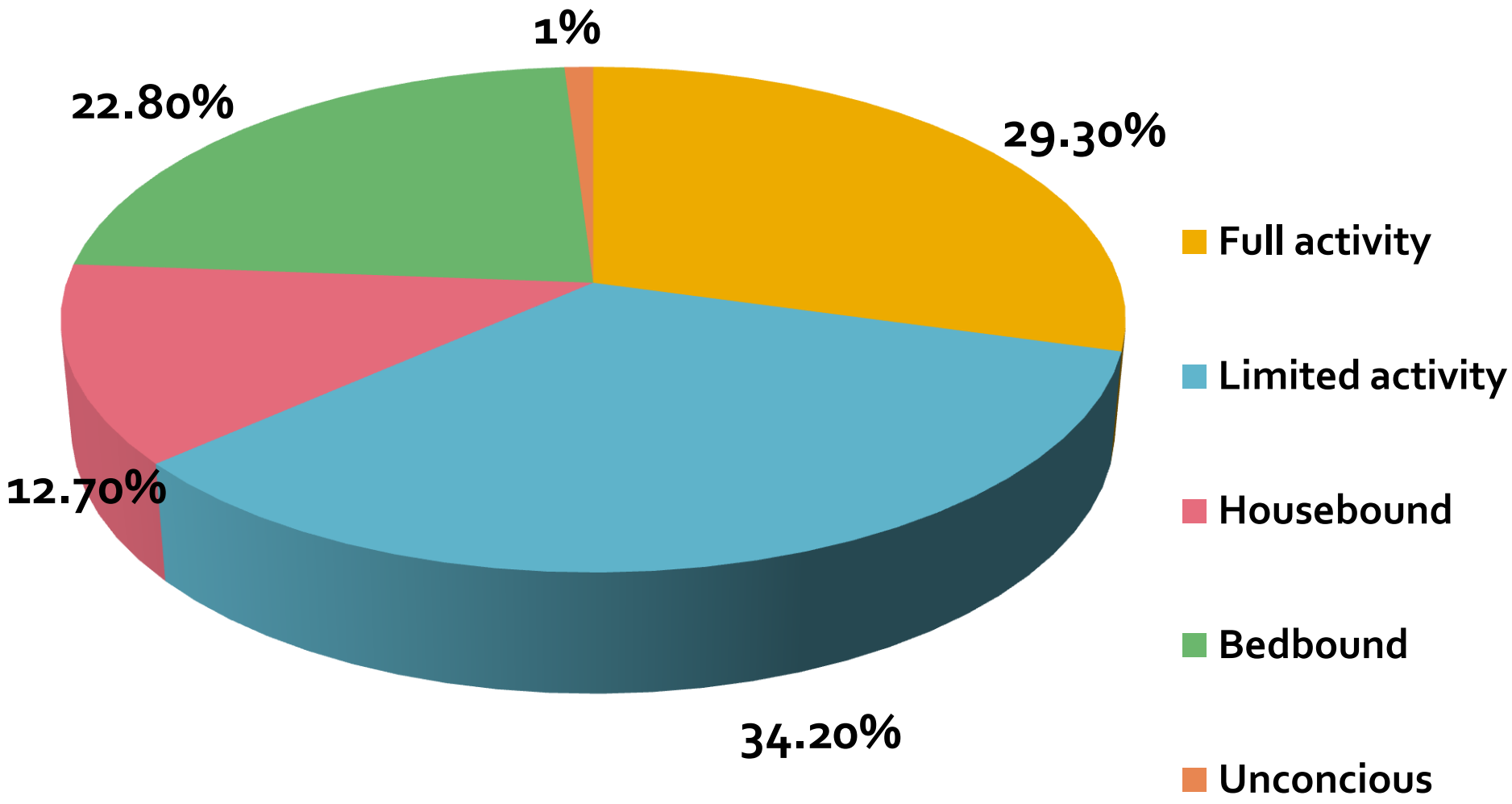
Beaumont HEN diagnoses continued



Beaumont HEN: type of tube



Beaumont HEN patients: functional status



AMNCH MDT PEG Clinic

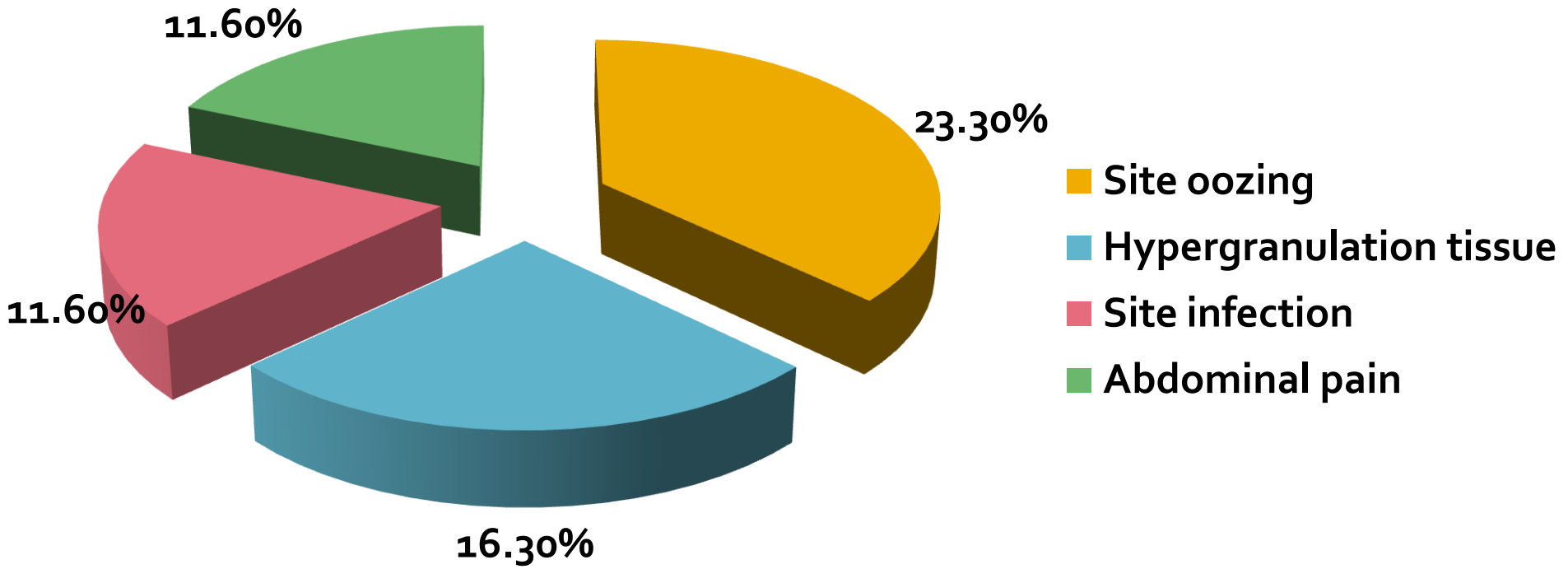
Who is involved?

- Dietitian
- SHO
- SALT
- Nurse

Why?

- Lack of community services for HEN patients.
- Need for follow up – early identification of complications and early intervention.
- Replacement gastrostomies as needed.

Post PEG insertion complications: top 4



Expanded role: Dietitian

- Use of silver nitrate to treat granulation tissue problems.

- Replacement of PEG tubes:
  - 54 replaced: August 2006-2010.

Beaumont Hospital 2004: Community service Patient Satisfaction Questionnaire

	Very Important %	Important %	Neither %	Unimportant %	Very Unimportant %
Ability to be reviewed at home	64	28	8	0	0
Review of PEG site by dietitian	45	44	0	11	0
Review of feeding tube and accessory equipment (ie) adaptors, connectors, pumps & extension sets	39	39	6	16	0
Review of feeding regimens	50	39	6	5	0
Ability to discuss issues face to face with the dietitian	61	33	6	0	0
One point of contact regarding PEG issues	50	38	6	6	0

Key message

- Be familiar with tubes used in your hospital
- Be able to recognise type of gastrostomy tube
- Know which tube can be removed with traction or if endoscopy is needed
- Early discharge planning
- MDT involvement:
  - ?PEG clinics
  - ?service provided to home

Home Parenteral Nutrition

Indications/prevalence
Access
Funding
Monitoring
Complications

Intestinal failure (IF): Definition

Association of Surgeons of Great Britain and Ireland. Issues in Professional Practice : the Surgical Management of Patients with Acute Intestinal Failure (September 2010)

Type 1	•Less than 28 days duration. •Includes post-op ileus, or SI obstruction. •Short term PN.
Type 2	•>28 days duration. •Includes complex Crohn's disease, intestinal fistulas, abdominal sepsis. •More prolonged nutritional & metabolic support – pending spontaneous resolution or surgical treatment.
Type 3	•Generally irreversible and usually occurs due to massive SI resection leading to SBS. •Severe motility problems account for a proportion. **•Will require HPN.** •In some cases – refer for intestinal transplantation.

HPN Indications

ESPEN 2009 HPN Guidelines

- Long-term PN is indicated for patients with prolonged GIT failure that prevents the absorption of adequate nutrients to sustain life.

NICE Guidelines 2006

- Non-functioning GIT
- Inaccessible GIT

Specific indications

- High output intestinal fistula
- Intestinal obstruction; pseudoobstruction; dysmotility
- Radiation Enteritis
- Short bowel syndrome (Crohn's; mesenteric infarction; SI ischaemia)

Incidence/prevalence

- In UK 2008 (BANS):
  - Prevalence 14.5 per 1,000,000
- In Ireland 2006-2008:
  - 30 adult patients
  - Prevalence 2.6 per 1,000,000
- Varies across Europe
  - Incidence: 4-6 per million
  - Prevalence: 2-40 per million
- Tends to develop in specialised centres with greater expertise

HPN access

- Tunnelled subclavian lines recommended for long-term use (>30 days)

  (NICE, 2006)

- ESPEN 2009:
  - Hickman or Broviac tunnelled catheters
  - Implanted port, e.g. Port-a-cath

Access & administration

ACCESS CONSIDERATIONS

- Duration of therapy
- Patient preference/ability
- Available venous access
- Prevention of infection
  - Protocol & training +++
  - Restrict access to CVAD
- Ensure catheter remains patent

ADMINISTRATION

- Volumetric pump with in-line air alarm
- Infused overnight
- Standard v patient-specific
- Additional IV fluids & electrolytes can also be given if required

Funding for HPN

Apply to relevant HSE budget holder for funding

e.g. Area Administrator

✓Letters sent by dietitian requesting funding with supporting letter from consultant.

✓PN company will also send literature and details on cost of providing HPN service.

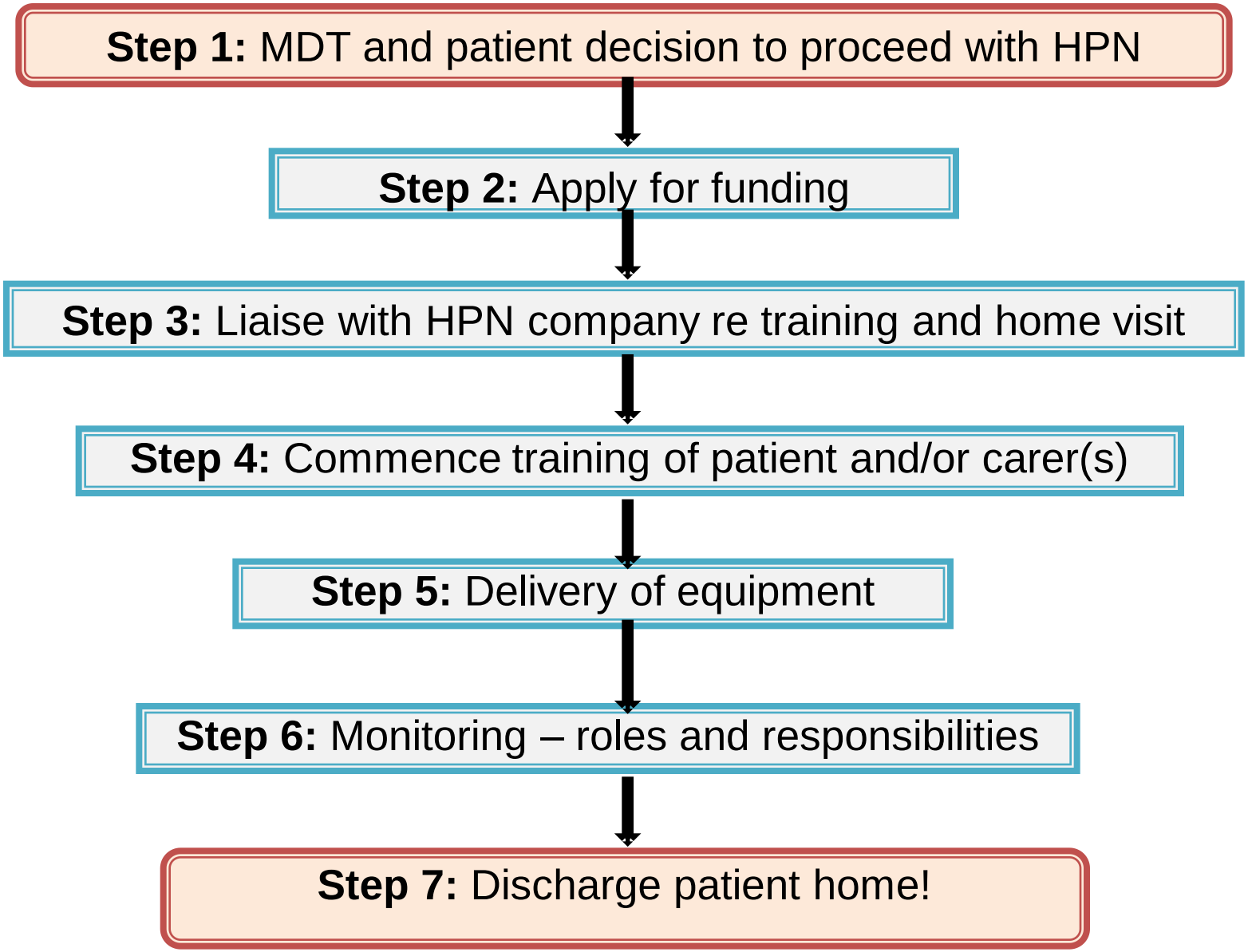
Medical Card v DPS

May need to be applied for prior to consideration of funding application, different practices exist currently.

Costs

Cost of €300-€350 per day for home PN (cost in excess of €1000 per day to remain as inpatient)

7 STEP PATHWAY TO DISCHARGING A PATIENT ON HPN



Monitoring issues

- The frequency of monitoring depends on the patient's clinical stability.

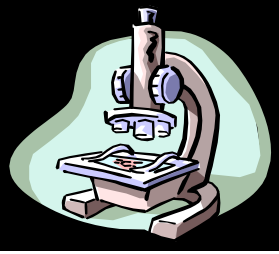
- Clinical judgement must be used when considering which vitamins and trace elements to monitor and frequency of monitoring.

Laboratory Parameter	Frequency
Haematology, urea, creatinine, electrolytes, liver function tests, calcium, magnesium, phosphate, albumin, glucose	At all monitoring visits. Every 3 months in stable patients (ESPEN). More often initially and in clinically unstable patients.
Triglyceride level	At each monitoring visit.
Glucose	In HPN - intermittently at home using glucometer if indicated.
Iron, ferritin	3-6 monthly (NICE).
Folate, B_{12}	2-4 weekly (NICE). 6-12 monthly once stable (ESPEN).
Zinc, copper	6-12 monthly in stable patients (ESPEN).
Selenium	Baseline (if risk of depletion) and thereafter as indicated (NICE). 6-12 monthly (ESPEN)
Manganese	6-12 monthly (NICE; ESPEN)
25-OH vitamin D	6-12 monthly (NICE; ESPEN).
Bone densitometry	On starting HPN, then every 1 to 2 years (NICE; ESPEN).
Vitamins and trace elements	6-12 monthly in stable patients (ESPEN).

Monitoring

- ✓ Nutritional assessment
  - ✓ Weight
  - ✓ Other anthropometric measurements
  - ✓ BMI
  - ✓ Dietary intake
- ✓ Fluid balance (if required)
- ✓ Clinical condition
- ✓ CVAD site

Complications



- Complications related to IV access:
  - Insertion complications
  - Catheter-related sepsis
  - Embolism / occlusion
  - Catheter fracture
- Metabolic complications:
  - Abnormalities of electrolytes, micronutrients
  - Glycaemic and lipid control issues
  - PN-associated liver disease
  - Metabolic bone disease

ESPEN HPN 2009: Prevention of liver function complications

GRADE C EVIDENCE

- Do not overfeed.
- Reduce iv LCT to a minimum.
- Ursodeoxycholic acid/taurine/choline/carnitine / alpha-tocopherol - but no controlled studies.
- Short-term antibiotic treatment if SBO suspected.
- Re-establish colon continuity where possible.
- Use as much oral/ enteral feeding as possible.

GRADE B EVIDENCE

- LCT/glucose ratio should not exceed 40% or more than 1g LCT/kg/24hours.
- Overfeeding must be avoided.
- Glucose >7mg/kg/minute is a risk factor.
- Continuous v cyclic feeding – risk factor.

<u>Other:</u>

Recommend ratio of glucose to lipid:

70-85% kcal from glucose

15-30% kcal from lipid.

Recommend feed over 5-6 nights per week.

Irish HPN data

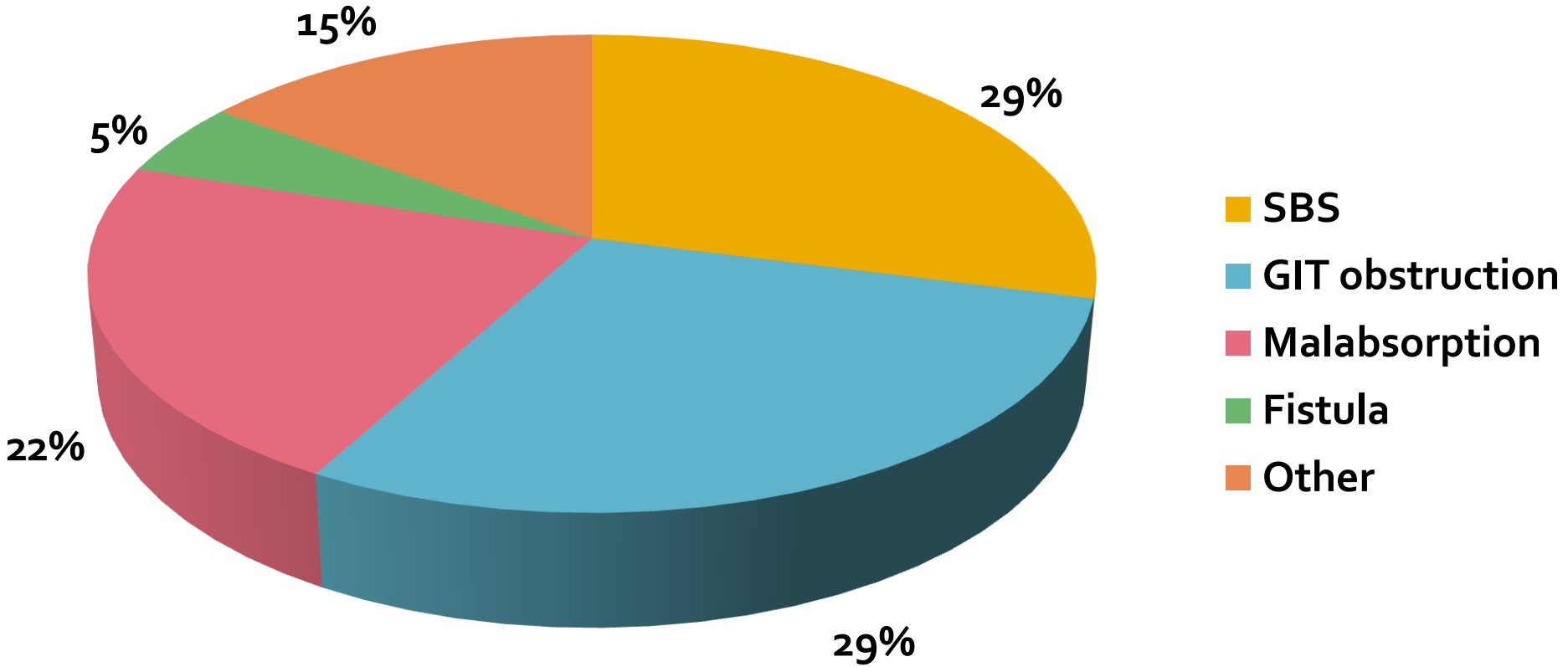
Study by Belinda Mortell

Survey covering: 1/1/2006-25/10/2008

HPN Survey Results (Belinda Mortell)

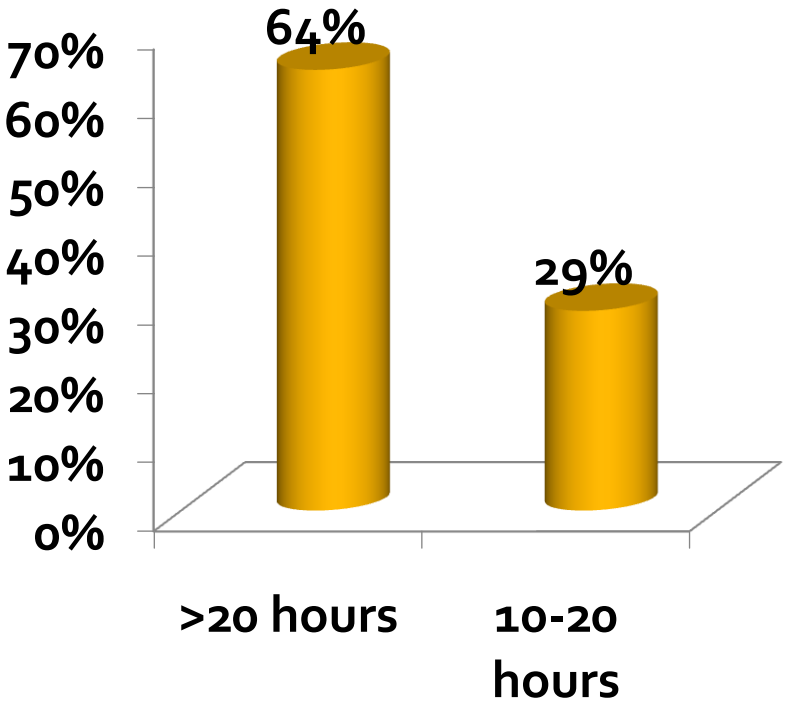
- 42 patients discharged on HPN:
  - 12 children
  - 30 adults
- 24 discharges were from Dublin hospitals.
- 13 hospitals managed HPN patients (6 managed only 1 patient in the study period).
- 37% of adults self-cared for CVAD.
- 26% had delayed discharge due to funding issues.

HPN Indications (Belinda Mortell)

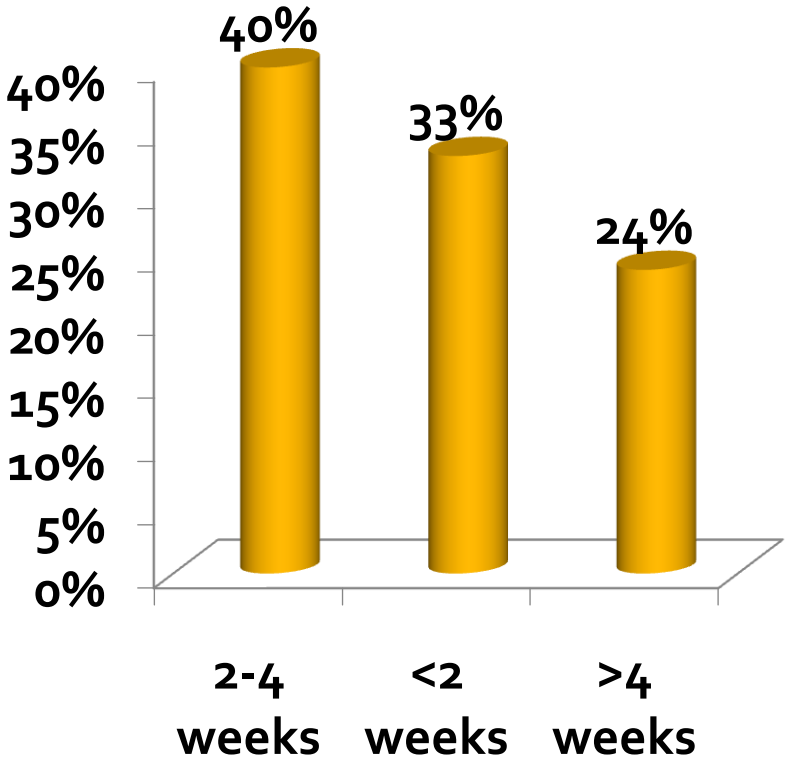


Time to organise and to fund HPN

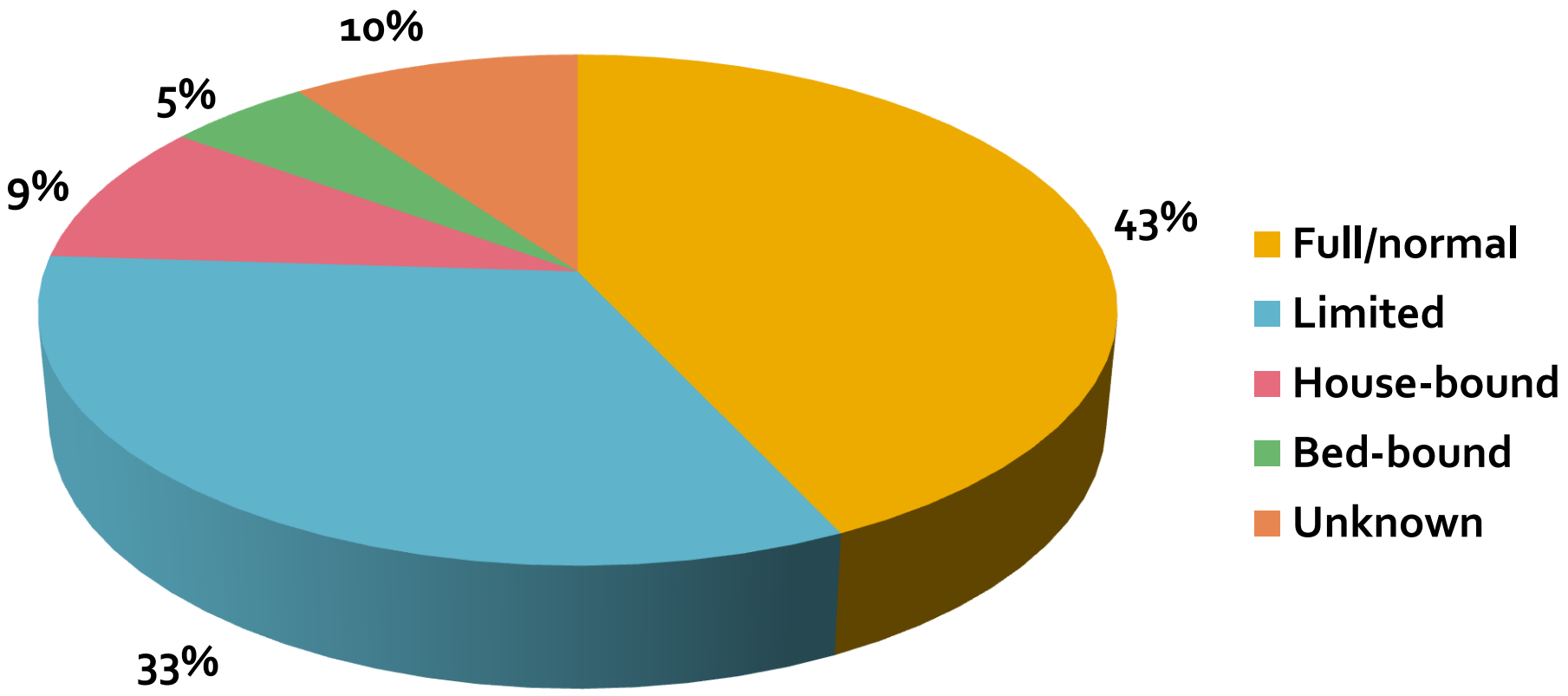
DIETETIC TIME TO ORGANISE DISCHARGE



LENGTH OF TIME TO RECEIVE FUNDING



HPN QOL indicator: level of activity



Key messages: HPN

- Early discharge planning
- Apply for funding immediately
- Local roles and responsibilities must be agreed
- Clear monitoring guidelines
- ?Establish intestinal failure centre in Ireland

Case Study: HEN

Presentation

BACKGROUND

- 72 year old lady.
- Presented to ENT OPD (from another hospital):
  - Pain in throat
  - Choking /dysphagia
  - Hoarseness for 1 month
  - Smoker (20 per week)
  - C/O some foods "catching her breath" – SOB++
  - Breathing difficulties x 5 months

NUTRITIONAL STATUS

- 36.5kg
- 1.49m
- BMI 16.4kg/m2
- UBW – 54.5kg
- 33% weight loss in approximately 8 months
- Poor appetite & intake – forcing herself to eat – no interest in food

Admission

- Admitted 1 week later for investigations
  - CT thorax and neck
  - Microlaryngoscopy and biopsy
  - Punch biopsy of neck mass
  - PET scan
- Findings:
  - Large right sided friable pyriform fossa tumour
- Treatment planned:
  - Surgery
  - Radiotherapy and chemotherapy

Nutritional intervention: initial

- **Fine bore NG** inserted
  - confirmed by CXR initially, then pH testing.
- **SALT** referral – VFL
  - regular fluids and soft diet.
- **Status**
  - Monitoring of nutritional status & requirements & intake
  - Soft diet ,ONS, overnight NG feeding
- **Refeeding risk**
  - monitoring & micronutrient supplementation
- **RIG** inserted (Mic- Key button)
  - RIG site reviewed, T-tacks out
  - Button volume checked weekly and extension set changed fortnightly
- Feeds were altered according to monitoring
- Additional water flushes
- Soft diet (high protein/kcal) as tolerated & ONS & 14 hour RIG feeds
- Daily intake monitored
- Weekly weights

Clinical and nutritional progress

SURGICAL PROGRESS

- 14 days after RIG inserted – debulking surgery – prolapsing over airway.
- Further 8 days later – total laryngectomy, bilateral neck dissection, left leg flap – reconstruction of pharynx
- To ICU post-op (2/7) – continuous RIG feeds + NPO

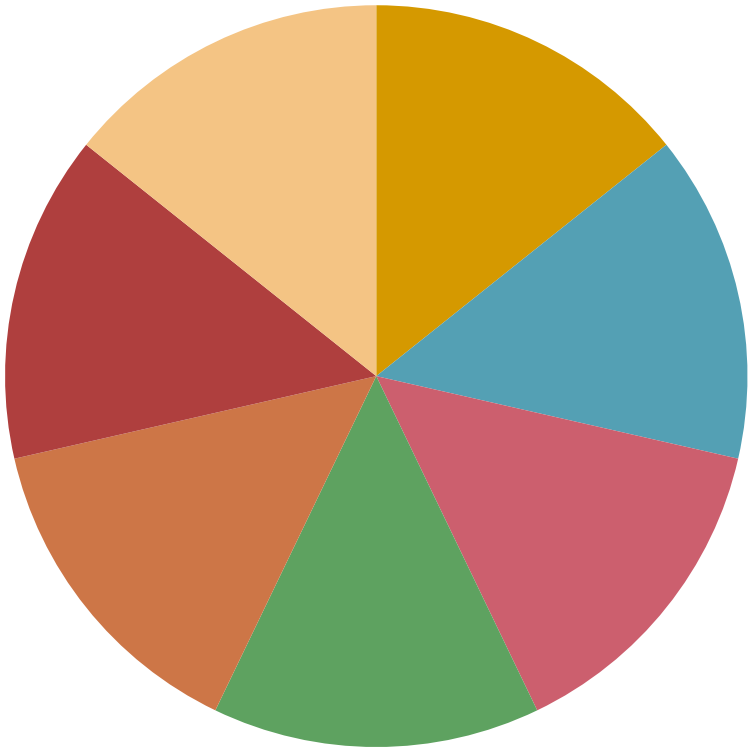
NUTRITIONAL PROGRESS

- Requirements re-estimated regularly depending on clinical course.
- Feeds increased once stabilised to repletion requirements.
- Changed to daytime bolus feeds and overnight continuous feeds
- Swallow test 14 days post-surgery – no leak – PO recommenced & ONS.
- Progressed to full PO & RIG feeds held x 12/7

Discharge Planning

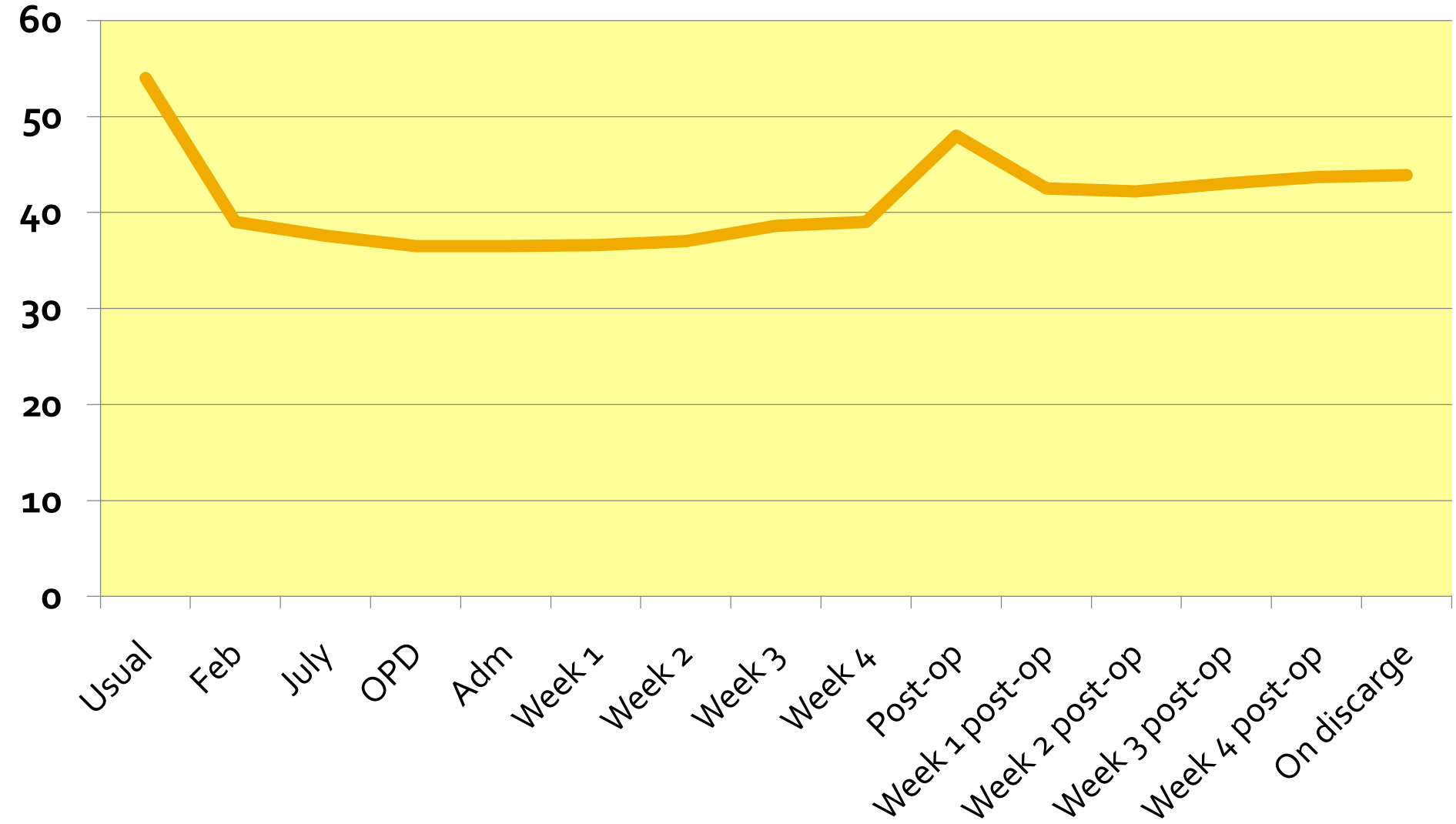
- Developed neck swelling/pain.
- Dietary intake reduced
  - unable to maintain nutritional status.
- Overnight RIG feeds recommenced.
- Nutritional status stabilised (43kg) – feeds on hold.
- New onset swallowing difficulties and nasal regurgitation + due for radiotherapy
  - overnight RIG feeds recommenced
- Repeat VFL – still regular fluids and soft diet.
- Home on:
  - Overnight RIG feeds: 1000kcal & 40g protein
  - PO intake: 800kcal & 20g protein
  - ONS: 400kcal & 24g protein
  - Total:
    - 2200 kcal (50kcal/kg)
    - 84g protein (1.9g/kg)
- Daytime bolus feeds x 3 also prescribed if <half meals taken.
- For review by MDT in ENT clinic in 2/52.

MDT monitoring



- ENT team
- Dietetics
- SALT
- Endocrinology
- Oncology liaison nurse
- Radiology
- Plastics

Weight Progress (kg)



Discharge planning

Commenced day 8 after RIG insertion (before surgeries)

Patient and family trained and deemed competent in:

- Flush RIG
- Attach giving set
- Operate pump
- Administer bolus feed
- Administer medications
- Care of stoma site
- Change extension set
- Check balloon volume (daughter)
- Pump trouble shooting
- Tube blockage
- Tube dislodgement

Discharge planning

Supplies and documentation provided

- Pump
- Dripstand
- Feed x 7 days supply
- Feed prescription
- Giving sets x 7
- 50ml syringe x 7
- Leur tip syringe x 2
- Extension set x 2
- HEN booklet
- Feeding regimen
- Care of stoma site information
- Contact details

Discharge planning

- Correspondence/registration:
  - Registered on HEN database
  - Letter to Director of PHN
  - Letter to PHN
  - Registered on companies hospital-to-home system
  - Letter to GP

    No community dietitian service available.

    Phone calls to all key stakeholders; letters faxed and posted.

Prescription for home

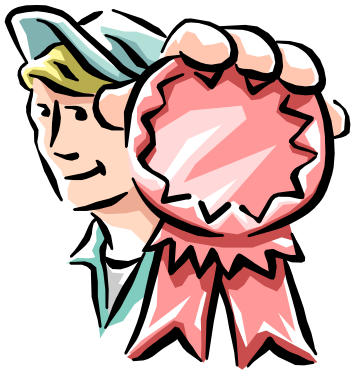
Equipment /Feed	Quantity
Specified feed	1000ml pack daily
Mic-Key extension set (code)	2 per month
5ml leur syringe – *for balloon volume*	4 per month
Catheter-tipped 50ml syringe (NPSA compliant) – *for flushing*	1 per day
Flocare Infinity Pump Giving Set	1/day
Mic-Key low profile gastrostomy	1 initially (then PRN)

Dietetic time

Intervention	Time spent (minutes)
Enteral nutrition (NG)	150
Enteral nutrition (RIG)	270
Overnight feeding	105
High protein/kcal and modified consistency diet	382
No intervention (e.g. bio or chart check)	8
Home enteral nutrition	**330**

Total: 20.75 hours spent – 26.5% of this – for HEN

Thanks for your attention!



& Thanks to:

- Claire Browne
- Elaine Neary
- Paula O'Connor and Nicola Connolly
- Linda Mortell

Appendix: Case Study: HPN

Presentation

- 37 year old single woman
- Gut problems all her life – 2 previous GI surgeries
- Diagnosis: chronic idiopathic intestinal obstruction & dysmotility syndrome
- Admitted from other hospital with 4 month history of
  - vomiting, anorexia, weight loss, diarrhoea, constipation, distention
- 6 month admission – D/C on HPN
- Nutritional status on admission:
  - Usual recent weight: 51kg
  - Height: 1.51m
  - First weight (abdominal distention): 46.5kg
  - BMI: 20.4
  - Pre-admission weight reportedly: 43kg

Surgical intervention

- Adhesiolysis
- Decompression & loop ileostomy
- Further decompression, pyloromyotomy/biopsy + gastrostomy inserted
- Multiple EUA and faecal drainage
- Revision of loop ileostomy to end ileostomy, adhesiolysis & SI resection
- Failure of stoma to work - laparotomy: SI resection, adhesiolysis, & decompression (grossly dilated SI - 13L drained) - required ICU admission afterwards
- Central line changes, Hickman inserted
- Decision: HPN & delay further surgery until fit

Medical interventions

- Multiple tests:
  - CT, US, TOE
  - biopsies
  - SBFT/scopes/enemas
  - genetic testing
  - antibody screen
- Pain a major problem
  - pain team consults++
- Psychiatric input
- All laxatives and prokinetics, eg:
  - maxalon, motilium, erythromycin, cisapride, liquid paraffin, Klean prep, neostigmine, usual laxatives++
- Antibiotics
- RIG button inserted

Nutritional interventions

- **Month 1/2:**
  - PN ≤85ml/hr x 1/52 (built up rate)
  - Diet + ONS
- **Month 3/4:**
  - Trial of NG using semi-elemental x 1/52
  - PN 85ml/hr x 4/7
  - PN 90ml/hr x 2/52 (lower glucose)
  - Transition to gastrostomy - standard feeds (2) x 1/52
  - PN 90ml/hr x 20/7
  - Elemental/semi-elemental RIG feeds +/- diet x 1/52
- **Month 5/6:**
  - PN 90ml/hr x 20/7
  - PN 95ml/hr x 1/7
  - Low fat PN 70ml/hr (propofol) x 5/7
  - PN 95ml/hr x 8/7
  - PN 95ml/hr x 3/52
  - small amounts of soft diet
  - PN 115ml/hr - 4hr break
  - PN 145ml/hr - 8hr break
  - PN 175ml/hr - 11hr break

PN related complications

- Severe line sepsis
- Thrombus and inflammation: left internal jugular to medial subclavian vein - developed neck abscess
- Hypertriglyceridaemia
- Blood glucose abnormalities
- Hepatic dysfunction & cholestasis
- ? Intestinal failure centre referral

HPN Process

- Weaned onto 13hr overnight PN + minimal diet
- Registered with company hospital-to-home service
- 3-6 weeks of training, home visit, equipment set up
- T/F to local hospital where training continued
- 6 weeks to get funding from Health Board – initially funding refused – further letters and explanations needed.
- Home with Hickman, RIG in situ, ileostomy
- HPN template (drawn up by dietitian with surgical team and linked in with local hospital):
  - Goals of treatment, requirements, assessment, monitoring plan – roles and responsibilities, contact details, regimen, liver disease prevention measures, micronutrient administration guidelines, other notes.
  - Patient, Team, GP, local hospital Consultant and Dietitian, Home Care Nurse, PHN, Company Pharmacist (plus prescription), Chair of PN Committee (Beaumont).

Lab monitoring in hospital

Initially

- Daily urea, creatinine and electrolytes initially
- Twice weekly liver function tests
- Twice weekly – haematology, calcium, magnesium, phosphate, albumin
- Once weekly triglyceride (more often if raised)
- Initially BGL 4-6 hourly then once to twice daily when stable

Once Stable

- Blood tests reduced to twice weekly.

- B12, folic acid, ferritin, iron, copper, zinc – month 5 in hospital

Lab monitoring at home

- Weekly bloods in local hospital: urea, creatinine, electrolytes, liver function tests, triglyceride, glucose, haematology

- Due 3 to 6 monthly bloods in Beaumont – including micronutrients

Nutritional Assessment: Hospital

Date months	Weight kg	MUAC cm	Grip-strength kg	TSF mm	MAMC cm
1	46.5				
2	44.2	18	17		
3	42.9	18.5	18		
4	48				
5	47.4	20.2	21		
6	47.5	22	19	11.8	18.3

Nutritional Assessment: OPD

Parameter	Result	Interpretation
Weight	47.5kg	No change
Gripstrength	27kg	Up from 19
MUAC	43.2cm	Up 1.2cm
TSF	13.2mm	Up 1.4mm
MAMC	19.05cm	Up 0.65cm
Dietary intake	1850-2640 Good variety in diet Stoma working well	Increased from minimal

Resulting from MDT Assessment on first outpatient visit

MDT consensus together with patient:

- try diet only for 1 week
- weekly checks in local hospital
- if maintaining nutritional status and bowel continues to function, continue trial diet on a week to week basis
- if unable to maintain status, restart HPN for 4 nights per week (break at weekends)
- if stoma stops working, for full daily HPN