Abstracts of Original Communications

This meeting is approved for credits under the Continuing Medical Education (CME) Scheme by all Medical Royal Colleges.
OC1 Peri-operative fluid administration in patients undergoing elective colorectal segmental resection
L. Potter, J. Ghaemi, S. Noons, G. Mackay, C. Roxburgh, R. McKee, A.J. McMahon, Surgical Department, Level 3, Queen Elizabeth Building, Glasgow Royal Infirmary, G31 2ER UK

OC2 A regional percutaneous endoscopic gastrostomy (PEG) audit exploring factors influencing mortality and complications
J.L. Hulley, S. Ramful, D. Mansour and N.P. Thompson, Department of Gastroenterology, Freeman Hospital, Newcastle upon Tyne, NE7 7DN, United Kingdom on behalf of the Northern Nutrition Network

OC3 A national survey of GPs to assess the understanding and priority given to malnutrition in patients with COPD
E.C. Hinton1, A.L. Cawood2, and R.J. Stratton2, 1NIHR Bristol Biomedical Research Centre: Nutrition Theme, University of Bristol, Bristol, BS2 8DX; 2Medical Affairs, Nutricia Ltd, Wiltshire, BA14 0XQ.

OC4 Nutritional and financial impact of an enhanced dietetic service to care homes within a Welsh health board
A. Evans1, A.G. Russ2, and A.C. Bell3, 1Nutrition & Dietetic Department, Dewi Sant Hospital, Pontypridd. CF37 1LB Wales, 2Nutrition & Dietetic Department, Royal Glamorgan Hospital, Llantrisant, Pontyclun, CF72 8XR, Wales and 3Nutrition & Dietetic Department, Prince Charles Hospital, Merthyr Tydfil. CF47 9DT, Wales.

OC5 Micronutrient deficiencies are difficult to predict in patients on home parenteral nutrition
M Pearson, D Brundrett, S.M. Gabe and A Culkin, St Mark’s Hospital, Harrow, HA1 3UJ, England.

OC6 Right meal, right patient, first time
T. Loughnane1, M. O’Brien2, K. O’Connor3, D. O’Reilly4, C. Reynolds1, S.P. Teeling1,4,5, A. Igoe1,4,5 and M. McKiernan1, 1Mater Misericordiae University Hospital, Dublin 7, Ireland, 2Wexford General Hospital, Wexford, Ireland, 3St Lukes General Hospital, Kilkenny, Ireland, 4Mater Lean Academy, Mater Misericordiae University Hospital, Dublin 7, Ireland, 5UCD School of Nursing, Midwifery and Health Systems, UCD Health Sciences Centre, 4, Belfield Dublin 4, Ireland.

OC7 Factors that affect survival in type 3 intestinal failure; the largest single centre experience of 978 patients over 37 years
S.M. Oke1, D.A. Lloyd2, Small M1, Naghibi M1, Donnelly S.C1, J. M. Nightingale1 and S.M. Gabe1
1Lennard Jones Intestinal Failure Unit, St Mark’s Hospital, Harrow, 2Hampshire Hospitals NHS Foundation Trust, Winchester, United Kingdom SO22 5DG
OC8  Review of tea drinking habits in short bowel patients with jejuno-colic anatomy in Northern Ireland
R.Warke and S-J Hughes, Nutrition Support Team, Department of Nutrition & Dietetics, Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB

OC9  Can dietitians contribute to reducing inpatient days among frail elderly people? A retrospective review of readmissions, length of stay and the impact of differences in anthropometry
L Nash, Department of Nutrition & Dietetics, Airedale NHS Foundation Trust, Skipton Road, Keighley, BD20 6HD

OC10 Increasing protein intakes through the addition of sauce to an older persons’ lunch meal.
K.M. Appleton, Bournemouth University, Poole House, Fern Barrow, Poole, BH12 5BB, UK.

OC11 Development of educational resources for patients and health professionals to enhance the inflammatory bowel disease (IBD) service.
J. Davidson¹, K. Blair¹, M. Groome², J. Fyall and J.P. Baxter¹, ¹Department of Nutrition and Dietetics, ²Department of Gastroenterology Ninewells Hospital, Dundee, DD1 9SY.

OC12 Introducing a dementia - specific nutrition and mealtime assessment tool.
M. Hannon, Raheny Community Nursing Unit (under the management of Beaumont Hospital), Dublin 5, Ireland.

OC13 Vitamin A deficiency - not just a developing country problem.
S.C.L. Smith, A. Marley, R. Ahmed, S.C. Cooper, Queen Elizabeth Hospital Birmingham, Mindelsohn Way, Edgbaston, Birmingham, B15 2GW, UK.

OC14 A Food Based Approach to Increase Dietary Protein Intake in Community Dwelling Older Adults: Protocol for a Randomised Controlled Trial
E. van den Heuvel¹, J.L. Murphy² and K.M. Appleton¹, ¹Research Centre for Behaviour Change, Department of Psychology, ²Faculty of Health and Social Sciences, Bournemouth University, Poole, BH12 5BB, UK.

OC15 Improve efficiency of Dietetic care for effective interventions in Care Home Residents at High Nutritional Risk.
K. Taylor, Queen Margaret Hospital, Whitefield Road, Dunfermline, Fife, KY12 0SU, Scotland.

OC16 A Systematic Review of Home Parenteral Nutrition in Patients With Advanced Cancer
K.C. Fragkos¹, L. Fini², N. Keane¹, H. Kwok¹, E. Paulon¹, J. Barragry¹, S. Mehta¹, F. Rahman¹ and S. Di Caro¹, ¹Nutrition and Intestinal Failure Service, University College London Hospitals NHS Foundation Trust, NW1 2PG, UK; ²Busto Arstizio Hospital, Busto Arstizio, Varese, Italy.

OC17 An Audit of Parenteral Nutrition Provision on the Cardiac and General Intensive Care Units at Southampton General Hospital.
A. Rogers and B. Jenkins. Department of Nutrition and Dietetics, University of Southampton NHS Foundation Trust, Tremona Road, Southampton, SO16 6YD, UK.
N. Bates, C. Hargraves, C. Killen and L.King, Nutrition and Dietetics Department, Castle Hill Hospital, Castle Road, HU16 5JQ, UK. Leeds Beckett University, City Campus, Leeds, LS1 3HE, UK.

OC19 Causes and complications of tunnelled central venous catheter repairs in patients on home parenteral nutrition.
M. Small, U. Meade, and S.M. Gabe. Lennard Jones Intestinal Failure Unit, St Mark's Hospital, Harrow, Middlesex HA1 3UJ, UK.

OC20 A snapshot of vitamin D deficiency in home parenteral nutrition patients in Northern England.
L.L. Shabeer1 and D. Burke2, 1School of Medicine, University of Leeds, West Yorkshire, LS2 9JT, United Kingdom. 2Department of Colorectal Surgery, St. James's University Hospital, Leeds, LS9 7TF, UK.

OC21 Audit of parenteral nutrition use in palliative care patients.
D. Woodham, M. Dera and S.C. Cooper, University Hospitals Birmingham NHS Foundation Trust, Queen Elizabeth Hospital, Mindelsohn Way, Birmingham B15 2GW, UK.

OC22 An orchestra without a conductor: A qualitative exploration of the journey from symptom onset to diagnosis in patients with severe Gastrointestinal Dysmotility.
K. Twist1, J. Ablett2, A. Wearden1, P. Paine2, D. Vasant2, S. Lal2, and S. Peters1, 1University of Manchester, Section for Clinical & Health Psychology, Zochonis Building, Brunswick Street, Manchester, M13 9PL, UK, 2Salford Royal Foundation Trust, Stott Lane, Salford, M6 8HD, UK.

OC23 Social support and employment status are associated with negative affect in patients with type 3 intestinal failure.
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OC26  Intestinal Failure Service Activity at the University Hospitals Birmingham NHS Foundation Trust in 2016-2017
A. McCulloch, J. Fletcher, H. Malhi, R. Quinn, K. Kane, S.C. Cooper, University Hospitals Birmingham NHS Foundation Trust, UK.

OC27  Type 2 and 3 Intestinal Failure workload at a district general hospital - implications for national commissioning

OC28  Audit of enteral nutrition provision during citrate anticoagulation of continuous renal replacement therapy in the Intensive Care Units.
L. Rose¹, E. Cresta¹, C. Day¹, F. Dakpoe¹, J. O'Flynn² and E. Segaran², ¹King College London, Franklin-Wilkins Building, Stamford Street London, SE1 9NH and ²Imperial College Healthcare NHS Trust, The Bays South Wharf Road, St Mary’s Hospital, London, W2 1NY, UK.

OC29  A survey of post primary gastrostomy insertion nutritional care.
J. Gregg and C.A. Fleming, Adult Acute Dietetic Services, Greater Glasgow & Clyde (GG&C) G12 OYN, Scotland.

OC30  Outcomes of Percutaneous Endoscopic Gastrostomy, Percutaneous Endoscopic Gastropexy Gastrostomy and Radiologically Inserted Gastrostomy in Patients at a District General Hospital in 2016.
B.H.H. Li, S.B. Ahmad, D. Oliver, A. Ashour, A. Beukes, A. Ellis, N. Ockwell, E. McKenna, A. Cartwright and M. Jarvis, Basildon Hospital, Essex, SS16 5NL, UK.

OC31  A Regional Survey: Indications, methods and complications in percutaneous endoscopic gastrostomy (PEG) tube insertion in 10 regional hospitals.
A. Vaziri, Cambridge Intestinal Failure and Transplant Team, Addenbrooke’s Hospital, Hills Road, Cambridge, CB2 0QQ, UK.

OC32  An audit around the use of salt in the treatment of overgranulation around peg sites.
E. Trautner, L. Booth, Birmingham Community NHS Trust, Priestly Wharf, Holt Street, B7 4BN, UK.
OC33 Predicting 3 - and 6 - Month Survival for Advanced Cancer Patients on Home Parenteral Nutrition: A Nomogram.

K.C. Fragkos¹, N. Keane¹, PS. Patel¹, K. Murray¹, S. Obbard¹, S.Ajibodu¹, S. O’Callaghan¹, H. Kwok¹, E. Paulon¹, J. Barragry¹, S. Mehta¹, S. Di Caro¹ and Farooq Rahman¹,
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OC34 Monitoring compliance with nasogastric (NG) tube management: a single centre experience.

T. Kilbane, R. Whitefield, J. Colby J, & N. Burch, UHCW NHS Trust, Clifford Bridge Road, Coventry CV2 2DX, UK

OC35 Survival rates after inpatient parenteral nutrition.

A. Qureshi, C.W. Steele and R. McKee, Glasgow Royal Infirmary, 84 Castle Street, Glasgow, G4 0SF, UK.

OC36 Care Pathway for Patients with Advanced Gynaecological Cancer and Bowel Obstruction: Preliminary Data.

N. Keane¹, K.C. Fragkos¹, S. Mehta¹, F. Rahman¹ and S. Di Caro¹, ¹Nutrition and Intestinal Failure Service, University College London Hospitals NHS Foundation Trust, NW1 2PG, UK

OC37 The prevalence and factors influencing distress in patients being discharged on home parenteral nutrition.

N. Wyer, R. Ball, R. Ford, and N. Burch, Nutrition Support Team, UHCW NHS Trust, Clifford Bridge Road, Coventry CV2 2DX, UK.

OC38 An audit of the nutrition provision on the general intensive care unit at the Northern General Hospital, Sheffield.

J. Leyland and F. Hardy, Dietetics Department, Northern General Hospital, Herries Road, Sheffield, S5 7AU, UK.
OC39 Exploring community healthcare staff experiences of current screening and treatment practices for malnutrition – baseline survey results from the Implementing Nutrition Screening in Community Care for Older People (INSCCOPe) process evaluation project. M. Bracher¹, J.L. Murphy¹, K. Steward², K. Wallis³, and C.R. May⁴, ¹Faculty of Health and Social Sciences, ²Bournemouth University, Bournemouth, BH1 3LT, UK; Southern Health NHS Foundation Trust, Southampton, SO40 2RZ; UK ³Wessex Academic Health Sciences Network, Chilworth, SO16 7NP; UK ⁴Faculty of Health Sciences, Building 67, University of Southampton, Southampton, SO17 1BJ, UK.

OC40 A pilot of the Malnutrition Universal Screening Tool (‘MUST’) in a general outpatient department: A service user questionnaire. R. Ford and N. Burch. University Hospital Coventry and Warwickshire NHS Trust, Clifford Bridge Road, Coventry. CV2 2DX, UK.

OC41 A pilot of the Malnutrition Universal Screening Tool (‘MUST’) in a general outpatient department. R. Ford, L. O’Flynn, T. Kilbane, N. Wyer and N. Burch. University Hospital Coventry and Warwickshire NHS Trust, Clifford Bridge Road, Coventry. CV2 2DX, UK.

OC42 A new integrated approach using an electronic system across health and social care to improve nutritional care for adults across Dorset A.J. Aburrow¹, K. Wallis¹, S. Hawkins², M. Smith², L.Gentle³ and J.L. Murphy¹,³, ¹Wessex Academic Health Science Network, Innovation Centre, Southampton Science Park, 2 Venture Road, Chilworth, Hampshire, SO16 7NP, UK, ²Tricuro, 28-30 Wimborne Road, Poole, BH15 2BU, UK ³Faculty of Health & Social Sciences, Bournemouth University, Bournemouth, BH1 3LT, UK.

OC43 Let them eat cake: a retrospective service evaluation of Focus on Undernutrition in care homes. R. Masters, Focus on Undernutrition, Nutrition and Dietetic Service, County Durham and Darlington NHS Foundation Trust, Henson Close, South Church Enterprise Park, Bishop Auckland, County Durham, DL14 8LW, UK.

OC44 Evaluation of the use of PaperWeight Armband in screening for malnutrition among older adults. B. Till¹, K. Wallis², and P. Nestel¹, ¹Faculty of Medicine, University of Southampton, Southampton, SO16 6YD, UK, ²Wessex Academic Health Science Network, Innovation Centre, Southampton Science Park, Chilworth, SO16 7NP, UK.
OC45  An e-learning tool to improve confidence and competence in confirming the position of nasogastric feeding tubes.

OC46  Association between feeding difficulties and malnutrition in nursing home residents.
K. Hall¹, S.J. Illingworth¹ and A. Gilson², ¹London Metropolitan University, 166-220 Holloway Road, London, N7 8DB, UK. ²Barts Health NHS Trust, Newham University Hospital, Glen Road, E13 8SL, UK.

OC47  The cost saving effect of advanced dietetic practice in an acute setting.
A. Gorham¹, S. Brady¹, O. Seery², N. McEniff², L.A. Healy¹ and N. Flanagan¹, ¹Department of Clinical Nutrition, ²Department of Interventional Radiology, St. James’s Hospital, Dublin, Ireland.

OC48  Measuring dietetic outcomes in oncology.
C. Shaw¹ and S. Lewis² on behalf of British Dietetic Association Oncology Specialist Group working party. ¹Department of Nutrition and Dietetics, The Royal Marsden NHS Foundation Trust, Fulham Road, London SW3 6JJ, UK and ²Department of Nutrition and Dietetics, Royal Glamorgan Hospital, Llantrisant, CF72 8XR, UK.

OC49  Compliance of Intravenous Fluid Therapy to NICE Guidelines in General Surgery Emergency Admissions.
S. Robinson¹, C.L. Gelder² and A. McMahon², ¹University of Glasgow, G12 8QQ, Scotland and ²Glasgow Royal Infirmary, G4 0SF, Scotland.

OC50  Adherence to NICE Intravenous Fluid Therapy Guidelines in General Surgery Emergency Admissions, when accounting for Administration of Intravenous Antibiotic in Fluid.
S. Robinson¹, C.L. Gelder² and A McMahon², ¹University of Glasgow, G12 8QQ, Scotland, ²Glasgow Royal Infirmary, G4 0SF, Scotland.

OC51  Reducing home enteral feed wastage and associated cost saving by an established adult home enteral nutrition team.
R. Robinson, H. Rhodes and A. Fairweather, Derby Hospitals NHS Foundation Trust, Royal Derby Hospital, Uttoxeter Road, DE22 3NE, UK.

OC52  Reducing nutritional deficits accumulated through prolonged pre-operative starvation.
R. Ball¹, V. Patel² and A. Kelly³, ¹Major Trauma Service, ²Dietetic Department and ³Anaesthetic Department, UHCW NHS Trust, Clifford Bridge Road, Coventry, CV2 2DX, UK.

OC53  Description of nutritional characteristics in patients identified at risk of refeeding syndrome.
B. Gillman, N. Drew, S. Murphy, and M. McKiernan, Department of Clinical Nutrition and Dietetics, Mater University Misericordiae Hospital, Eccles Street, Dublin, Ireland.
Presented by T. Loughnane.
OC54 Has the percutaneous endoscopic gastrostomy (PEG) multidisciplinary team meeting improved quality and safety outcomes of percutaneous endoscopic gastrostomies?
C. Rasanayagam, J. O’Rourke and T. Haldane, Worcestershire Royal Hospital, Charles Hastings Way, Worcester, WR5 1DD, UK.

OC55 Catheter related line sepsis rate reduced with establishing Nutrition Support Team
C.L. Peplow, Z. Shah and T. Haldane, Worcester Royal Hospital, Worcester, WR5 1DD, UK.

OC56 Improved mortality with the implementation of an MDT to determine patient selection for Percutaneous Endoscopic Gastrostomy (PEG) insertion–A retrospective audit; single centre experience.
A Dhaliwal, S Smith and T Haldane, Worcestershire Royal Hospital, Charles Hasting Way, Worcester, WR5 1DD, UK.

OC57 Prevalence of malnutrition in critically ill adults within University Hospital Southampton NHS Trust.
E. Stiles, B. Jenkins and L. Marino, Department of Dietetics and Speech and Language Therapy, University of Southampton NHS Foundation Trust, Tremona Road, Southampton, SO16 6YD, UK.

OC58 A ’Mixed Bag’ of Nutrition in Lincoln County Hospital.
A. Eastwood1, C. Lam2, R. Grinhm3 and H. Gupta3, 1Nottingham City Hospital, Nottingham University Hospitals NHS Trust, Hucknall Road, NG5 1PB, UK, 2Sheffield Teaching Hospitals NHS Foundation Trust, Herries Road, Sheffield S5 7AU, UK, 3Lincoln County Hospital, United Lincolnshire Hospitals NHS Trust, Greetwell Road, LN2 5QY, UK

OC59 An audit of the adherence to blood-glucose monitoring and overall glycaemic management in patients requiring parenteral nutrition.
S.K. Jangra and A. Sangera. University Hospitals Birmingham NHS Foundation Trust, Queen Elizabeth Hospital, Mindelsohn Way, Birmingham B15 2GW, UK.

OC60 Home parenteral nutrition and advanced ovarian cancer: a qualitative study of artificial feeding in terminally ill cancer patients in bowel obstruction.
A.M. Sowerbutts1, S. Lal2, A. Clamp3, G.C. Jayson2, C. Todd1, A.M. Raftery3, L. Hardy3, E. Sutton4, J. Sremanakova1 and S. Burden1, 1School of Health Sciences and Manchester Academic Health Science Centre, University of Manchester, M13 9PL, UK 2Salford Royal NHS Foundation Trust, Manchester, M6 8HD, UK, 3The Christie NHS Foundation Trust, Manchester, M20 4BX, UK, 4Department of Social Medicine, University of Bristol, Bristol, BS8 2PS, UK.
The impact of service improvement strategies in a well-established radiologically inserted gastrostomies (RIGs) service: a retrospective audit.

F. Carvalho, The Royal Marsden Hospital, Colorectal Surgery Department, MH, Floor 4, Room 10, Fulham Road, SW3 6JJ, London, UK.

Investigation of nutritional status, body composition and functional status of heart failure patients in the outpatient setting.

C. Monahan, Department of Nutrition and Dietetics, St. Vincent's University Hospital, Elm Park, Dublin, Ireland.

Older malnourished individuals registered with their GP use greater healthcare resources than non-malnourished individuals.

G.L. Fry¹, F. Brown¹, A. L. Cawood², J. Cotton³ and R. J. Stratton², ¹Gloucestershire Hospitals NHS Foundation Trust, GL53 7AN, UK, ²Medical Affairs, Nutricia Ltd, Wiltshire, BA14 0XQ, UK, ³Jacqui.R.Cotton Ltd, Wiltshire, SN13 8JZ, UK.

Appropriate management of disease related malnutrition in GP practices improves nutritional status & reduces healthcare use, with potential cost savings.

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Managing acute adult inpatient Dietetic referrals.

J. Yarrow and E. Ryan¹, NHS Fife Department of Nutrition & Dietetics, Victoria Hospital, Hayfield Road, Kirkcaldy, KY2 5AH, UK.

Presented by F. Havlin.

Changes in aetiology of type 3 intestinal failure over 37 years: a single centre experience.

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**Peri-operative fluid administration in patients undergoing elective colorectal segmental resection**

by L. Potter, J. Ghaemi, S. Noons, G. Mackay, C. Roxburgh, R. Mcke, A. J. McMahon, Surgical Department, Level 3, Queen Elizabeth Building, Glasgow Royal Infirmary, G31 2ER UK

Excess fluid and salt load can have many adverse effects, resulting in delays in post-operative recovery. Patients who gain at least 2.5–3 kg in weight, as a result of salt and water overload, in the post-operative period have a worse outcome than those maintained in a state of zero fluid balance \(^1\). There is a trend in guidelines to suggest aiming for a reduction in fluid and salt load, in order to achieve a closer to zero fluid balance.

We carried out a retrospective analysis of peri-operative fluid administration in all patients in 2016 undergoing elective colorectal segmental resection (both laparoscopic and open) at Glasgow Royal Infirmary within an enhanced recovery programme. Data collected included all fluid input and output both intra-operatively and post-operatively, and urea and electrolyte values both pre-admission and on days 1, 2 and 3 post-operation, height and weight, and operative details. The five patients who had intraoperative blood loss of over a litre in theatre were excluded from analysis due to the increased fluids required for resuscitation and replacement. Of the 140 patients included, only 7 (5%) had blood loss over 500mls.

74% were given a vasopressor (metaraminol) intraoperatively while only 16% had an epidural. Patients received a median of 3.8 litres of fluid on the day of theatre (till midnight), but there was wide variation (range 1.5-8.1 litres) with a quarter receiving more than 4.6 litres. Hartmann’s solution accounted for 84% of the fluid given, while 5% Dextrose accounted for only 2% of the fluid. The median total sodium given on the day of theatre was 462 mmol. The median fluid balance was 3.1 litres positive, with a quarter being more than 3.9 litres positive. There was a positive correlation between fluid balance and postoperative stay (Spearman rank R 0.2, p=0.021). Patients received a median of only 18 mmol of potassium. 74% of the fluid on the day of theatre was administered in theatre, 10% in recovery and only 16% in high dependency or the ward.

Many of our patients had a high positive fluid balance and high sodium load on the day of surgery, mainly due to the amount of Hartmann’s given during surgery (despite 74% being given a vasopressor) and this correlated with a longer hospital stay. These findings have prompted a multidisciplinary discussion, which is likely to lead to a change in our enhanced recovery fluid guidelines and education of staff.

**Reference**

A regional percutaneous endoscopic gastrostomy (PEG) audit exploring factors influencing mortality and complications

By J.L. Hulley S. Ramful, D. Mansour and N.P. Thompson Department of Gastroenterology, Freeman Hospital, Newcastle upon Tyne, NE7 7DN, United Kingdom on behalf of the Northern Nutrition Network

The Northern Nutrition Network has been functioning since 2004 and includes all hospitals in acute trusts in the Northern region plus North Cumbria, with multidisciplinary involvement. The aim of this study was to complete a region-wide audit over a three-month period from September 2016 to November 2016, examining 90-day outcomes. A proforma was used to collect 30 pieces of data per patient, including demographics, biochemical parameters, use of sedation/antibiotics, ASA grade, mortality rates and complications. Results showed 146 patients in the North East of England underwent PEG insertion during this period.

The cohort comprised of 56 males and 88 females with an average age of 66 years. Their mean body mass index (BMI) and albumin levels were 23.5 and 37 respectively. The most common indication for PEG was mechanical obstruction in 49/146 (33.6 %) patients; comprising ENT cancer (46) and gastrointestinal malignancy/obstruction (3). The second most common indication was stroke, with 24.7 % (36/146) patients.

Thirty day mortality was 12/146 (8.2%) with 25% (3) of the deaths attributed to PEG insertion. Overall, 90 day mortality was 26/146 (17.8%) with 5 out of 26 of these deaths linked to PEG procedure. Analysis of the patients who died within 30 days of PEG insertion showed that they had a higher mean age (76.7 years), lower BMI (18.5) and higher ASA grade than that of the cohort mean. This trend was reflected in the overall 90-day mortality. The most common indication for PEG insertion in these two mortality groups was stroke 36/146 (42%) followed by mechanical obstruction 49/146 (27%).

The overall complication rate for the cohort of patients was 27% (40/146) with the commonest cause being pneumonia or chest infection (11% or 16/146). The 90 day mortality for patients with complications was 30 % and 3 out of the 12 deaths were linked to PEG insertion.

During PEG insertion, 88% (23/26) of patients received midazolam in the 90 day mortality group compared to 71% (83/117) of patients alive at 90 days. In the group receiving midazolam, the rate of pneumonia or chest infections post-PEG was 13.5% (15/111) which was slightly higher than the mean for this complication in the overall cohort, as mentioned above (11%).

In conclusion, this audit showed that the 30-day mortality in our region for the study period was similar to that reported in other studies\textsuperscript{1-3}. Our data suggests mortality predictors would include increased age, lower BMI and higher ASA grade. There was potentially increased incidence of complications including pneumonia in patients receiving midazolam sedation.

References

A national survey of GPs to assess the understanding and priority given to malnutrition in patients with COPD
by E.C.Hinton¹, A.L.Cawood², and R.J.Stratton², ¹NIHR Bristol Biomedical Research Centre: Nutrition Theme, University of Bristol, Bristol, BS2 8DX; ²Medical Affairs, Nutricia Ltd, Wiltshire, BA14 0XQ.

Disease-related malnutrition is common in patients with COPD (21%)¹ and there is evidence that oral nutritional support is an important part of the management of this patient group²,³. As most individuals at risk of malnutrition, including those with COPD, are within the community setting, GPs need to play a key role in identifying and managing malnutrition. However, it is unclear how aware GPs are of malnutrition or their knowledge of the existence of relevant guidelines for its management, especially for patients with COPD. Therefore, a survey of GPs was undertaken to assess: understanding and level of priority given to malnutrition; and awareness and use of relevant NICE guidelines and pathways for management in those with COPD.

A nationally representative, cross sectional, online survey was undertaken in January 2017 of 100 GPs (69% male; 48.8±9 years (mean±SD) in England (93%), Scotland (6%), and Wales (1%). It comprised a series of questions to GPs about prevalence, methods of identification and management of malnutrition, local policies, priority given to malnutrition, and awareness and use of relevant NICE guidelines (CG101², CG32⁴, QS24⁵) and pathways (e.g. the multi-professionally endorsed Managing Malnutrition in COPD pathway⁶).

Overall one third of GPs gave malnutrition a high priority in their practice (46% gave it a medium priority), although specifically for patients with COPD, only 16% gave malnutrition a high priority (37% medium priority), despite 41% rating nutrition generally as being of high importance in this patient group. GPs estimated that about one fifth (22%) of their COPD patients were at risk of malnutrition. Less than half (40%) of GPs surveyed assessed the ‘nutritional status’ of patients with COPD (and 45% did this only once a year), and methods used included weight/body mass index (BMI) (48%), clinical judgement (30%), and screening tool (8%). Overall, 51% of GPs surveyed were aware that NICE CG101 recommends COPD patients should have BMI monitored, and that those with low BMI (<20kg/m²) should be given oral nutritional supplements; and 36% knew of the NICE CG32 recommendation for tackling malnutrition with oral nutritional support. GPs who were aware of this recommendation gave a significantly higher priority to malnutrition in their practice (81%) compared to GPs who were unaware (19%). Awareness of the cost savings⁷ that could be achieved by implementing NICE guidance was low (22%). Of the 19% of GPs who were aware of the ‘Managing Malnutrition in COPD’ pathway, most (89%) were following this pathway in their practice. Management strategies for malnutrition in COPD varied, the most common ones cited were referral to a dietitian (59%), diet sheet (35%) and oral nutritional supplements (30%). Outcomes of nutritional support of most interest to GPs for COPD patients were skeletal muscle strength, respiratory muscle strength and function, and economic measures. Similar results were obtained for all questions irrespective of the age, gender or location of the GP.

In summary, this GP survey suggests that there is some awareness of malnutrition, its prevalence and the importance of its management in patients with COPD but there remains scope to improve this. Increasing the awareness of key guidelines and pathways may increase the priority of malnutrition with GPs ensuring malnourished patients in the community are managed appropriately.

References
Nutritional and financial impact of an enhanced dietetic service to care homes within a Welsh health board
by A. Evans\textsuperscript{a}, A.G. Russ\textsuperscript{b}, and A.C. Bell\textsuperscript{c}, \textsuperscript{a}Nutrition & Dietetic Department, Dewi Sant Hospital, Pontypridd. CF37 1LB Wales, \textsuperscript{b}Nutrition & Dietetic Department, Royal Glamorgan Hospital, Llantrisant, Pontyclun, CF72 8XR, Wales and \textsuperscript{c}Nutrition & Dietetic Department, Prince Charles Hospital, Merthyr Tydfil. CF47 9DT, Wales.

Over 3 million people across the United Kingdom are either malnourished or at risk of malnutrition, of which more than 1 million are aged over 65. \textsuperscript{1} Further reports state that 35% of people aged over 70 on admission to a care home are malnourished; about 29% within Wales.\textsuperscript{2} Total public expenditure on malnutrition in health and social care in England is estimated to be £19.6 billion per year.\textsuperscript{3} Tackling malnutrition has the potential to improve nutritional status, clinical outcomes, and reduce health care use.\textsuperscript{3,4} Implementing a comprehensive and structured approach to improve nutritional care for residents living within a care home setting may therefore offer the potential to improve nutritional status and reduce healthcare needs.\textsuperscript{5}

An enhanced dietetic service was established within the health board in November 2014. The aim of the service was to improve the nutritional status of residents in care homes by raising the awareness of malnutrition amongst staff and developing local nutrition pathways for those identified at risk of malnutrition. This was achieved by scoping the level of staff knowledge and evaluating the reliability of nutritional screening pre-intervention in order to identify training needs. A tailored nutrition education programme was delivered in individual nursing homes, which included topics such as screening, mealtime experience, food fortification and appropriate use of oral nutrition supplements (ONS). Alongside this, individualised dietetic interventions were provided to residents at risk of malnutrition and those already established on ONS. Table 1 shows the impact of the enhanced dietetic service on knowledge, accuracy of screening and % at high risk of malnutrition.

Table 1: Results showing pre & post intervention data for the 4 pilot nursing homes.

<table>
<thead>
<tr>
<th>Nursing Home</th>
<th>% Staff trained Pre</th>
<th>% Staff knowledge of MUST Pre</th>
<th>% residents accurately screened for malnutrition Pre</th>
<th>% residents at high risk of malnutrition Pre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Home 1</td>
<td>64</td>
<td>21</td>
<td>46</td>
<td>15</td>
</tr>
<tr>
<td>Nursing Home 2</td>
<td>62</td>
<td>56</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Nursing Home 3</td>
<td>72</td>
<td>33</td>
<td>47</td>
<td>11</td>
</tr>
<tr>
<td>Nursing Home 4</td>
<td>66</td>
<td>20</td>
<td>48</td>
<td>43</td>
</tr>
</tbody>
</table>

The enhanced dietetic service to care homes within the local health board was shown to decrease the risk of malnutrition amongst residents, increase the number accurately screened for malnutrition and improved the nutritional knowledge of staff. The cost of screening, monitoring and initiating early appropriate dietetic intervention also led to significant cost avoidance by reducing the financial cost of inappropriate prescribing of oral nutritional supplements.

Following completion of the project further funding has been secured for additional dietetic staff to offer the enhanced dietetic service to all care homes throughout the health board.

References
Micronutrient deficiencies are difficult to predict in patients on home parenteral nutrition
by M Pearson, D Brundrett, SM Gabe and A Culkin, St Mark’s Hospital, Harrow, HA1 3UJ, England.

Studies report a high prevalence of micronutrient deficiencies in home parenteral nutrition (HPN) patients. We audited the micronutrient status of patients in a tertiary HPN centre.

A retrospective analysis was performed on patients receiving HPN for a minimum of six months. This included trace elements zinc and selenium plus vitamins A, D and E. Patients were excluded if they had undergone surgery or a change in micronutrient provision in the past six months. To avoid the effect of the acute phase response on micronutrient concentration, blood samples were excluded if C-reactive protein (CRP) >15mg/L. In patients with micronutrient deficiencies, univariate and multivariate analyses were performed to determine if demographic categories were significant including age, sex, aetiology, intestinal anatomy, BMI, number of days on PN, Cernevit® and Additrace®.

A total of 93 patient samples were included. Samples were excluded due to surgery (n=8) or change in micronutrient provision (n=42) in the last six months or CRP >15mg/L (n=18). Mean age 54±14 years, 33M:60F and mean BMI 21.8±3.1kg/m². Aetiology included inflammatory bowel disease (n=28), mesenteric infarction (n=23), motility disorder (n=22), surgical complications (n=6) and other (n=14). Mean number of days/week on HPN 5.7±1.5 (range 2-7) with Cernevit® 4.7±1.6 days/week (range 2-7) and Additrace® 5.7±1.6 days/week (range 2-7). Deficiencies were observed in zinc (19%), selenium (13%) and vitamins A (26%), D (33%) and E (13%). Factors associated with deficiency are presented in Table 1. No associations were observed for vitamin D. No associations were observed regarding the intestinal anatomy.

Table 1 Factors associated with micronutrient deficiencies

<table>
<thead>
<tr>
<th>Micronutrient</th>
<th>Significant associations on univariate analysis</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc</td>
<td>Surgical complications</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>BMI &gt;25kg/m²</td>
<td>0.01*</td>
</tr>
<tr>
<td></td>
<td>Additrace® &lt;4days/week</td>
<td>0.06</td>
</tr>
<tr>
<td>Selenium</td>
<td>Surgical complications</td>
<td>0.04</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>Age &lt;50 years</td>
<td>0.02</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>Male</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*Multivariate analysis

To our knowledge this is the largest survey of micronutrient status in stable HPN patients. Micronutrient deficiencies were observed in our HPN population but age, sex, aetiology, intestinal anatomy, BMI, number of days on PN, Cernevit® and Additrace® did not impact consistently on micronutrient concentrations highlighting the importance of ongoing monitoring and adequate supplementation as per ESPEN guidelines.

References
**Right meal, right patient, first time.**

By T. Loughnane, M. O’Brien, K. O’Connor, D. O’Reilly, C. Reynolds, S.P. Teeling, A. Igoe, and M. McKiernan, Mater Misericordiae University Hospital, Dublin 7, Ireland, Wexford General Hospital, Wexford, Ireland, St Lukes General Hospital, Kilkenny, Ireland, Mater Lean Academy, Mater Misericordiae University Hospital, Dublin 7, Ireland, UCD School of Nursing, Midwifery and Health Systems, UCD Health Sciences Centre, Belfield Dublin 4, Ireland.

Lean is the application of a set of principles to identify and eliminate waste, and to deliver to the customer what they want, when they want it. Dysphagia is a swallowing disorder whose management includes altering the texture of diet and/or altering the consistency of fluids.

The purpose of this study was to examine the process of providing appropriate modified consistency meals to patients with known dysphagia, admitted through the Emergency Department (E.D.), using Lean Healthcare methodology, taking into consideration the HIQA Report of the Review of Nutrition and Hydration care in public acute hospitals 2016.

The Define, Measure, Analyse, Improve, Control (DMAIC) Lean Methodology was used in this project. The ‘Define’ phase, used Lean tools such as ‘SIPOC’ (Supplier, Input, Process, Improve, Control) to scope out the project. The ‘Measure’ phase involved broad stakeholder engagement via questionnaires, survey monkeys, interviews and focus groups. Data was collected from 20 charts and validated with a gemba (following a patient in real time). In the ‘Analyse’ phase, data was plotted on an IPO (input output) process map. An ‘Ishikawa (Fishbone)’ diagram and ‘TIMWOOD’ (Transport, Inventory, Motion, Waiting, Over-production, Over-processing, Defects) analysis were used for root cause analysis. Improvements were identified via stakeholder brainstorming and selected using a ‘PICK’ (Possible, Implement, Challenge, Kill) chart. These were plotted on a future state IPO.

Of 20 charts reviewed of patients with dysphagia, 45% received the “wrong meal, first time”. Median time to the first correct meal was 19.5 hours. 83% of patients were unable to communicate their own needs. 60% of the patients came from nursing homes but only 33% of transfer forms had information on modified diet. A survey of medical and nursing staff (n=22) showed 16% rarely or never asked if the patient required a modified diet, while 22% rarely or never documented the patient’s specific consistency of food required.

Process improvements implemented included a swallow I.D. card for patients, a suitable out of hours snack, an awareness campaign for nursing homes and G.P.s, staff education, and an improved communication plan for E.D.

Using Lean methodology to examine this process has highlighted its’ complexity and the large number of stakeholders involved. Staff education, patient empowerment and forging links with community services are essential to streamline this process.

**References**


Factors that affect survival in type 3 intestinal failure; the largest single centre experience of 978 patients over 37 years
by S.M.Oke¹, D.A.Lloyd², Small M¹, Naghibi M¹, Donnelly S.C¹, J. M.Nightingale¹ and S.M.Gabe¹
¹Lennard Jones Intestinal Failure Unit, St Mark's Hospital, Harrow, ²Hampshire Hospitals NHS Foundation Trust, Winchester, United Kingdom SO22 5DG

Standard management of type 3 intestinal failure (IF) is long-term parenteral support (PS). While it is clear that PS is lifesaving treatment for IF, it carries significant morbidity and mortality, both dependent and independent of the underlying aetiology of the IF. We report the largest single-centre series assessing the long-term survival of adult patients on all forms of home PS (parenteral nutrition and parenteral fluids) for type 3 IF.

Clinical records of 978 adult patients receiving home parenteral support for IF at our tertiary referral centre were analysed from January 1979 until October 2016. Demographic data, underlying aetiology, intestinal length, colonic continuity, complication rates and survival was recorded. Differences between groups were analysed by chi-squared tests. Kaplan-Meier and Cox’s regression models were used to assess factors affecting survival.

Overall probability of survival for all patients on PS was 86%, 63%, 52%, 43%, 31%, 24% at 1, 5, 10, 15, 20 and 30 years respectively. When active malignancy is excluded as a cause of IF, survival rates were 90%, 66%, 55%, 45%, 33% and 25%. There is a significant difference in survival dependent on underlying IF aetiology. The worst 1-year survival of 62% was seen for malignancy and the best with pseudo-obstruction (excluding scleroderma) at 93%.

Multivariate analysis demonstrated a significant relationship between survival and the following factors; age at start of PS; HR 1.03 (p<0.001), form of PS; HR 0.48 (p=0.04), presence or absence of colon in continuity; HR 0.42-0.70 (p=0.03), and the aetiologies underlying IF HR 0.74-8.19 (p<0.001).

Our data have shown that several factors are associated with long-term survival. A better prognosis was associated with an earlier age of onset of type 3 IF and the presence of colonic continuity, while a worse prognosis was associated with underlying aetiologies such as malignancy and radiation enteritis. To our knowledge, this is the largest single-centre case series looking at survival in type-3 IF to date and adds to our current understanding of the long-term outcomes in type 3 IF.

References:
Review of tea drinking habits in short bowel patients with jejuno-colic anatomy in Northern Ireland

by R. Warke and S-J Hughes, Nutrition Support Team, Department of Nutrition & Dietetics, Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB

Numerous studies have demonstrated that absorption of oxalate from the gut is enhanced in patients with ileal disease or resection and is specifically increased after restoration of continuity between small bowel and colon. Whilst there are numerous potential contributors to kidney stone formation amongst patients with small bowel disease or resection, a 25% incidence of Calcium oxalate stones occurs in those with jejuno-colic anastomosis. Dietary oxalate restriction is a rational approach in patients with enteric hyperoxaluria. Ireland is known to have the 2nd largest annual tea consumption in the world. Of the some 170 patients attending Intestinal Failure Service in Northern Ireland, 37 have restoration of continuity of less than 100cm small bowel to colon. These patients have already been counselled on a low oxalate diet post restoration of continuity including restriction of high oxalate foods such as spinach, beetroot, rhubarb, nuts, wheatbran, tea, chocolate and strawberries. As the majority of these patients follow a lower residue diet the main dietary source of oxalate is tea (up to 280mg/100ml). We surveyed these patients in regards to their tea drinking habits (frequency, strength, brewing method +/- milk) and provided 7 day supply of an oxalate free tea (Rooibos- Red Bush Company) to aim to alter habit. This patient group were drinking 1-8 cups of black tea daily (cup size ranging from 100-350ml) despite dietary advice. We introduced Rooibos tea as an alternative and encouraged restriction of black tea to 4 cups daily, whilst encouraging adequate fluid consumption. 58.3% of those surveyed provided positive feedback with majority of patients willing to change to the Rooibos tea. We have updated our written dietary information to include this recommendation.

References
Can dietitians contribute to reducing inpatient days among frail elderly people? A retrospective review of readmissions, length of stay and the impact of differences in anthropometry by L Nash, Department of Nutrition & Dietetics, Airedale NHS Foundation Trust, Skipton Road, Keighley, BD20 6HD

The Frail Elderly Pathway (FEP) Team at Airedale NHS Foundation Trust aims to reduce admissions, readmissions and length of stay (LOS) among frail elderly people. The dietitian’s main focus is treating malnutrition in the community in order to contribute towards these aims. This evaluation aimed to assess whether dietetic intervention contributes to reducing readmissions and LOS and whether differences in anthropometry have an impact, as found by Tappenden et al (2013)\(^1\). Ethics approval was not required.

This was a retrospective analysis of data for patients who had received dietetic intervention from the FEP team dietitian between May 2015 and July 2016. The Trust provided data from electronic patient records on: admissions during six months prior to dietetic intervention; admissions during six months after start of dietetic intervention; LOS per admission. Anthropometrical data recorded during intervention was used to assess the impact of weight change, BMI and strength. Statistical analysis was performed using SPSS 16.0 for Windows. Results are summarised in Table 1

<table>
<thead>
<tr>
<th>Table 1: Results</th>
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<tbody>
<tr>
<td><strong>Did patients experience fewer admissions post intervention?</strong></td>
</tr>
</tbody>
</table>
| • 42 separate admissions during 6 months pre intervention, 14 during 6 months post.
  • Using the paired t-test, the difference was 1.17 (±1.4), statistically significant at the 5% level (t=4.164, df=23, p <0.05).
  • A genuine admissions per patient (n=24) were 1.75 during 6 months pre and 0.58 during 6 months post intervention. |
| **Did patients experience reduced LOS post intervention?** |
| • 200 total inpatient days during 6 months pre intervention; 79 during 6 months post intervention.
  • Average LOS per patient 9.1 days during 6 months pre, 7.9 during 6 months post intervention.
  • NB 2 outliers excluded. |
| **What is the impact of weight change?** |
| • 1.3 day reduction in LOS on average for patients who gained/maintained weight during intervention.
  • 0.6 day reduction in LOS on average for patients who lost weight during intervention. |
| **What is the impact of BMI?** |
| • Patients with BMI <18.5 kg/m\(^2\) did not experience a decrease in number of admissions on average.
  • A genuine admissions per patient reduced by 1.2 days (BMI 18.5–19.9 kg/m\(^2\)); 1.6 days (BMI 20-24.9 kg/m\(^2\)); 1 day (BMI ≥20 kg/m\(^2\))
  • A genuine LOS increased by 1.7 days on average for patients with BMI <18.5 kg/m\(^2\).
  • A genuine LOS reduced per patient by an average of 2.8 days (BMI 18.5–19.9 kg/m\(^2\)); 5.6 days (BMI 20-24.9 kg/m\(^2\)); 6.5 days (BMI ≥25 kg/m\(^2\)). |
| **What is the impact of changes in strength** |
| • Patients who gained handgrip strength during intervention experienced on average 1.3 fewer readmissions and experienced a 4.2 day reduction in LOS, a greater reduction than for the full group.
  • The extent of strength gain did not make a difference. |

These results are consistent with previous findings that malnourished people experience more frequent admissions and longer LOS and that reversing malnutrition can reduce likelihood of admission\(^1,2\). It must be borne in mind that the FEP team organise health and social care support for patients in addition to dietetic input, so it cannot be proven that dietetic intervention alone has been the main contributory factor in reducing inpatient days.

The FEP team has contributed towards a 67% reduction in readmissions and reduced LOS for this patient group, with implications for patient experience, cost efficiencies and hospital flow. The FEP dietitian’s role is contributing towards these outcomes. Reducing risk for malnutrition/sarcopenia is an appropriate focus for admissions reduction interventions. Frail elderly patients who lose weight are at higher risk for readmission, as are those with BMI <18.5 kg/m\(^2\).

References
1. Tappenden, K A; Quatrara, B; Parkhurst et al (2013), Critical Role of Nutrition in Improving Quality of Care: An Interdisciplinary Call to Action to Address Adult Hospital Malnutrition, Journal of the Academy of Nutrition and Dietetics. 2013: 113(9):1219-1237
Increasing protein intakes through the addition of sauce to an older persons’ lunch meal.
by K M Appleton, Bournemouth University, Poole House, Fern Barrow, Poole, BH12 5BB, UK.

Protein-specific under-nutrition impacts 10-20% of UK older adults\(^1\), with potential detriments to health and wellbeing\(^{1,2}\). This under-nutrition is considered to result, at least in part, from low protein intakes\(^1,3\), resulting, in the early stages, from the low consumption of high quality protein-rich foods, such as meat, fish, eggs and dairy\(^3\). Strategies to increase the consumption of these foods by older adults include modifications to the food, e.g., improving the taste or texture\(^3\), and improvements to the eating experience, e.g., through improving dining ambience and social interaction\(^3,4\). Our studies demonstrate increased protein intakes in older adults through improving taste and flavour by adding sauces and seasonings\(^5,6\). In our studies, older adults consumed more energy, protein and fat, by consuming more of the meat component of the meal in meals with added sauces and seasonings, compared to the same meals without sauces and seasonings\(^5,6\). While strategies may demonstrate success at a single meal however, for effects on health and wellbeing, increased protein intakes must be sustained over several meals. Sustained higher intakes are achievable under supervision\(^4\), but most meals consumed by community-dwelling older adults are unsupervised. In this scenario, benefits at one meal may be easily reduced by decreased protein intakes at the next meal. This work aimed to investigate the impact of adding sauce to an older persons’ lunch meal to protein intakes at that meal and over the following meal.

Using a laboratory setting, 56 community-dwelling older adults consumed a traditional hot lunch meal with sauce and the same meal without sauce on two separate occasions, and intakes at lunch and at the following evening buffet meal were measured.

In the whole group (final N = 52), significantly more protein was consumed at the lunch meal with sauce (mean (excl. sauce) = 34.2 ± 13g) compared to without sauce (mean = 31.6 ± 12.2g). Individual differences, however, were also found. For some participants (N = 26), significantly higher protein intakes were found following sauce (40.0 ± 13.1g vs 27.7 ± 11.4g), while for others (N=19), the addition of sauce resulted in lower protein intakes (28.5 ± 9.9g vs 35.5 ± 10.7g). Seven participants demonstrated no effect. Overall intakes (lunch + evening meal) also followed the same pattern: those who responded to the sauce manipulation with an increase in protein intake consumed more protein overall following the sauce (65.2 ± 16.1g vs 54.2 ± 12.2g), while those who consumed less protein at lunch following the sauce manipulation did so again overall (57.5 ± 12.7g vs 50.5 ± 11.5g). Compensation for earlier intakes was very poor for both groups.

These findings suggest that the addition of sauce to an older persons’ lunch meal can increase protein intakes at that meal, and that these effects are sustained, thus benefits were maintained. This intervention, however, was more beneficial for some than for others.

References

5. Appleton KM. Increases in energy, protein and fat intake following the addition of sauce to an older person’s meal. Appetite 2009; 52: 161-165.
Development of educational resources for patients and health professionals to enhance the inflammatory bowel disease (IBD) service.

By J. Davidson\(^1\), K. Blair\(^2\), M. Groome,\(^2\) J. Fyall and JP. Baxter\(^1\), \(^1\)Department of Nutrition and Dietetics, \(^2\)Department of Gastroenterology Ninewells Hospital, Dundee, DD1 9SY.

Diet and nutrition problems are extremely common in patients with IBD - Crohn’s disease and ulcerative colitis (UC). The UK IBD Standards (NICE 2015) recommend that in order to promote patient centred care all patients with IBD should have access to a dietitian and nutritional resources. However, many patients do not need the specialist services of a dietitian, but there is a need to improve awareness of the importance of good nutritional intake and to enable early interventions that can be delivered by other health professionals. Patient self-management should also be supported. Improving knowledge on diet and IBD to ensure nutritional adequacy and preventing nutritional depletion, managing food intolerances, symptom control, are just some aims of nutritional care. We know from preliminary work that patients would like to receive nutritional information. The majority of patients had not received dietary advice but would have welcomed it; not necessarily from a dietitian, but wanted to be sure they received from a reliable source. Ensuring a continuity of care across the IBD multi disciplinary team including the dietetic service will help minimise this variation.

Funding was secured to develop educational resources to improve the nutritional knowledge of health professionals and patients to enhance the IBD service; to improve patient self management and optimise patient experience. The project aims to support early interventions in the management of IBD by improving the nutritional knowledge of health professionals and patients using a multi factorial approach.

To improve patient nutritional knowledge a focus group was formed comprising 7 patients with IBD; recruited using advertising posters; to identify their nutritional intolerances and ways to overcome them then used to inform the content of leaflets and website content. The focus group was also involved with draft peer reviews. Feedback was noted on both developed leaflets and the webpage content, of which were also circulated around the patient public partners and MDT members. The webpage content was also based on feedback from the focus group and based on dietetic consultation. Imagery education was also used to suit all patients’ ability.

Improving health professional’s nutritional knowledge was done via a clinical update. The Nutrition and Dietetic service was provided with a clinical update on IBD research and guidelines. A knowledge and confidence questionnaire was completed prior and post these session. The knowledge questionnaire completed by the dietitians showed a significant improvement in confidence (P-value of 0.0419) in General IBD knowledge, diet and IBD management/advice. Significant improvement (P value of 0.03) in awareness of IBD standards, guidelines and our service resources was also achieved. The update to other MDT members will also receive similar questionnaires.

We have developed IBD resources using coproduction and asset-based approaches to develop population specific dietary advice, as well as relevant education to support nutritional intervention to be delivered by other health professionals. Using the IBD population to develop resources will result in appropriate and patient centred care. Future developments include assessment of the uptake and effectiveness of the resources using questionnaires and Google analytics.

References
Introducing a dementia-specific nutrition and mealtime assessment tool
by M Hannon Raheny Community Nursing Unit (under the management of Beaumont Hospital),
Dublin 5, Ireland.

It is estimated that there are 55,000 people with dementia in Ireland (1). It is estimated that 90% of residents in Raheny Community Nursing Unit have cognitive impairment. The positive psychological and social aspects of eating are important pleasures of life, which can persist into old age (2). For many people with dementia food and mealtimes may add a sense of meaning, order, and structure to the day. It can provide opportunities for a person to make choices regarding their care and promote a sense of independence (3). Complex nutritional problems arise in dementia over the course of the disease with the progressive decline in cognitive, behavioural and physical functions. Behaviours such as wandering, pacing, refusal, spitting out food or indifference to food can also have a significant impact. Cognitive issues affecting intake include the visual perception of food on a plate or the inability to recognise food and what to do with it. In addition to dementia-related issues, people with dementia may also be affected by other co-morbidities (4).

There are multiple tools available to assess behaviour at mealtimes which affect dietary intake. Food charts are an established method of recording nutritional intake (5). However, there appears to be no tools available which combine factors affecting nutritional intake and a person’s actual dietary intake. For residents with dementia who are at a high risk of malnutrition, they may not be able to participate fully or at all in dietetic consultation to jointly agree a care plan, express nutritional preferences or desires. Therefore as carers we must use our expertise to interpret a resident’s behaviour to advocate for and encourage patient-specific care regarding food choices.

The aim of this quality improvement initiative was to create and implement a tool to record the actual food intake of long-term care residents with dementia and the physiological and social factors which may affect their intake at mealtimes. The purpose is to create patient-specific care plans to improve nutritional outcomes and improve Quality of Life.

Using Quality Improvement methodologies a nutrition and mealtime assessment tool was created and implemented on 25 bed unit in Raheny Community Nursing Unit. This change initiative resulted in a more detailed record of a resident’s dietary intake. There was also information recorded on the level of assistance required at mealtimes, any factors affecting nutritional intake, texture modifications to diet and fluids, location of meals and who assisted or accompanied the resident.

The newly introduced nutrition assessment tool has been well-received overall by nursing and healthcare staff due to its ease of use. It allows for greater flexibility in recording residents’ intake, particularly when they don’t eat at standard mealtimes. It also provides information at a glance about the textures and consistencies of meals and fluids and therapeutic diets a resident may be taking. This promotes the handover of accurate information. This has a safety implication when there is a high turnover of staff or the use of agency staff. Primarily it has allowed more specific patient centred nutritional care planning for a resident by the Dietitian as there is more qualitative information available. It has also highlighted factors affecting intake which could be addressed by the Dietitian or escalated to the medical team. The author has identified the need to provide education to staff on the use of the tool.

References:
Vitamin A deficiency-not just a developing country problem
by SCL Smith, A Marley, R Ahmed, SC Cooper, Queen Elizabeth Hospital Birmingham, Mindelsohn Way, Edgbaston, Birmingham, United Kingdom, B15 2GW.

Vitamin A (retinol) plays a vital role in the functioning of eyes, growth and development and maintenance of epithelial cellular integrity and immune function (1). Its role in skin and eyes is integral in the maintenance of its barrier to infection. Vitamin A is required for the detection of light by the retina as retinol (the active form of Vitamin A) and is present in the opsin proteins of rods and cones (2). Oxidation of retinol forms retinal and retinoic acid which is essential for gene regulation (3). Deficiencies in Vitamin A can be seen in conditions such as liver disease, chronic pancreatitis and in patients with short bowel syndrome or other causes of intestinal failure. Deficiencies are seen in Primary Biliary Cirrhosis, as reduced concentrations of intraluminal bile increases malabsorption and deficiencies in fat-soluble vitamins (A,D,E,K) (4) with 33% of patients deficient in vitamin A (5).

The more common symptoms and signs are visual disturbance, including night visual loss and degeneration of the cornea (2). The literature surrounding Vitamin A deficiency is largely in populations from developing counties where malnutrition is frequently seen.

We reviewed all Vitamin A assay requests which were reported as <1 umol/L across a 5 year period between 2012-2016. We identified 106 patients with a deficiency, 18 of whom were symptomatic varying from blurred vision (n=2), night blindness (n=11), reduced/poor vision (n=4) and dry eyes (n=1). These 18 patients were requested by ophthalmology (8), hepatology (5), gastroenterology/nutrition (3) and neurology (2). Fourteen received treatment (Forceval 5, Dalivit 2, other 7). Of these, 4 patients responded both biochemically and symptomatically. 7 responded biochemically (no mention regarding symptom improvement in correspondence), 2 had no response, 4 unknown and 1 patient died.

There is little in the literature about Vitamin A deficiency in the Western World. This case series demonstrates that Vitamin A deficiency can arise from a diversity of aetiology and its prevalence should be considered outside that of developing countries. A low threshold for checking serum Vitamin A in those patients with symptoms is recommended and treated promptly. A significantly deficiency should be treated with preparations such as Dalivit with milder deficiencies replaced with Forceval.

References
1. WHO
**A Food Based Approach to Increase Dietary Protein Intake in Community Dwelling Older Adults: Protocol for a Randomised Controlled Trial**

By E van den Heuvel, JL Murphy and KM Appleton. Research Centre for Behaviour Change, Department of Psychology, Faculty of Health and Social Sciences, Bournemouth University, Poole, BH12 5BB, UK

Dietary protein has an important impact on health, physical functioning, and muscle mass, and it has been suggested that older adults need more dietary protein than younger adults\(^1\). Compared to other protein rich foods, eggs are easy to cook, of long shelf life, and low cost; so they may be of help in increasing protein intake in older adults. Reasons for eating or not eating eggs in adults aged 55 years and older were identified in a focus group study\(^2\) and then used to design a structured questionnaire which was sent out to a National sample\(^3\). Our questionnaire results showed that older adults who eat more eggs report that they think eggs taste good and add variety to the diet. Adding flavour and more variety may encourage intakes in those who consume fewer eggs.

A randomized controlled intervention study was designed to increase egg and protein intakes, by providing recipes of protein-rich egg-based meals and herb/spice packets, to encourage the addition of flavour and variety to the diet. Community dwelling adults aged 55 years and over were randomized to receive dietary information followed by either 6 recipes and relevant herbs/spices every fortnight for 3 months, or nothing further. Dietary intake (Food Frequency Questionnaire\(^4\)), body composition (Bioelectrical Impedance Analysis), handgrip strength, and physical performance were assessed at baseline, and will be assessed again after the 3-month intervention period and at a 6-month follow up. The study is registered at ClinicalTrials.gov (NCT02777918). All participants have so far completed baseline sessions.

A total of 100 participants are taking part - 54 females and 46 males; mean age at baseline was 70 ± 7 years, range 55-97 years. Egg intake was 22 ± 16 eggs per month, which is higher than the National Diet and Nutrition Survey data indicating that British older adults (65yrs +) consume 33g eggs and egg dishes per month (equivalent to up to 16-17 eggs). Reported protein intake was 1.24 ± 0.42g/kg/day. In this sample, 10% did not meet the Reference Nutrient Intake for all adults of 0.75g/kg/day, and 50% did not meet the 1.2g/kg/day which has been suggested as the protein requirement for older adults\(^4\). Mean BMI was 27 ± 4 kg/m\(^2\); lean mass (LM) percentage was 61 ± 6% for females, and 74 ± 5% for males; handgrip strength was 25 ± 4kg for females, and 40 ± 9kg for males. In our sample, 11% of the females and 9% of the males could be classified as sarcopenic, which is within the estimated range of sarcopenia in community dwelling populations (1-29% prevalence\(^5\)). Providing recipes could be a straightforward to implement strategy to encourage older adults to consume more eggs and more protein, which could support good health.

**References**

2. van den Heuvel E, Murphy JL, Appleton KM Exploring the barriers and facilitators to the consumption of eggs and other protein rich foods using focus groups. Proc Nutr Soc 2015; 74: 314
Improve efficiency of Dietetic care for effective interventions in Care Home Residents at High Nutritional Risk
by K. Taylor, Queen Margaret Hospital, Whitefield Road, Dunfermline, Fife, KY12 0SU

Increasing numbers of referrals were made to the Older Peoples Service Dietetic Team in West Fife. Upon further investigation it was found that the MUST Screening\textsuperscript{[1]} referral protocol was not being implemented fully.

Staff were referring residents with a Medium nutritional risk direct to Dietetics, instead of implementing Food First Guidelines for 4 weeks and rescreening.

A Nutritional Care Plan for High Risk patients was not consistently implemented by staff. Nutritional needs were not being met for residents identified at Medium and High risk. This was an inefficient use of Dietetic time.

The aim was to enable Care Homes to promote self-sufficiency and refer appropriately in line with the guidance, establishing a consistent approach to implementing Nutritional Care Plans for all care home residents\textsuperscript{[2]}. To highlight areas of good practice and identify areas for improvement, utilising Dietetic time for effective interventions with residents identified at High Nutritional Risk.

Insight into documentation was obtained via audit of Dietetic referrals. A questionnaire was developed, using this information. The questionnaire was completed using meal time observations as well as interviewing senior members of staff. Feedback was structured to highlight Areas of Good Practice and suggest Areas of Improvement, including signposting to available resources to support implementation of any changes. Areas identified for improvement and a timescale were agreed with the Care Home Manager and confirmed by email. A follow-up questionnaire was repeated within six months to review changes.

Improved implementation of Care Plans for High Nutritional Risk residents was observed. Care Homes were more self-sufficient, resulting in improved nutritional care of residents and there was a 19% reduction in the number of referrals.

We plan to replicate this project across Fife Care Homes to establish a consistent and co-ordinated approach to implementing Nutritional Pathways and Care Plans.

References
1. Malnutrition Universal Screening Tool ("MUST") The "MUST" Report - Executive Summary, June 2012, Malnutrition Advisory Group (MAG) of BAPEN

2. Food Fluid and Nutritional Care Standards: October 2014, Health Improvement Scotland.
A Systematic Review of Home Parenteral Nutrition in Patients With Advanced Cancer
by Konstantinos C. Fragkos,¹ Lucia Fini,² Niamh Keane,¹ Hanson Kwok,¹ Emma Paulon,¹ John Barragry,¹ Shameer Mehta,² Farooq Rahman¹ and Simona Di Caro¹
¹Nutrition and Intestinal Failure Service, University College London Hospitals NHS Foundation Trust, NW1 2PG, UK; ²Busto Arstizio Hospital, Busto Arstizio, Varese, Italy.

The use of Home Parenteral Nutrition (HPN) in patients (pts) with advanced cancer, who cannot meet their nutritional requirements by oral or enteral routes, remains controversial with significant variation worldwide. Our aim was to review data from literature and identify the potential benefit of HPN in pts with advanced cancer. Articles on HPN in advanced cancer from 2002 to 2016 were searched in Pubmed. The primary end point was survival, secondary end points were quality of life (QoL) and nutritional/performance (Karnofsky score, KPS) status.

Eighteen studies met the quality inclusion criteria (11 retrospective, 7 prospective and 2 randomized). Studies were mainly conducted in Western countries (30% in Italy, 15% in USA, 10% in Canada and Germany), including overall 3066 patients. Mean age was 57.2±6.4 years. Most common cancer site were GI tract, ovary, breast, and head and neck. Main indication for HPN was bowel obstruction or cachexia. Mean duration of HPN was 3.8±1.4 months. Median overall survival was 4.6±2.4 months (1.5 month in a selected cohort with peritoneal carcinomatosis, 8 months in a study including only advanced ovarian cancer). At baseline, mean weight was Kg 57.6±5.1, mean BMI 20.7±0.8 and mean KPS 55±5. After 1-5 months of HPN, mean weight and mean BMI increased to 61.9±5.3 and 21.2±0.5 respectively. KPS increased in 2 studies, stable in 2 studies. QoL was analysed through validated scales in 5 studies and resulted significantly increased after HPN. On average, HPN related complications were reported in 13±6% of the pts.

Indications for HPN and overall survival (3.8±1.4 months) in advanced cancer was in accordance with prognostic parameters specified in International guidelines. Variation in clinical practice is evident in different countries. A cultural change and education of healthcare professionals is required to ensure early access to HPN for appropriate patients.

Table. Studies included in the review

<table>
<thead>
<tr>
<th>Article</th>
<th>study type</th>
<th>country</th>
<th>n°pt</th>
<th>tumor type</th>
<th>pt type</th>
<th>life expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasanisi, 2001</td>
<td>retros.</td>
<td>Italy</td>
<td>76</td>
<td>Gyn_GI</td>
<td>obstruction</td>
<td>any</td>
</tr>
<tr>
<td>Bozzetti, 2002</td>
<td>prospect.</td>
<td>Italy</td>
<td>69</td>
<td>GI_Gyn_breast_others</td>
<td>obstruction</td>
<td></td>
</tr>
<tr>
<td>Lundholm, 2004</td>
<td>prospect.</td>
<td>Sweden</td>
<td>134</td>
<td>solid tumor</td>
<td>cachexia</td>
<td>&gt; 6 months</td>
</tr>
<tr>
<td>Duerksen, 2004</td>
<td>retros.</td>
<td>Canada</td>
<td>9</td>
<td>GI metastatic</td>
<td>obstruction</td>
<td>&gt; 2</td>
</tr>
<tr>
<td>Hoda, 2005</td>
<td>retros.</td>
<td>USA</td>
<td>52</td>
<td>GI_Gyn_others</td>
<td>metastasis</td>
<td></td>
</tr>
<tr>
<td>Brand, 2006</td>
<td>retros.</td>
<td>USA</td>
<td>28</td>
<td>ovarian cancer</td>
<td>obstruction</td>
<td>terminal</td>
</tr>
<tr>
<td>Santarpia, 2006</td>
<td>retros.</td>
<td>Italy</td>
<td>152</td>
<td>GI_Gyn_breast_others</td>
<td>carcinomatosis</td>
<td>any</td>
</tr>
<tr>
<td>Fan, 2007</td>
<td>retros.</td>
<td>China</td>
<td>115</td>
<td>GI</td>
<td>cachexia</td>
<td>few months</td>
</tr>
<tr>
<td>Wang, 2007</td>
<td>retros.</td>
<td>Taiwan</td>
<td>20</td>
<td>Gyn_GI lung</td>
<td>cachexia</td>
<td>few months</td>
</tr>
<tr>
<td>Soo, 20008</td>
<td>retros.</td>
<td>Canada</td>
<td>38</td>
<td>Gyn_GI_hematologic</td>
<td>cachexia</td>
<td>few months</td>
</tr>
<tr>
<td>Pelzel, 2010</td>
<td>prospect.</td>
<td>Germany</td>
<td>32</td>
<td>pancreas</td>
<td>cachexia</td>
<td>few months</td>
</tr>
<tr>
<td>Madhok, 2010</td>
<td>retros.</td>
<td>UK</td>
<td>7</td>
<td>advanced ovarian cancer</td>
<td>cachexia</td>
<td>few months</td>
</tr>
<tr>
<td>Chermesh, 2011</td>
<td>prospect.</td>
<td>Israel</td>
<td>28</td>
<td>GI_Gyn_larynx_breast</td>
<td>obstruction</td>
<td></td>
</tr>
<tr>
<td>Ruggieri, 2013</td>
<td>retros.</td>
<td>Italy</td>
<td>333</td>
<td>head/neck_GI_Gyn_others</td>
<td>cachexia</td>
<td>&gt;1,5</td>
</tr>
<tr>
<td>Bozetti, 2014</td>
<td>prospect.</td>
<td>EU</td>
<td>414</td>
<td>head/neck_GI_Gyn</td>
<td>obstruction</td>
<td>&gt;3 months</td>
</tr>
<tr>
<td>Vashi, 2014</td>
<td>prospect.</td>
<td>USA</td>
<td>52</td>
<td>GI_Gyn_others</td>
<td>cachexia</td>
<td>&gt;3 months</td>
</tr>
<tr>
<td>Drissi, 2015</td>
<td>retros.</td>
<td>Germany</td>
<td>1137</td>
<td>GI_Gyn_breast_others</td>
<td>cachexia</td>
<td></td>
</tr>
<tr>
<td>Sennesse, 2015</td>
<td>prospect.</td>
<td>France</td>
<td>370</td>
<td>GI</td>
<td>cachexia</td>
<td>any</td>
</tr>
</tbody>
</table>
An Audit of Parenteral Nutrition Provision on the Cardiac and General Intensive Care Units at Southampton General Hospital.
by A. Rogers and B. Jenkins. Department of Nutrition and Dietetics, University of Southampton NHS Foundation Trust, Tremona Road, Southampton, England, SO16 6YD.

Parenteral nutrition (PN) has been a controversial subject in intensive care nutrition; a large multi-centre study and meta-analysis found no increased mortality with PN compared to EN\textsuperscript{1,2}, but a more recent large trial showed full parenteral feeding increased infections complications and recovery time compared to enteral feeding\textsuperscript{3,4}. To reflect the new evidence guidelines have been updated to recommend PN is held for the first 7 days of ICU admission for patients at low nutritional risk\textsuperscript{5}.

This audit was therefore completed to investigate whether PN prescription on the cardiac and general intensive care units at Southampton General Hospital was in line with critical care guidelines. Information on PN prescription, nutritional status and nutritional requirements was collected on 30 consecutive patients commenced on PN. Data was collected up to a maximum of 14 days or until discharge from intensive care unit or termination of PN.

27% (n=8) of PN prescriptions were commenced for a likely ileus and a further 17% (n=5) were commenced post bowel surgery; none of the patients had a confirmed ileus, high gastric aspirates or an inadequate length of bowel. 6% (n=20) of patients were on PN for 3 days or less; the average length of PN prescription was 6.4 days. Our cohort started on PN after an average of 3.4 days from admission to ICU and 2.7 days of poor nutritional intake.

Calorie requirements were met (>85% of calculated requirements) on 5 of the 263 days of PN prescription; only one patient met their protein requirements (1.2g protein/kg) during the audit and they were also on enteral feed. The mean deficit was 3301 kcal and 192.1g protein over the duration of parenteral feeding.

Current ASPEN guidance\textsuperscript{5} is that PN is commenced on day 7 for critically ill patients at low nutritional risk; in this study PN was commenced after a mean of 3.2 days from admission for those at low nutritional risk (NUTRIC<5). Further to this 13/30 PN prescriptions were started in contradiction to ASPEN guidance with no evidence of poor enteral feed tolerance or a non-accessible gastro-intestinal tract.

Once on PN, our patients often fail to meet calorie and protein requirements whilst solely PN fed. Nutritional requirements are more likely to be met when a combination of enteral and parenteral nutrition is used. PN rates are often increased slowly due to concerns over risk of refeeding syndrome; however feed rates are increased more slowly than NICE recommendations. Therefore a review of PN prescription processes on intensive care could contribute a monetary saving as well as improving nutrition provision and associated outcomes.

References

By N. Bates, C. Hargraves, C. Killen and L. King1 Nutrition and Dietetics Department, Castle Hill Hospital, Castle Road, HU16 5JQ, UK. Leeds Beckett University, City Campus, Leeds, LS1 3HE, UK.

The number of patients requiring home parenteral feeding (HPN) in the UK has increased significantly over the past 5 years, with a 200% increase in new home parenteral patients1. Patients requiring long-term HPN are at risk of developing micronutrient deficiencies, due to an increase in requirements, increased losses, or inadequate or inappropriate administration2. However there are limited studies looking at the correction and frequency of vitamin and trace element deficiencies in this population. The first aim of our study was establish if HPN patients were meeting recommended daily doses from parenteral feeding and daily multivitamin supplementation. The second aim of the study was to review the frequency of vitamin and mineral deficiencies and addition corrections in these patients over the course of one year.

Data was collected from 10 adult home parenterally fed patients records between January and February 2017. The inclusion criteria being those patients who had been fed on home parenteral nutrition for a year and had quarterly vitamin and trace element blood monitoring. Vitamin and trace element content of the parenteral feeds was obtained from prescriptions and compared to the ESPEN recommendations for HPN3. Blood test results were reviewed for these patients to review for any vitamin and mineral deficiencies parameters collected being vitamin A, Folate, B12, Vitamin D, Vitamin E, Adjusted Calcium, Magnesium, Zinc, Copper, Selenium and Iron. Frequency of additional corrections was also assessed from dietetic records.

Our results showed the overall total mean amount of each vitamin provided was largely exceeding the recommended requirements, except for vitamin K; with intake from an oral multivitamin daily and parenteral additions. However review of biochemical parameters showed that 100% of patients had a vitamin D deficiencies which required correction and 20% had selenium deficiencies which required corrections despite meeting recommended values.

This study found patients were exceeding micronutrient requirements with the supplementation of forceval; however additional corrections were still needed for Vitamin D in all cases and selenium in 2 cases. This poses the question of whether the recommendations need to be revisited, because even though patients received more than the recommended requirements corrections were still needed. As a result of this work we plan to change the vitamin and mineral preparations we use in our bags to see if this will reduce the need for supplementation.

References
Causes and complications of tunnelled central venous catheter repairs in patients on home parenteral nutrition
By M Small, U Meade, & S M Gabe. Lennard Jones Intestinal Failure Unit, St Mark’s Hospital, Harrow, Middlesex HA1 3UJ, UK.

Reliable vascular access devices are essential for the administration of home parenteral nutrition, therefore the ability to be able to repair damaged devices is of clinical benefit as it can mitigate the need to change the catheter. While there is published data to support the benefit of undertaking repairs with Pollack et al\(^\text{1}\) demonstrating that repair avoided the removal of 7% damaged catheters, details on the causes of catheter fracture and any subsequent catheter related complications post repair is lacking. This descriptive study aimed to outline the causes of catheter fracture and any subsequent catheter related complications in our cohort of home parenteral nutrition patients.

A retrospective analysis of our intestinal failure database was performed between January 2011 and December 2016. A repair involved removing the damaged section of the catheter and attaching a new catheter segment with integral metal spike to the cut end of the native device by means of silicone glue.

55 repairs were performed on 44 catheters, with 11 patients needing more than one repair on a single device. 10 of these had 1 subsequent repair and 1 patient had 3. All subsequent repairs were as the result of the repair segment becoming detached. 48 (87%) repairs were successful lasting a mean of 87±468 (2-2052) days, median 156 days. The most common cause of catheter damage was trauma, n=15 (31%) and of these 12 (25%) being while the patient was infusing and 3 (6%) resulting from damage caused by pets. Details of catheter damage is listed in Table 1.

<table>
<thead>
<tr>
<th>Cause of damage</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma while infusing</td>
<td>12 (25%)</td>
</tr>
<tr>
<td>Previous repair detachment</td>
<td>10 (21%)</td>
</tr>
<tr>
<td>Reduction in patency</td>
<td>9 (19%)</td>
</tr>
<tr>
<td>Wear and tear</td>
<td>8 (17%)</td>
</tr>
<tr>
<td>No identifiable cause</td>
<td>13 (27%)</td>
</tr>
</tbody>
</table>

Of the unsuccessful repairs 3 failed due to the repair not holding presumed to be secondary to a reduction in patency secondary to residual parenteral nutrition sitting in the catheter following identification of the fracture, and 4 failed as there was insufficient undamaged catheter length to attach the repair segment to. There was 1 coagulase negative staphylococcus bacteraemia 7 days post repair secondary to a traumatic fracture which the patient had not reported for 10 days. 2 patients developed bacteraemias more than 30 days post repair. 1 patient developed coagulase negative staphylococcus bacteraemia at 56 days which was successfully eradicated and staphylococcus aureus bacteraemia at 120 days requiring catheter removal. 1 patient developed staphylococcus aureus bacteraemia at 194 days also requiring removal. None of the patients developing bacteraemia in their repaired devices had had a bacteraemia in the device pre repair. 3 patients reported a reduction in catheter patency prior to the repair segment becoming detached, with 1 patient reporting a total occlusion. No other catheter complication was reported in the repaired catheters.

Catheter repair in our patient cohort was most commonly associated with trauma while infusing thereby emphasising the need to caution patients about the need to be mindful of their environment. Repair does not seem to be associated with a risk of bacteraemia or occlusion and can extend the lifespan of patient’s devices and reduce the need to have repeated catheter insertions.

References
A snapshot of vitamin D deficiency in home parenteral nutrition patients in Northern England
By L.L. Shabeer and D. Burke
1School of Medicine, University of Leeds, West Yorkshire, LS2 9JT, United Kingdom. 2Department of Colorectal Surgery, St. James’s University Hospital, Leeds, LS9 7TF, United Kingdom.

Vitamin D deficiency is increasingly common with an occurrence of 1 in every 5 adults, approximating to 10 million people across England in the general population. Those on home parenteral nutrition (HPN) are at increased risk of deficiency, making these patients of clinical interest. However, current data are limited to small sample size and the topic has not recently been explored in northern European countries. The aim of this study was to examine the prevalence of vitamin D deficiency in HPN patients in northern England.

Serum Vitamin D (25-hydroxyvitamin D [(25(OH)D)]) values from all HPN patients at St James’s Hospital, Leeds were obtained with sufficiency defined by the range, 75-250nmol/L. The most recent non-fasting serum values for vitamin D in the last six months, patient age and ethnicity were recorded.

Data were obtained on 139 patients (51 male and 88 female). 94% of patients were of White British ethnicity. Vitamin D levels in the sub-normal range were seen in 61.2%. Five patients did not have any recorded vitamin D values within the last six months. Similar levels of vitamin D insufficiency were seen between male and female cohorts (60.8% and 61.4% respectively). 28% of patients were over the age of 65 with 51.3% of these having insufficient vitamin D levels.

This study uses the largest sample size to date and is the first study conducted in a European cohort. Inadequate vitamin D levels were seen amongst a large number of HPN patients, despite monitored supplementation. There is a need for a consideration of the most effective methods to sustain adequate levels of vitamin D in HPN patients.
Audit of parenteral nutrition use in palliative care patients.
‘by D. Woodham, M. Dera and S.C. Cooper,’ University Hospitals Birmingham NHS Foundation Trust, Queen Elizabeth Hospital, Mindelsohn Way, Birmingham B15 2GW, England.

ESPEN guidelines on palliative use of parenteral nutrition (PN) recommend it should be offered to patients who are unable to be fed enterally, are likely to die sooner from starvation rather than the disease, if quality of life is acceptable and will be stabilised or improved and if the patient wants it. The expected survival time from disease progression should be longer than 2-3 months for palliative PN to be beneficial against the burden it undoubtedly involves. The purpose of PN should be clear whether to support the patient through palliative treatment or to palliate until death. In a previously presented cohort, case selection was in keeping with the above, with aetologies from gynaecological and slow growing tumour sites. At UHB, a tertiary referral centre for upper and lower GI cancers, younger patients are often seen.

The use of PN in palliative care over a period of 2 years with 7 patients was retrospectively audited. Factors examined in the decision to use PN included diagnosis, intestinal failure cause, weight loss, CRP, albumin, and current nutritional support. The audit charted date of diagnosis, staging, relevant surgery and outcome, chemotherapy, radiotherapy, modified Glasgow prognostic score and when PN was started and stopped.

Briefly, the audit showed all patients were fully nursed and none had PN related complications. 3 patients were readmitted to hospital or hospice with disease related symptoms. 2 patients survived for 2 months or more.

Table 1: Summary of preliminary results.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Diagnosis</th>
<th>Cause of intestinal failure</th>
<th>BMI at referral</th>
<th>MGPS</th>
<th>Intention of PN</th>
<th>Days on PN</th>
<th>Reason for stopping PN</th>
<th>Place of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31</td>
<td>Gastric Ca</td>
<td>Bowel obstruction</td>
<td>24</td>
<td>1</td>
<td>Palliate</td>
<td>62</td>
<td>Died</td>
<td>Hospice</td>
</tr>
<tr>
<td>2</td>
<td>64</td>
<td>Chronic lymphocytic leukaemia</td>
<td>Bowel enteropathy</td>
<td>13.25</td>
<td>0</td>
<td>Treatment support</td>
<td>33</td>
<td>Pt choice</td>
<td>Hospice</td>
</tr>
<tr>
<td>3</td>
<td>49</td>
<td>Stomach Ca</td>
<td>Bowel obstruction</td>
<td>21.3</td>
<td>2</td>
<td>Chemo</td>
<td>53</td>
<td>Died</td>
<td>Hospital</td>
</tr>
<tr>
<td>4</td>
<td>51</td>
<td>GIST, Paraganglioma, pheochromocytoma</td>
<td>Bowel obstruction</td>
<td>18.9</td>
<td>0</td>
<td>Palliate</td>
<td>18</td>
<td>Pt choice</td>
<td>Hospital</td>
</tr>
<tr>
<td>5</td>
<td>64</td>
<td>Adenocarcinoma Oesophagus</td>
<td>Bowel obstruction + leak</td>
<td>22.46</td>
<td>1</td>
<td>Palliate</td>
<td>71</td>
<td>Died</td>
<td>Home</td>
</tr>
<tr>
<td>6</td>
<td>38</td>
<td>Adenocarcinoma Sigmoid</td>
<td>Bowel obstruction</td>
<td>27.78</td>
<td>1</td>
<td>Palliate</td>
<td>57</td>
<td>Died</td>
<td>Hospital</td>
</tr>
<tr>
<td>7</td>
<td>26</td>
<td>Gastric Ca</td>
<td>Enteropathy</td>
<td>19.8</td>
<td>1</td>
<td>Chemo</td>
<td>59</td>
<td>NG feed</td>
<td>NA</td>
</tr>
</tbody>
</table>

It appears that the Glasgow prognostic score and a younger age at presentation does not confer greater survival on palliative PN and the underlying cancer site has the key impact upon longevity. Decision making for patient selection for palliative PN remains challenging.

References
“An orchestra without a conductor”: A qualitative exploration of the journey from symptom onset to diagnosis in patients with severe Gastrointestinal Dysmotility.

By K. Twist, J. Ablett, A. Wearden, P. Paine, D. Vasant, S. Lal, S. Peters

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Gastrointestinal dysmotility (GID) covers a spectrum of disorders disrupting enteric neuromuscular co-ordination which, when severe, causes intractable gastrointestinal symptoms, malnutrition and is a recognised cause of chronic intestinal failure. To date, no study has provided an in-depth account of the experiences of patients with severe GID and their psychosocial needs. This study aimed to explore patients’ experiences from symptom onset and the process of seeking and receiving a diagnosis. It specifically explored the psychological impact of this process and the impact on relationships.

Participants (n=20, mean age=47.9, female n=16, parenteral nutrition=13) were recruited from a UK centre with tertiary Neurogastroenterology and Intestinal Failure services. A qualitative exploratory design with semi-structured in-depth interviews was used. Data was analysed using thematic analysis.

Significant delays were experienced in obtaining a diagnosis. Participants reported having their mental health questioned and felt they had to fight to prove their symptoms had a physical basis in order to access appropriate treatment. Although a diagnosis helped legitimise symptoms, the condition remained poorly understood by participants themselves, relatives and health professionals. Participants discussed the impact that ‘feeling delegitimised’ and the ‘lack of coherent understanding of GID’ had on their relationships and mental health.

The distressing experience of GID symptoms are compounded by a delay in validating symptoms and lack of coherent understanding. More knowledge of GID is needed by health professionals to speed up diagnosis and offer more coherent information. The psychological impact of a GID diagnosis should be acknowledged early to help facilitate adjustment.
Social support and employment status are associated with negative affect in patients with type 3 intestinal failure

By J. Ablett, D. Vasant, M. Taylor, C. Cawley and S. Lal, The Intestinal Failure Unit, 3rd Floor Hope Building, Salford Royal Hospital, Salford Royal Foundation NHS Trust, Stott Lane, Salford, Lancashire, M6 8HD

Quality-of-life in patients with type 3 Intestinal Failure (IF) on Home Parenteral Nutrition (HPN) has been reported as poor. However, the influence of social support, employment and levels of anxiety and depression have not been previously described.

Patients requiring HPN managed at a national UK IF Unit were invited to complete a postal survey. Data were collected on demographics, HPN duration, employment and IF aetiology. All patients completed the Hospital Anxiety & Depression Scale (HADS) and the Multi-Dimensional Scale of Perceived Social Support (MSPSS). HADS data, anxiety scores (HADS-A), depression scores (HADS-D) and negative affect (HADS-NA) were compared using regression and one-way ANOVA analyses, where appropriate.

85/256 (33%) patients (median age 59 (range: 25-78)), 60% Female, median length of time on PN 42 months (range: 2-408), responded. 22/85 (26%) patients were unemployed, 44/85 (52%) retired, 10/85 (12%) employed. Overall, 48/85 (56%) patients had clinical levels of anxiety and/or depression. Regression analysis confirmed a significant relationship between MSPSS and HADS scores (HADS-A: P<0.0005, R² = 0.29, HADS-D: P<0.0005, R² = 0.21 and HADS-NA: P<0.0005, R² = 0.29). Unemployment was associated with significantly worse HADS scores (HADS-A: P=0.004, HADS-D: P=0.008, HADS-NA: P=0.003). By contrast, HADS scores were not influenced by age, length of time on HPN or aetiology of IF.

Clinical anxiety and depression is common, affecting over half of patients with type 3 IF; these data suggest that patients requiring HPN should be routinely screened for affective disorders. Patients with poor social networks and those of working age who have ceased employment appear to be particularly vulnerable and should be prioritised for psychological support.
Lean Body Mass in Computed Tomography as a Marker of Nutritional Status in Enterocutaneous Fistulae: a Cross Sectional Study
by Konstantinos C. Fragkos,1 Kenneth Cheung,2 Debbie Thong,1 Niamh Keane,1 Shameer Mehta,1 Farooq Rahman,1 Andrew Plumb,2 Simona Di Caro1

1Nutrition and Intestinal Failure Service, 2Imaging, University College London Hospitals NHS Foundation Trust, NW1 2PG, UK

We aimed to investigate the correlation between body weight, body mass index, albumin levels and radiological indices of lean body mass in patients undergoing enterocutaneous fistula (ECF) repair with surgical outcomes. Biochemistry parameters and anthropometric characteristics at the time of ECF surgery were collected for a set of patients undergoing ECF repair. Skeletal muscle and visceral and subcutaneous adiposity was measured at the level of the L3 region (slice and volumetric analysis, Image J). Statistical analysis was performed with percentages, means, Spearman’s rho and dendrograms based on hierarchical clustering.

Twenty seven patients (14 females, 55±3.0 years) were identified in one year. Aetiology of ECF was: surgical complications in 13 patients, extensive bowel disease in the remaining (Crohn’s disease, diverticulitis, radiation enteropathy). 36% of patients had a BMI less than 18.5 kg/m², 50% had albumin less than 30 g/L. None of the L3 measurements were statistically different when compared between patients with albumin less or over 30 g/L. Parenteral nutrition was given peri-operatively in 48.1% of patients. Pre-operative albumin had a strong positive correlation with all radiological indices (rho 0.402-0.522, p<0.05) when sepsis was cleared. Weight and BMI were strongly positively correlated with radiological indices (rho 0.527-0.918). Dendrograms identified two clusters that correlated with imaging indices: hematological parameters (largely negative correlations) and nutritional parameters (weight, albumin and others) (mainly positive correlations). None of the L3 measurements were different with respect to ECF recurrence and PN administration (p>0.05).

L3 measurements strongly correlate with nutritional parameters at the time of surgery when sepsis is cleared. Surgical outcomes might be improved with early identification of patients requiring nutritional optimisation at initial radiology scan.
A review of the quality of life of adult patients on Home Parenteral Nutrition in Northern Ireland
by R Warke, SJ Hughes, Nutrition Support Team, Department of Nutrition and Dietetics
Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB

Home Parenteral Nutrition (HPN) is an established treatment used for the management of
patients with Intestinal Failure. All patients receiving Home Parenteral Nutrition under
the care of the Intestinal Failure Service in Northern Ireland were surveyed using an
assessment of quality of life, aimed at providing insight into presenting issues. The main
reason for carrying out this study in a Northern Ireland population was to determine if
further improvements in our service provision and patient pathway could increase a
patient’s quality of life whilst receiving Home Parenteral Nutrition.\(^1\) We utilised a Home
Parenteral Nutrition-Quality Of Life (HPN-QOL) questionnaire by kind permission,
which was the first quality of life assessment tool developed and validated for this
specific patient group.

There was a response rate of 77% which, whilst in a smaller cohort (15 females and 6
males), compared favourably with the original authors. The patients had been receiving
HPN from between 1 month and 10 years at the time of survey. Daily time on infusion
ranged from 12 to 16 hours, and most received at least 6 infusions weekly, impacting on
ability to carry out various daily tasks. 89% of patients displayed coping issues and 79%
emotional function issues. Financial concerns and concerns regarding body image were
expressed. Overall Quality of Life was found to be low despite ongoing HPN treatment
(6.7 to 33.7 out of 100) which, while many recognized the benefit of HPN keeping them
alive, coping with the restrictions the treatment placed on them is of ongoing concern.
Additional comments regarding travel restrictions and patients being reluctant to be a
burden to family and friends also featured. We concur that the use of an appropriate
quality of life questionnaire should be a routine part of clinical management of HPN
patients and will involve our patient group in future decision making for service
improvement.

References
2010;34(2):131-142
Intestinal Failure Service Activity at the University Hospitals Birmingham NHS Foundation Trust in 2016-2017

By Adam McCulloch, Jane Fletcher, Hardip Malhi, Ruth Quinn, Kate Kane, Sheldon Cooper

Introduction:
2015 saw a change in home parenteral nutrition (HPN) services in the West Midlands with one of the five centres transferring patient care to University Hospitals Birmingham (UHB). UHB nutrition team underwent expansion in all disciplines. We aimed to review our practice in the last year for the management of patients with type 2 and 3 intestinal failure (IF) at UHB.

Methods:
A detailed database of patients requiring parenteral nutrition (PN) at UHB is prospectively maintained. We retrospectively analysed patients with type 2/3 intestinal failure (PN for >28 days) between April 2016 and June 2017.

Results:
Between April 2016 and June 2017, 38 patients (19 females, median age 66) were newly commenced on PN for >28 days, receiving PN for a median of 47 days (range 28 - 429). Primary mechanisms for type 2/3 IF were mechanical obstruction (n=10), fistulation (n=9), mucosal disease (n=8), surgical complications (n=6) and short bowel syndrome (n=4). 12 out of the 38 patients died during the follow-up period; 9 had advanced malignancy and no deaths were attributed to complications of PN. In the remaining 26 patients, nutritional autonomy was achieved via surgery in 13 cases and conservative management in 6. 7 patients continue on HPN. Overall, 65 patients are currently managed on HPN by the UHB’s IF services.

Conclusion:
UHB operates a comprehensive, multidisciplinary service for patients with type 2 and 3 IF, which has successfully expanded to meet the demands of not only acquiring a new cohort of existing patients on HPN, but opening to tertiary referrals from around the region.
Type 2 and 3 Intestinal Failure workload at a district general hospital- implications for national commissioning

by Sayer JM, Stirland H, Gregory A, Peck M, Deakin M, Lee KL
Doncaster and Bassetlaw NHS Foundation Trust

Services for patients with type 2 and type 3 intestinal failure is commissioned nationally. The commissioners have collected data from the intestinal failure centres in order to establish overall costs for these patients. However many patients with type 2 or type 3 intestinal failure who are on home parenteral nutrition may be admitted to their local district general hospital with complications of their home parenteral nutrition. They may then be transferred to the intestinal failure centre or managed jointly through networking.

We have collected data on patients with type 2 or type 3 intestinal failure admitted to Doncaster Royal Infirmary during the 6 months 1 April 2016 to 1 October 2016.

Results

<table>
<thead>
<tr>
<th>patient</th>
<th>Age/sex</th>
<th>IF diagnosis</th>
<th>Reason for admission</th>
<th>Length of stay (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>57/m</td>
<td>Intestinal dysmotility, HPN</td>
<td>Line sepsis</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>56/f</td>
<td>High output stoma, HPN</td>
<td>Line sepsis</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>47/f</td>
<td>Crohns, HPN</td>
<td>Abdominal wall abscess</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>27/f</td>
<td>Intestinal dysmotility, HPN</td>
<td>Anaemia, abdominal pain</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>68/f</td>
<td>Rectal cancer, HPN</td>
<td>Urosepsis</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>67/m</td>
<td>High output stoma, home iv fluids</td>
<td>Small bowel obstruction</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>59/f</td>
<td>Bowel ischaemia</td>
<td>Bowel ischaemia</td>
<td>62</td>
</tr>
</tbody>
</table>

Conclusion

Intestinal failure patients with type 2 and type 3 intestinal failure may present to their local district general hospital and be managed locally with advice from the intestinal failure centres. National Commissioning of Intestinal failure services needs to take account of this additional workload which may not be apparent from previous data collection.
Audit of enteral nutrition provision during citrate anticoagulation of continuous renal replacement therapy in the Intensive Care Units
By L. Rose1, E. Cresta1, C. Day1, F. Dakpoe1, J. O’Flynn2 and E. Segaran2, 1King College London, Franklin-Wilkins Building, Stamford Street London, SE1 9NH and 2Imperial College Healthcare NHS Trust, The Bays South Wharf Road, St Mary’s Hospital, London, W2 1NY.

Citrate anticoagulation renal replacement therapy (RRT) has been introduced to the Intensive Care Units (ICU’s) in the trust and it provides substantial additional calories, made up of lactate, glucose and citrate (1). These calories need to be taken into consideration as overfeeding is associated with complications and increased mortality (2,3). If the nutrition support volume is adjusted to reduce calories, it will ultimately result in protein reduction. Meeting >80% protein requirements is associated with reduction in mortality (4).

The aims of this audit were firstly to compare intake from both Enteral Nutrition (EN) support and citrate against energy and protein targets (5) and secondly to determine if current EN products are able to meet the nutritional needs of patients on citrate anticoagulation RRT. This audit was conducted in two ICU’s in a large London teaching hospital using patient data collected from electronic patient records over a one month period in 2017. Data was collected on calorie and protein requirements, EN plans, calories and protein delivered from EN, EN products and calories/level provided by citrate (mmol/L).

Data were recorded for 16 patients over 115 days. The mean age was 58 years, the mean BMI was 26 kg/m², 75% were male and 38% were admitted due to respiratory causes. Nutritional data are presented in Table 1. Three different levels of citrate were used. As the level of citrate increases, so too does the calories provided. The mean calories from citrate were 477kcal/day. On 33% of days the dietitians plan took into account the citrate calories and reduced the feed volume. There was no significant difference in protein intake for patient days when the dietitian did or did not account for the additional calories provided by citrate. Target volume was not fully delivered on 74% of days; reasons being fasting for tracheostomy, investigations and extubation. On >85% of patient days a high protein EN product was used. The results show the adjustment of EN regimes to avoid overfeeding of calories, led to a 50g/day protein deficit where protein requirements were not met on 92% of days.

We recommend 1) the trust purchases a protein supplement for patients on citrate filtration as current EN products are unable to meet protein needs, 2) continues data collection to include patients receiving parenteral nutrition, 3) once protein supplementation is implemented to repeat this audit.

Table 1. Nutritional data and adequacy of feed

<table>
<thead>
<tr>
<th>Nutrition Therapy</th>
<th>Requirements</th>
<th>Dietitian Plan</th>
<th>Nutrition Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy kcal/kg (SD)</td>
<td>1780 (291)</td>
<td>1462 (305)</td>
<td>1131 (486)</td>
</tr>
<tr>
<td>Protein g/day (SD)</td>
<td>103 (19)</td>
<td>85 (19)</td>
<td>55 (30)</td>
</tr>
<tr>
<td>Total Calories kcal/kg (SD)</td>
<td>1608 (505)</td>
<td>1608 (505)</td>
<td></td>
</tr>
<tr>
<td>Adequacy of feeding</td>
<td>Percentage (%)</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Kcal as dietitian plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kcal as requirements</td>
<td></td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Kcal as total (Citrate &amp; EN)</td>
<td></td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>Protein (g) as requirements</td>
<td></td>
<td>54</td>
<td></td>
</tr>
</tbody>
</table>

1 EN only; 2 as per ASPEN/SCCM guidelines 2016; 3 EN + Citrate; 4 Success defined as 100% of plan being delivered

References
A survey of post primary gastrostomy insertion nutritional care
by J. Gregg and C. Fleming. Adult Acute Dietetic Services, Greater Glasgow & Clyde (GG&C) G120YN. Caroleanne.fleming@ggc.scot.nhs.uk.

NICE (2006, 2011) states that percutaneous endoscopic gastrostomy (PEG) tubes that have been placed without apparent complications can be used for enteral tube feeding 4 hours post insertion. However, as there is no guidance on what nutrition or fluids should be administered, rate of administration or if this statement is also applicable to radiologically inserted gastrostomy (RIG) tubes, the GG&C complex nutrition support dietetic effective practice group identified the need for a standard protocol of nutritional care post primary gastrostomy insertion to ensure continuity of practice and equity of care.

An online Weropol survey was conducted via email with the aim of investigating current practice and clinical rationale for this practice within GG&C for administering nutrition and fluids in adults post primary PEG and RIG insertion. Surgical gastrostomy and routine existing gastrostomy replacements were excluded. The survey was sent to all adult acute dietitians and members of multi disciplinary nutrition teams, who were asked to cascade to colleagues, it is estimated it was sent to 100 people.

Thirty-eight responses were received from Dietitians (n=24) 63%, Nutrition Nurses (n=5) 13%, Gastroenterologists (n=5) 13%, Surgeons (n=2) 5%, Intervention Radiologist (n=1) 3% and Pharmacist (n=1) 3%. Results highlighted that for both PEG and RIG 82% waited 4 hours post insertion prior to using a gastrostomy for the first time, the other 18% waited a range hours from 0 (3%), 6 (11%), 12 (3%) to ‘other’ (3%) who did not state a time. In 87% (PEG) and 89% (RIG) sterile water was used initially, the remainder used enteral feed. Those who initially administered sterile water recommended subsequently giving enteral feed after a range of hours 2 (11% PEG & RIG), 4 (34% PEG 32% RIG), 6 (11% PEG 8% RIG), 10 (26% PEG 29% RIG), 12 (3% PEG & RIG) and ‘Other’ (16% PEG & 18% RIG) stated it depended upon tolerance of sterile water. Initial rate of administration for both PEG & RIG was 10ml (3%), 25ml (11%), 50ml/hr (42%), 100ml/hr (16%), 29% of respondents selected ‘other’ and commented that consideration of nutritional risk and previous enteral feeding tolerance would influence their choice of rate. The clinical rationale given for regimens included NICE CG32, NCEPOD or local guidelines, MDT decision, advice of more experienced colleagues, individual clinical assessment and anecdotal evidence on personal experience with issues in relation to tolerance and pain after procedure being related to feed rather than water and caution with new site and leakage being more easily managed if sterile water used initially.

In GG&C the NICE guideline of enteral feeding after 4 hours is predominantly used post insertion of both PEG and RIG. The majority initially administer sterile water and then introduce enteral feed at a range of 2-12 or more hours, most frequently used rate is 50mls/hr. There is no evidence base for choice of feed vs sterile water but anecdotal experience suggests that cautious use of sterile water and low rate is prudent to aid hydration and establish tolerance with minimum patient discomfort. This is patient centred, considers hydration status, effective use of resources, cost and potential wastage of opened feeding/water packs. However, this cautious approach may only be applicable and necessary where insertion has been complicated or patient has not previously been established on enteral feeding.

In conclusion based on this survey best practice in GG&C is that both PEG and RIG tubes placed without apparent complication can be used 4 hours post insertion, sterile water should be administered at 50ml/hr until tolerance clinically agreed. In patients who were established on enteral feeding pre insertion and an individual clinical assessment indicates the previous enteral feeding regimen may be resumed after 4 hours.

A proposal to develop a protocol to standardise this best practice has been submitted to the board Clinical Nutrition Group for ratification.

References
Outcomes of Percutaneous Endoscopic Gastrostomy, Percutaneous Endoscopic Gastropexy Gastrostomy and Radiologically Inserted Gastrostomy in Patients at a District General Hospital in 2016

by 1B.H.H. Li, 1S.B. Ahmad, 1D. Oliver 1A. Ashour, 1A. Beukes, 1N. Ockwell, 1E. McKenna, 1A. Cartwright and 1M. Jarvis, 1Basildon Hospital, Essex, SS16 5NL, UK

Enteral tube feeding has proven to be safe and effective for patients requiring assisted feeding in the long term. There are various methods of tube insertion, namely: Percutaneous Endoscopic Gastrostomy (PEG), Percutaneous Endoscopic Gastropexy Gastrostomy (PEGG) and Radiologically Inserted Gastrostomy (RIG). The guidelines released by the British Society of Gastroenterologists¹ in 2010, formulated after the 2004 National Confidential Enquiry into Patient Outcome and Death (NCEPOD)² after gastrostomy were adopted in our trust. Following that we had observed an improvement in the 30-day mortality rate compared to earlier published data and we had reported the findings in our 2016 study at BAPEN. The purpose of this study is to evaluate and compare patient outcomes in 2016 post gastrostomy procedures with our previous findings in our local district hospital trust. The following were considered: procedure type, waiting time, sex, complications, mortality at 30 days, and mortality after 1 year.

A total of 170 enteral tube feeding related referrals were received in 2016, the vast majority (78%) being requests for primary gastrostomy insertion including 79 PEGs, 20 PEGGs and 34 RIGs. The rest is a mixture of secondary insertion, removal and tube exchange requests. Cerebral Vascular Accidents (CVA) remained the most common reason for PEG referral (52%) as we have seen previously in 2014 and 2015, followed by Parkinson’s Disease (9%) and Maxillofacial SCCs (5%). PEG tubes were eventually inserted in 44 patients with a mean age of 72.4 and mean BMI of 24.1, and the average waiting time to procedure was 16 days with clinically unwell patient being the most common reason for delay. Minor complications such as the need for second passes and yeast infection were noted in 3 of the 44 cases (complication rate of 6.8%) but none were directly linked to patient deaths. Of the 6 mortalities post primary PEG insertions, 1 occurred within 30 days giving a 30-day mortality rate of 2.2%. All but 1 of the 20 PEGG referrals (95%) were made for Cancer patients with most of them being Maxillofacial SCCs. 15 patients, including 7 males and 8 females of mean age of 65.7 and mean BMI of 26.5 were given the PEGG with an average wait time of 23 days. There were 3 minor complications (20% complication rate) and no mortality was seen within this group of patients. Motor neuron disease (MND) had superseded cancer as the most common reason for RIG referrals in 2016. Out of the 34 RIG referrals, 13 males and 10 females with mean age of 65.5 and mean BMI of 25.5 underwent the procedure with the average waiting time of 21 days. 2 minor complications were recorded (8.7% complication rate) and there were 2 deaths within 30 days of insertion giving a 30-day mortality rate of 8.7%.

We have seen a year on year decrease in complication rate 2014 to 2016 for PEG, PEGG and RIG. Overall 30 day mortality for PEG, PEGG and RIG in 2016 was 3.8% comparing favourably with previous years.

Outcomes following gastrostomy insertion in our trust continue to improve. In part this may be due to embedding of the 2010 guidelines. We continue to monitor selection process and outcomes for our gastrostomy patients.

References:
1. BSG Guidelines For Percutaneously Placed Enteral Tubes. 2010
A Regional Survey: Indications, methods and complications in percutaneous endoscopic gastrostomy (PEG) tube insertion in 10 regional hospitals
by Dr Arash Vaziri on behalf of the Cambridge Intestinal Failure and Transplant team, Addenbrooke’s Hospital, Hills Road, Cambridge, CB2 0QQ

The aim of the study was to compare regional variations in indications for, methods of and complications of PEG insertion across the East of England region.

An electronic survey method was used to collect data from 9 district general hospitals and 1 tertiary hospital across the Eastern Region of the United Kingdom on all PEGs inserted from April 2015 to April 2016. A retrospective analysis was performed through local endoscopy and nutrition team databases to identify cases of feeding PEG tube insertion. Each of the hospitals reported back on several indices including: patient demographics, indications, methods of PEG tube insertion used, mortality and PEG site infections and use of prophylactic antibiotics. The results were self-reported and a unified reporting tool was not used.

The tertiary centre was the only hospital that reported using Push PEGs in the survey and used this method in most procedures. There is significant heterogeneity in the use of prophylactic antibiotics to reduce contamination of the PEG tract (0% to 100%) and PEG site infection rate varied from 0% to 4.5%.

There is also significant variation in the mortality rate across different hospitals; 7-day mortality ranged from 0% to 4.4% and 30-day mortality ranged from 0% to 8.3%.

Table 1. Variations in insertion method, average age of patients, mortality, infection rates, antibiotic use and percentage of PEGs inserted for Stroke and Head & Neck cancers.

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Age</th>
<th>Pull PEGs</th>
<th>Push PEGs</th>
<th>% and (No.) of PEGs indicated for stroke</th>
<th>% and (No.) of PEGs indicated for Head &amp; Neck Ca.</th>
<th>7-day mortality %</th>
<th>30-day mortality %</th>
<th>Prophylactic antibiotic use %</th>
<th>Overall site infections %</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGH 1</td>
<td>65</td>
<td>30</td>
<td>0</td>
<td>67 (20)</td>
<td>0 (0)</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>DGH 2</td>
<td>75</td>
<td>12</td>
<td>0</td>
<td>75 (9)</td>
<td>0 (0)</td>
<td>0</td>
<td>8.3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DGH 3</td>
<td>67</td>
<td>36</td>
<td>0</td>
<td>33 (12)</td>
<td>22 (8)</td>
<td>0.2</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DGH 4</td>
<td>78</td>
<td>61</td>
<td>0</td>
<td>52 (32)</td>
<td>25 (15)</td>
<td>No data</td>
<td>No data</td>
<td>24.6</td>
<td>No data</td>
</tr>
<tr>
<td>DGH 5</td>
<td>65</td>
<td>1</td>
<td>0</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td>DGH 6</td>
<td>75</td>
<td>52</td>
<td>0</td>
<td>50 (26)</td>
<td>7.7 (4)</td>
<td>0</td>
<td>5.8</td>
<td>96.2%</td>
<td>No data</td>
</tr>
<tr>
<td>DGH 7</td>
<td>74</td>
<td>55</td>
<td>0</td>
<td>55 (30)</td>
<td>42 (23)</td>
<td>3.6</td>
<td>5.5</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>DGH 8</td>
<td>74</td>
<td>72</td>
<td>0</td>
<td>31 (22)</td>
<td>46 (33)</td>
<td>0</td>
<td>6.9</td>
<td>100</td>
<td>No data</td>
</tr>
<tr>
<td>DGH 9</td>
<td>62</td>
<td>67</td>
<td>0</td>
<td>22 (15)</td>
<td>52 (35)</td>
<td>4.5</td>
<td>2.9</td>
<td>94</td>
<td>4.5%</td>
</tr>
<tr>
<td>Tertiary Hospital</td>
<td>60</td>
<td>38</td>
<td>60</td>
<td>5.1 (5)</td>
<td>49 (48)</td>
<td>0</td>
<td>1</td>
<td>86.8</td>
<td>2%</td>
</tr>
</tbody>
</table>

In terms of the underlying disorder leading to PEG insertion there was a notable difference in the number of patients receiving a PEG tube after strokes with this constituting 0% of patients at one DGH to 75% of cases at another.

These differences in indications, PEG insertion methods, complications and the use of prophylactic antibiotic agents may reflect differences in clinical perspective and methodology. A awareness of these differences is useful to stimulate reflection and discussion on what the best practice is for our patients.
An audit around the use of salt in the treatment of overgranulation around peg sites
by E.Trautner and L.Booth, Birmingham Community NHS Trust, Priestly Wharf, Holt Street, B7 4BN

The prevention and management of overgranulation around PEG sites is a challenge for nurses to manage as outlined by Warriner et al (2012); the evidence is not clear so therapy decisions are often based on the assessment of the nutrition nurse. This abstract will follow the treatment plan for ten patient with overgranulation, consider the initial consultation with the patient, the problems that they face and audit the impact of SALT on there overgranulation.

Harris et al (1994) defines three types of overgranulation, Type one considers that overgranulation is caused by inflammatory factors that may be caused by an irritant at the wound bed. Type two overgranulation is caused by an a moist environment. Type three overgranulation is caused by cellular imbalance and has no specific treatment options other than to eradicate type 1 and 2 causation factors as discussed by Viola (2010). It was obvious within our patient group that often some overgranulation remained untreatable and we had consulted the NNNG (2013) Exit Site Management for Gastrostomy Tubes in Adults and Children.

Following a literature review I found a research paper that considered the use of salt in overgranulation. Tenaka et al (2013) which found that sprinkling salt reduced or removed PEG overgranulation. Salt draws the water out of the oedematous tissue, across cell membrane, removing fluid and possible contaminants into the salt crystals. The results appeared successful so following a meeting with our trust I decided to trial this treatment.

Patients were offered salt therapy for overgranulation if they met the following criteria.
- They had overgranulation which had failed other treatments.
- They could consent.
- Either the patient or carer could complete the treatment.
- Could read the patient guide and consent to the treatment.
- They did not have renal failure.
- Ten patients will be discussed.

The treatment methods used on the patients were as follows.
- Tenaka et al (2013) guide was used.
- Half a teaspoon of salt on overgranulation for twenty minutes, once per day for 7 days.
- A barrier cream was used to protect the surround skin and dry gauze taped over the wound following the treatment.
- Patients were seen after the treatment and had a month follow up.

The results and discussion raised were.
- All Patients treated demonstrated a reduction in size and symptoms of overgranulation tissue.
- 2 Patients required a PEG tube change.
- 1 Patient discontinued after 1 treatment due to discomfort.
- 2 Patients continue with therapy when needed.
- 1 Patient has an auto immune disorder which resulted in reappearance of the overgranulation tissue.

In the ten patients that we reviewed it appeared that the salt improved overgranulation in all of the patients. Only one patient failed to tolerate the treatment due to discomfort but still had improvement after one treatment. One patients overgranulation returned after a month so they repeated the treatment as required to keep the overgranulation under control. A much larger research study is required but it does appear that salt might be an effective treatment for overgranulation.

References
Predicting 3- and 6-Month Survival for Advanced Cancer Patients on Home Parenteral Nutrition: A Nomogram

by Konstantinos C. Fragkos,1 Niamh Keane,1 Pinal S. Patel,1 Krista Murray,1 Sarah Obbard,1 Shola Ajibodu,1 Simon O’Callaghan,1 Hanson Kwok,1 Emma Paulon,1 John Barragry,1 Shameer Mehta,1 Simona Di Caro1 and Farooq Rahman1

1Nutrition and Intestinal Failure Service, University College London Hospitals NHS Foundation Trust, NW1 2PG, UK

We describe the largest cohort of Home Parenteral Nutrition (HPN) patients with advanced cancer in the UK in order to identify factors affecting prognosis and develop a nomogram. Data was collected retrospectively for all patients receiving HPN between 01/01/2006 to 15/10/2016. Demographic, anthropometric, biochemical and medical factors, Karnofsky Performance Status (KPS), Glasgow Prognostic Score (GPS), and PN requirements were recorded. Univariate and multivariate analyses were performed including Kaplan-Meier curves, Cox Regression and correlation analyses.

In total, 107 HPN patients (68 women, 39 men, mean age 57 years) with advanced cancer were identified. The main indications for HPN were bowel obstruction (74.3%) and high output ostomies (14.3%). Cancer cachexia was present in 87.1% of patients. The hazard ratio (HR) for upper gastrointestinal and ‘other’ cancers vs gynaecological malignancy was 1.75 (p=0.077) and 2.11 (p=0.05), respectively. KPS score, GPS, PN volume and PN potassium levels significantly predicted survival (HRKPS≥50 vs <50 =0.47; HRGPS=2 vs GPS=0=3.19). In multivariate Cox regression analyses after adjustment for covariates, KPS and GPS remained significant predictors (p<0.05), whilst PN volume reached borderline significance (p=0.094) (Table 1). In general, people who score over 150 in the 3-month and over 100 in the 12-month survival prediction nomograms, respectively, had less than 20% survival probability. Internal validation is also discussed.

Performance status, prognostic scoring and PN requirements may predict survival in patients with advanced cancer receiving HPN. PN volume and potassium content might assist in decision making as predictors of survival. Further research and education of healthcare professionals is needed to identify which patients would most benefit from HPN and ensure timely referral and access to HPN.

<table>
<thead>
<tr>
<th>Table 1. Multivariate Cox Regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>KPS Score</strong></td>
</tr>
<tr>
<td>&lt; 50</td>
</tr>
<tr>
<td>≥ 50</td>
</tr>
<tr>
<td><strong>GPS</strong></td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>N/A</td>
</tr>
<tr>
<td><strong>PN Volume (L/day)</strong></td>
</tr>
<tr>
<td>&lt; 2</td>
</tr>
<tr>
<td>≥ 2</td>
</tr>
<tr>
<td><strong>PN Potassium (mmol/day)</strong></td>
</tr>
<tr>
<td>&lt; 60</td>
</tr>
<tr>
<td>≥ 60</td>
</tr>
</tbody>
</table>
Monitoring compliance with nasogastric (NG) tube management: a single centre experience.
by T. Kilbane, R. Whitefield, J. Colby J, & N. Burch

Introduction: Nasogastric (NG) tube placement for the delivery of nutrition support in patients is commonplace, with over 3 million NG/OG tubes used in the NHS between Sept 2011 and March 2016. Despite NPSA alerts in 2005, 2011, 2013, and 2016 highlighting key issues surrounding NG tube safety, there continue to be ‘Never Events’ reported annually to the Strategic Executive Information System (StEIS) (95 instances between Sept 2011 and March 2016). As part of a rolling programme of competency assessment for nursing staff who manage NG tubes within UHCW, we set about to audit compliance with standards.

Method: All adult patients who required an NG/OG tube insertion between the dates of 1st September 2016 to 14th October 2016 were identified. A random selection was then audited with a maximum of 5 patients per ward, and a total of 3 days of NG management per patient. All ward areas were included in the audit. Nursing documentation, pH check charts, medical records, and the drug Kardex were evaluated.

An audit proforma was utilised to ensure assessment against all aspects of NG tube safety; including initial insertion, and ongoing checks of the tube prior to administration of feed, fluid, flush, or medication. The drug Kardex was evaluated to establish timings of delivery of medication, and compared with the pH check charts to ensure appropriate NG checks prior to medication delivery.

Results: A total of 120 days of NG tube management was evaluated in 40 patients, with 53 NG tubes, covering 16 wards. 70% of these patients (n=28) had one NG tube in-situ for the audit period, 30% had >1 tube.

A total of 94% patients (n=50) had documentation of initial insertion (e.g. insertion sticker and/or documentation in medical/nursing record). Of these, 92% (n=46) had accurately documented confirmation of placement: 63% (n=29) confirmed with pH check alone; 30% (n=14) x-ray confirmation; and 7% (n=3) both x-ray and pH check. In 13% patients (7/53) there was no documentation of confirmation of safe placement.

Only 42% had clear documentation of appropriate tube checks prior to administration of feed, fluids, or medication during the 120 days of ongoing NG management. The required frequency of safety checks ranged from 1-9 times per day depending upon medication regimen. In 12% patients there was no documented evidence of any ongoing NG tube checks following initial placement.

Conclusions: Our audit shows that despite a robust programme of education and competency assessment in a large University Hospital, documentation of safe confirmation of initial placement of NG tubes was still only 94%. Moreover, only 42% had clearly documented checks of the tube prior to further use for feed, fluids, or medication. Whilst conventional training focuses on documentation of confirmation of initial placement, there is clearly a need to ensure that the same high standards are met for safe ongoing NG tube use to help reduce the likelihood of never events occurring.

References:
Survival rates after inpatient parenteral nutrition
by A. Qureshi, C.W. Steele and R. McKee, Glasgow Royal Infirmary 84 castle street, Glasgow, G4 0SF United Kingdom

Parenteral Nutrition (PN) is often needed in patients who have major complications of surgery. Their prognosis might be expected to be poor. We wished to assess the 1 and 5-year survival of patients who received inpatient PN during their admission to a large teaching hospital to establish whether very poor prognosis could be predicted and futile PN avoided.

A prospectively maintained database was used to identify patients who received inpatient PN from 2009-11. Electronic hospital and GP held records were used to identify date and cause of death. The data was analysed at 1 year and 5 years post-event.

289 inpatients (158 males: 131 females; median age 61 years, range 13-85 years) received PN. Underlying diagnoses were malignant upper gastrointestinal (GI) disease (28%), benign upper GI disease (11%), malignant hepatopancreatobiliary disease (12%), benign hepatopancreatobiliary disease (3%), acute pancreatitis (6%), ischaemic bowel (6%), colorectal cancer (4%), Crohn’s (7%), other GI pathology (17%) and non-GI pathology (6%).

67 patients received PN electively after oesophagectomy. Amongst them, the survival rate rate was 97% at 30 days, 84% by 1 year and 52% by 5 years.

In the 222 patients with complications, survival rate was 89% during the 30 days after PN started, 66% at 1 year and 49% at 5 years. The major cause of death before 30 days was sepsis (48%); at 1 and 5 years was underlying malignancy (37% and 43% respectively).

In non-elective use of PN, malignant disease significantly accelerated death compared to benign disease (P<0.001). Patient with malignant disease and a post-operative complication such as lymph leakage had a poor prognosis. Mortality rate was not influenced by sex; age or underlying disease, nor by indications for PN other than lymph leak (fistula, obstruction, short gut).

Despite being very sick at initiation of PN, the one-year mortality of this cohort (30%) is comparable to the all cause inpatient hospital mortality of 28.8% (1) in Scotland. Death during the index admission is mostly likely due to sepsis and is independent of underlying disease process while death in subsequent years reflects the presence of poor prognosis malignant disease.

References
Care Pathway for Patients with Advanced Gynaecological Cancer and Bowel Obstruction: Preliminary Data

by Niamh Keane, Konstantinos C. Fragkos, Shameer Mehta, Farooq Rahman and Simona Di Caro

Nutrition and Intestinal Failure Service, University College London Hospitals NHS Foundation Trust, NW1 2PG, UK

Cachexia is prevalent in more than 50% of patients with advanced cancer and can lead to death. Variation and unequal access to home parenteral nutrition (HPN) exist and cause delay and even lack of nutritional support in patients with incurable gynaecological cancers that develop intestinal failure as a result of malignant bowel obstruction (MBO). HPN services are not integrated into oncology/palliative pathways and care is fragmented. MBO is often multilevel and subacute without an endoscopic or surgical solution [1, 2].

We aimed to describe a cohort of patients with advanced gynaecological cancer resulting in MBO that have lost their nutritional autonomy in order to identify pathways of care and predictors of survival with respect to nutrition, anatomy, medical factors and biochemistry.

A dult patients with advanced gynaecological cancer admitted with MBO were selected and analysed. Data on diagnosis, cancer treatment, MBO level (single or multi-level, first or subsequent episode, surgical/endoscopic or conservative management), referral to palliative care, nutritional assessment, and referral for nutritional support. Statistical analyses included percentages, means, standard deviations, Kaplan-Meier curves and Cox regression.

Sixteen females (62.9 ± 10.6 years) with advanced gynaecological cancer and MBO were identified from January 2016 to December 2016. Of them, 27% had radiotherapy while 50% had chemotherapy as cancer treatment. MBO was multilevel in 54% while 46% had a single transition point. Positioning of a Ryles tube was required in 44%. Conservative management was adopted in 82% of patients, 14% had surgery, and only 1 patient was amenable to endotherapy. Patients were admitted a total of 37 times, mean number of admissions per patient was 2 (range 1-6 admissions); 22% were referred for palliative care input, 59% to dietetics for nutritional assessment and 51% to the Nutrition team for PN at varying time-points (day 1-13) during admission. Only 12% of them received PN. Mean percentage of weight loss at admission was 24%, mean albumin was 35.7 g/dL and mean CRP was 81 mg/L. Overall median survival was 316 days (IQR 86-407 days). There was a trend for longer survival in patients who had received PN (25 days longer). No other medical factor or treatment significantly predicted survival. In the Cox regression, only creatinine was a significant predictor of survival with a hazard ratio of 1.07 (95% CI 1.01-1.12).

Our study shows that patients with advanced gynaecological cancer and MBO undergo numerous hospital admissions and the majority are treated conservatively. There was a trend for longer survival in patients who had received PN (25 days longer). No other medical factor or treatment significantly predicted survival. In the Cox regression, only creatinine was a significant predictor of survival with a hazard ratio of 1.07 (95% CI 1.01-1.12).

Our preliminary data clearly show a need for early identification, standardised care pathway and integrated nutritional support onto management plan for this vulnerable cohort. Further prospective data are currently being collected.

References

The prevalence and factors influencing distress in patients being discharged on home parenteral nutrition
by N. Wyer, R. Ball, R. Ford, and N. Burch Nutrition Support Team, UHCW NHS Trust,
Clifford Bridge Road, Coventry CV2 2DX United Kingdom

Although a life saving treatment modality in the presence of intestinal failure, home parenteral nutrition (HPN) may adversely affect psychosocial wellbeing and quality of life1, 2. The distress thermometer is a visual tool for patients to score their level of distress and is commonly used in the oncology setting3. The tool has also been validated for use in patients who have already been established on HPN4.

Patients being prepared for discharge on HPN over an eight month period were given a distress thermometer to complete. They scored their level of distress from zero (no distress) to ten (extreme distress). Factors influencing their score were chosen from a predetermined problem list which was divided over five domains (physical, practical, family/relationship, emotional, and spiritual/religious). This was then discussed at a discharge planning meeting held by the lead consultant for nutrition, a member of the nutrition support team (NST) and the patient +/- family. A plan was agreed during the meeting to address the concerns, including referral for psychological support, if desired by the patient.

Fourteen patients (5 Male, 9 Female), completed the Macmillan version of the distress thermometer prior to the discharge planning meeting. The mean score for distress was 4.9 (median 5.5, range 1-8) with 57% of patients having either a moderate or significant level of distress (Table 1). The factors most reported as influencing the distress score were: eating/appetite (n=9), nausea/vomiting (n=8), pain (n=8), tired/exhausted or fatigued (n=6), caring responsibilities (n=6), worry, fear or anxiety (n=5), getting around/walking (n=5), insurance and transport (n=5). Eight patients were referred to the NST psychiatrist for psychological support.

<table>
<thead>
<tr>
<th>Distress Level</th>
<th>Number of patients n=14 (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild (0-3)</td>
<td>6 (43%)</td>
</tr>
<tr>
<td>Moderate (4-6)</td>
<td>4 (28.5%)</td>
</tr>
<tr>
<td>Significant (7-10)</td>
<td>4 (28.5%)</td>
</tr>
</tbody>
</table>

The distress thermometer is a simple tool for patients to self complete which allows the managing clinical team to identify and address potentially important factors affecting patient well being. The incidence of distress was high in patients being discharged on HPN with 57% having either a moderate or significant level of distress identified using this tool. Physical, practical and emotional concerns were the main determinants of the score. This tool could be repeated at set intervals to assess for distress following discharge from hospital. The HPN version of the distress thermometer should be used for future assessments.

References
Providing at least 80% of estimated requirements for both energy and protein during critical illness is associated with improved clinical outcomes such as decreased mortality and reduced length of stay\(^1\). Overfeeding energy has been shown to increase carbon dioxide production, increase blood glucose and insulin requirements and increase triglycerides, all of which can delay recovery\(^2\). It can be a challenge to meet both energy and protein requirements without overfeeding, particularly when large amounts of intravenous calories are given or patients have raised protein requirements due to trauma, continuous veno-venous-haemodialysis (CVVH) or burns\(^3\)\(^4\).

The aims of the audit were to assess whether patients were meeting their estimated energy and protein requirements, by comparing the nutritional content of feed administered with their estimated requirements.

Case notes were retrospectively reviewed for all patients receiving sole nutrition via the enteral route for a period of seven days, following admission to GICU. Data on 22 patients was collected between 9/5/16 - 8/7/16.

**Standard one:** 100% of patients who are unable to eat and drink will be artificially fed within 48 hours of admission. 91% of patients commenced nutrition within 48 hours of admission, and 64% within 24 hours of admission. Reasons that nutrition was not commenced within 48 hours (N=2) was spinal cord injury and septic shock as per clinical protocol.

**Standard two:** 100% of patients are achieving 80% of estimated energy requirements. 91% of patients met > 80% of their energy requirements, with 23% meeting 100% or more. Reasons for not achieving energy requirements within the first seven days included the inability to pass a nasogastric tube, refeeding risk and high requirements. On average patients were in a 190kcal deficit over the week compared with their estimated requirement.

**Standard three:** 100% of patients will meet 80% of estimated protein requirements. 27% of patients met 80% of their protein requirement within the first week. Reasons included unavailability of appropriate feeds and the energy content of Propofol. The average protein prescription was 80g, 18% below the average requirement of 97g. 36% of patients had disproportionately high protein requirements compared to energy requirements, due to trauma, CVVH and obesity.

Whilst the majority of patients on GICU met their energy needs within the first week of being admitted, only a small percentage were able to meet their protein requirements.

The multidisciplinary team agreed to start all appropriate patients on a high energy, high protein (1.25 kcal/ml; 0.63g protein/ml) feed to allow for a higher protein intake from day one. A low energy, high protein supplement has also been procured to meet any further protein deficit. The audit will be repeated in 12 months to assess if these changes have improved nutrient provision on GICU.

**References**

Exploring community healthcare staff experiences of current screening and treatment practices for malnutrition - baseline survey results from the Implementing Nutrition Screening in Community Care for Older People (INSCCOPe) process evaluation project.

by M. Bracher1, J.L. Murphy2, K. Steward2, K. Wallis2, C.R. May4

Faculty of Health and Social Sciences, Bournemouth University, Bournemouth, UK, BH1 3LT; Southern Health NHS Foundation Trust, Southampton, UK, SO40 2RZ; Wessex Academic Health Sciences Network, Chilworth, UK, SO16 7NP; 4Faculty of Health Sciences, Building 67, University of Southampton, Southampton, UK, SO17 1BJ.

The majority of malnutrition (as undernutrition) is found in the community; more than 3 million adults are estimated to be at risk, with about 93% originating in the community (1). Malnutrition has many negative consequences that affect both the individual and health-care services, through delayed recovery from illness, more frequent visits by community nurses, and increased hospital admissions (2). Despite this, malnutrition remains under-detected, under-treated and under-resourced, and often overlooked by those working with older people (3).

A new procedure for screening and treatment of malnutrition has been implemented by Southern Health NHS Foundation Trust. Running in parallel, the INSCCOPe process evaluation study explores factors that may promote or inhibit implementation and longer term embedding of this new procedure in routine care, using Normalization Process Theory (NPT) (4). This involves 14 Integrated Community/Older People's Mental Health (ICT/OPMH) teams (comprising a single business unit within the trust) taking part in the training, at three observation points: prior to implementation (T0/baseline); 2 months post-implementation (T1); and 8 months post-implementation(T2). At each point, all participants complete a 23 item survey instrument based on NPT (NoMad-23), and a sub-sample of participants are asked to participate in follow-up semi-structured interviews (by telephone) in order to explore experiences and processes that underpin survey responses.

We report preliminary findings from the baseline (T0) survey, in relation to two areas: (i) value placed by staff on screening and treatment activity, and (ii) staff perceptions of current resources and support for screening and treatment of malnutrition. (i) Participants (n=73) placed significant value on work relating to malnutrition: 95% strongly/agreed that screening and treatment for malnutrition was a legitimate part of their role, while 91% strongly/agreed that screening and treatment for malnutrition was a worthwhile activity. (ii) In relation to current resources and support for screening and treatment work: 33% of participants agreed that there are key people who drive screening and treatment for malnutrition forward and get others involved, while 44% neither agreed nor disagreed; 29% agree that sufficient resources were available to support screening and treatment for malnutrition, however 40% neither agreed nor disagreed, with 19% disagreeing. 42% agreed that management support for screening and treatment activity was adequate, with 34% neither agreeing nor disagreeing; just over half of participants were ambivalent (23%) or disagreed (32%) that sufficient training was provided to enable screening and treatment for malnutrition.

These preliminary findings indicate that, pre-implementation, most participants valued screening and treatment for malnutrition as an effective and legitimate aspect of their role. However, most participants provided ambivalent or negative responses in relation to aspects of current practice, as well as for resources and support, indicating the importance of current service development work with respect to procedures and training in relation to malnutrition. Further investigation is exploring experiences and processes that underpin these responses in more depth from semi-structured interviews, with respect to healthcare professional group and team category.

References:
A pilot of the Malnutrition Universal Screening Tool (‘MUST’) in a general outpatient department: A service user questionnaire.
By R. Ford and N. Burch. University Hospital Coventry and Warwickshire NHS Trust, Clifford Bridge Road, Coventry. CV2 2DX.

It is known that early identification of patients who are (or are at risk of becoming) malnourished using a nutritional screening tool is vital to provide timely and effective nutritional interventions. NICE guidelines in 2006 (1) recommend screening for malnutrition using a validated tool in all adult patients on admission, and all outpatients at their first clinic appointment (although highlight that Trusts may elect to ‘opt-out’ of screening in low-risk outpatient clinics).

Despite successfully implementing ‘MUST’ for in-patients in 2012, there have been significant challenges with implementing malnutrition screening in the outpatient department. This was due to time taken to complete paperwork, perceived challenges of calculating the score, and concerns that screening may slow the throughput of patients through the department leading to clinic delays.

We therefore modified the process in March 2017 to utilise the online ‘MUST’ tool available on the BAPEN website (2), and then undertook a service user questionnaire to establish the impact of screening on the medical and nursing staff who were involved with the pilot.

Nine consultant-led clinics were chosen across specialties including gastroenterology, renal, colorectal surgery and respiratory. The BAPEN website was downloaded onto iPads for use by the nursing staff. Anthropometric measurements were entered on the website by the nursing staff who then placed a pre-printed coloured sticker (green, yellow, red) into the notes detailing the ‘MUST’ score and a recommended action to follow. After 3 weeks, questionnaires were sent to medical and nursing staff to determine opinions. The questionnaires included 5 multiple choice questions with an opportunity for free-text.

8 of the 9 Consultants replied (89% response). 7/8 noticed the screening stickers in the medical notes and 6 (75%) stated that they implemented actions based on the results of screening. This is in keeping with our audit results of 64 patient records which found that in those patients identified as at risk of malnutrition (‘MUST’ score >1), an action plan was implemented by the Consultant in 73% cases. Only 2/8 (25%) thought clinic was delayed due to this process.

13 nursing staff were asked to complete the survey and 6 responded (46% response). 5 (83%) found the iPad easy/very easy to use, 4 (67%) found using the website and entering data easy/very easy, and 3/6 (50%) did not like using the stickers. 2/6 (33%) of the nursing staff reported that screening resulted in a delay in clinic throughput and difficulties in completing the tool without access to previous weights.

Overall the pilot to introduce malnutrition screening to outpatients was successful, and overall feedback from service users was positive. There was no objective evidence that screening delayed throughput of patients through clinics. Utilising the on-line tool and coloured stickers enabled easy quantification of screening outcome. Implementing change can be difficult and it is imperative to engage staff by ongoing education to promote awareness. Embracing technology such as the use of iPads was welcomed by the staff. Future developments will be to ensure historic weights are available for comparison and to review the use of tablets/iPads. We now plan to roll out malnutrition screening to the remaining relevant outpatient clinics, and will undertake an outpatient screening audit on an annual basis.

References
2. BAPEN http://www.bapen.org.uk/screening-and-must/must-calculator
A pilot of the Malnutrition Universal Screening Tool (‘MUST’) in a general outpatient department.
By R. Ford, L. O’Flynn, T. Kilbane, N. Wyer and N. Burch. University Hospital Coventry and Warwickshire NHS Trust, Clifford Bridge Road, Coventry. CV2 2DX.

Early identification of patients who are (or are at risk of becoming) malnourished using a nutritional screening tool is vital to provide timely and effective nutritional interventions. NICE guidelines in 2006 (1) recommend screening for malnutrition using a validated tool in all adult patients on admission, and all outpatients at their first clinic appointment. We introduced ‘MUST’ in 2012 for all adult inpatients. Initial attempts to launch the tool across the outpatient department met with little success. This was due to time taken to complete paperwork and perceived challenges of calculating the score. We therefore modified the process in March 2017 to utilise the online ‘MUST’ tool available on the BAPEN website (2).

Nine consultant-led clinics were chosen across specialties including gastroenterology, renal, colorectal surgery and respiratory. The BAPEN website was downloaded onto iPads and the nursing staff would enter the relevant anthropometric measurements. They then placed a pre-printed coloured sticker (green, yellow, red) into the notes detailing the ‘MUST’ score and recommended actions. Clinics from the first 3 weeks of the pilot were reviewed to determine compliance.

382 patients attended clinic in these 3 weeks. 76 sets of notes were selected at random. 11 sets were unavailable leaving 64 for review. A sticker was present in 44/64 (69%) of notes, with no sticker in the remaining 31%. The results are summarised in the below tables.

Table 1: Distribution of ‘MUST’ score

<table>
<thead>
<tr>
<th>MUST score</th>
<th>Number (percentage) of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score 0 (green sticker)</td>
<td>33/44 (75%)</td>
</tr>
<tr>
<td>Score 1 (yellow sticker)</td>
<td>7/44 (16%)</td>
</tr>
<tr>
<td>Score 2+ (red sticker)</td>
<td>4/44 (9%)</td>
</tr>
</tbody>
</table>

Table 2: Action documented by clinician in response to a ‘MUST’ score of ≥1

<table>
<thead>
<tr>
<th>MUST Score</th>
<th>Number of Patients</th>
<th>Action taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Referred to the dietitian for advice (as present in the clinic)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>No action documented</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Clinician mentioned weight loss in the clinic letter to the GP</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Clinician commented that no further action needed at this stage</td>
<td></td>
</tr>
<tr>
<td>Score 2+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Known to the dietitian</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Clinician commented that score was inaccurate</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Referred to the dietitian</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Decision made by clinician for GP to monitor in community.</td>
<td></td>
</tr>
</tbody>
</table>

The percentage of patients identified at risk of malnutrition (‘MUST’ score >1) was 25%; in keeping with published UK screening data (3). In 73% of these patients an action was documented by the clinician in response to the screening result. This pilot demonstrates that implementation of outpatient ‘MUST’ screening is feasible in a busy outpatient department, and that in the majority identified as high risk an appropriate action plan was implemented. We now plan to cascade nutritional screening across the remaining outpatient areas and improve compliance by further training and education.

References
2. BAPEN http://www.bapen.org.uk/screening-and-must/must-calculator
A new integrated approach using an electronic system across health and social care to improve nutritional care for adults across Dorset


Wessex Academic Health Science Network, Innovation Centre, Southampton Science Park, 2 Venture Road, Chilworth, Hampshire, UK, SO16 7NP; Tricuro, 28-30 Wimborne Road, Poole, BH15 2BU; Faculty of Health & Social Sciences, Bournemouth University, Bournemouth, UK, BH1 3LT

Malnutrition (undernutrition) is both a cause and a consequence of ill health, and increases a person’s vulnerability to disease (1). The underlying reasons for undernutrition may be due to physical, psychological and social issues requiring multiagency, integrated approaches to resolve (2). One of the Malnutrition Task Force pilot sites in Purbeck has successfully implemented an integrated approach for reducing undernutrition in the community (January 2015 - August 2016). This new integrated approach incorporates an electronic nutritional screening form with associated care pathways to connect health and social care, and facilitate referrals between teams.

We report the finding from the Purbeck pilot site and the extent to which this integrated approach could be successfully implemented in another locality (Christchurch) over a period of 11 months (March 2016 - February 2017).

This quality improvement programme involved local agreement and implementation of integrated nutritional care pathways, including screening, treatment guidelines, and referral routes (facilitated through the development of a novel electronic system to enable screening data recording, care pathway guidance and information sharing between teams). Community health and social care teams were then trained on nutritional screening, care planning and use of the new electronic form to enable them to implement the new process.

128 staff in Purbeck locality and 79 staff in Christchurch locality received training. 69% (n=703) of people screened in both localities were screened by professionals who would not previously have carried out screening (75% (n=418) in Purbeck and 63% (n=285) in Christchurch). A total of 1014 people were screened across both localities using the electronic form, with 25% (n=252) identified as being at medium or high risk. This prevalence was similar between both localities (27% in Purbeck compared to 22% in Christchurch). Of those at medium or high risk on initial assessment, 28% (n=70) had a reduced ‘MUST’ on review. This represents an estimated cost avoidance per annum of £66,443 (3) across both localities.

<table>
<thead>
<tr>
<th>Area</th>
<th>No. people screened at least once</th>
<th>Prevalence of undernutrition</th>
<th>No. people with improved ‘MUST’</th>
<th>Cost avoidance estimate per annum for people with reduced ‘MUST’</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% at medium risk</td>
<td>% at high risk</td>
<td>% at medium or high risk</td>
</tr>
<tr>
<td>Purbeck pilot</td>
<td>561</td>
<td>19% (n=107)</td>
<td>8% (n=47)</td>
<td>27% (n=154)</td>
</tr>
<tr>
<td>Christchurch</td>
<td>453</td>
<td>8% (n=35)</td>
<td>14% (n=63)</td>
<td>22% (n=98)</td>
</tr>
<tr>
<td>Total</td>
<td>1014</td>
<td>14% (n=142)</td>
<td>11% (n=110)</td>
<td>25% (n=252)</td>
</tr>
</tbody>
</table>

Data from both these localities has demonstrated the effectiveness of a collaborative approach across health and social care to reduce the prevalence of undernutrition in older people living independently. The implementation of an electronic form enabled the inputting and sharing of nutritional status information across different teams and far greater potential for cost avoidance. Based on these findings, it has been possible to roll out the programme in other localities across Dorset. Further work is needed to investigate the factors that will ensure sustainability of the programme.

References:
'Let them eat cake': a retrospective service evaluation of Focus on Undernutrition in care homes.

By R. Masters, Focus on Undernutrition, Nutrition and Dietetic Service, County Durham and Darlington NHS Foundation Trust, Henson Close, South Church Enterprise Park, Bishop Auckland, County Durham, DL14 8LW, UK.

Undernutrition is a major cause and consequence of poor health in older people, affecting 35% of residents in care homes\(^1\). Focus on Undernutrition (FoU), a dietetic service delivered by dietetic assistants uses a multifaceted approach to undernutrition management. This study evaluated FoU’s impact on undernutrition outcome measures in care homes; including FoU’s influence on weight change in residents ‘at risk’ of undernutrition, and prevalence of undernutrition and pressure ulcers (PU).

A retrospective pragmatic service evaluation was undertaken using pseudonymised data collected over 13 years on weight, undernutrition risk and PU from long-stay residents’ notes before and six months after training (FoU).

Analysis completed on 104 homes, 4315 residents (71.3% female; mean stay 10.8 (1-278) months) in County Durham. After FoU a significant difference was identified for:

- improved rate of weight change for ‘at risk’ residents (\(p<0.001\)). Undernutrition risk significantly influenced weight change (low: \(B=-1.04kg, E=0.01kg\); moderate: \(B=-1.79kg, E=-0.38kg\); high: \(B=-0.83kg, E=1.00kg\), \(p<0.001, E<0.001\)).
- reduced undernutrition prevalence (\(p<0.001\)) from 32.7% to 29.1% residents ‘at risk’ of undernutrition (moderate: \(B=13.1%, E=8.9%\); high: \(B=19.6%, E=15.9%\)). Nutrition screening significantly improved \((B=76.3%, E=98.7%, p<0.001)\).
- reduced prevalence PU (51%, \(p<0.001\)). PU prevalence significantly increased with undernutrition severity at baseline \((p<0.001)\), but not following FoU \((p=0.233)\) (low: \(B=5%, E=2.3%\); moderate: \(B=6.9%, E=1.6%\); high: \(B=10.5%, E=3.9%\)). Odds of developing PU reduced 53\% (OR:0.47).

These results demonstrate dietetic assistants delivering FoU significantly improves weight, undernutrition and PU prevalence in care homes. Indicating FoU is an effective model for improving undernutrition outcomes, with the potential of reducing possible harm, such as PU in care homes.

References
Evaluation of the use of PaperWeight Armband in screening for malnutrition among older adults. By Benjamin Till, Kathy Wallis, Penelope Nestel

Faculty of Medicine, University of Southampton, Southampton, SO16 6YD, UK, Wessex Academic Health Science Network, Innovation Centre, Southampton Science Park, Chilworth, SO16 7NP, UK.

In the UK older adults are at risk of becoming undernourished, with multiple risk factors associated with increasing age. The majority of malnutrition (undernutrition) originates in community settings. Identifying at risk individuals within the community is a challenging but vital step in controlling malnutrition. This process evaluation investigated how a novel approach to identify such individuals by Age Concern Hampshire and the Wessex Academic Health Science Network (WAHSN), with Age Concern Hampshire volunteers using the PaperWeight Armband (PWA) and weight loss questions, were used to screen for malnutrition in the community.

A mixed methods approach was taken. Descriptive statistics were used to summarise the data in the monitoring forms completed (Jan 2016-July 2016) by Age Concern Hampshire volunteers that included use of PWA, questions on weight loss, resources provided, and referral to community services. This information was recorded after visiting clients age >50y at home or meeting clients at community events. Interviews were conducted in July 2016 with Project managers and a convenience sample of Age Concern Hampshire volunteers to explore the use of the PWA, suitability and usability, the role of volunteers, training and support, the impact of armband and questions and the monitoring process. Interviews were audio-recorded, transcribed verbatim and then thematically analysed using NVivo. Themes were broken into subthemes where appropriate. Ethical approval was obtained from the University of Southampton, Faculty of Medicine Research Ethics Committee.

Volunteers screened 35 people in the community using the PWA and weight loss questions. The PWA were used on all individuals, but only 80% were asked questions regarding weight loss in the last six months. Two individuals were identified as underweight using the PWA and four had lost weight in the last six months. One individual had lost weight in the last six months, yet questions regarding weight loss were not asked at the visit. Eight key themes were identified from the interviews: risk factors for malnutrition, the PWA as a tool, outcomes, response, usability, sustainability, barriers and the wider role of volunteers.

This process evaluation found that volunteers were using the PWA as a tool to start conversations about nutrition with clients. Training had raised awareness of malnutrition and also improved the volunteers’ understanding of the actions they can take to help control it. PWAs were positive about the training received. The PWA was deemed easy to use by volunteers, although limited signposting and referral occurred. Further investigation is necessary to see how volunteers, situated within the community, can be utilized to help tackle malnutrition.

References
An e-learning tool to improve confidence and competence in confirming the position of nasogastric feeding tubes.
by L.D. Morris, T. Earley, R. Stockwell and P. Brophy, Lancashire Teaching Hospitals NHS Trust, Preston, United Kingdom, PR2 9HT

Nasogastric tube (NGT) insertion is commonly performed but mismanagement of NGTs can have disastrous consequences for patients. Administration of feed, fluid or medication through a tube which has been incorrectly placed in the respiratory tract has been a ‘Never Event’ since 2009. Despite the focus on safe usage, between 2011 and 2016 there were 95 reported incidences of fluid or medication being introduced into the respiratory tract via an incorrectly placed NGT. There were two incidences of this in Lancashire Teaching Hospitals NHS Foundation Trust (LTHTr) in 2016. Improved education in the identification of incorrectly placed NGTs is required to help address this patient safety issue.

An e-learning module was devised at LTHTr to teach the principles of confirmation of NGT position with the aim of improving confidence and competence of staff members who care for patients with NGTs. The tool provides information on indications and contraindications for NGT insertion. It then shares a strategy for non-radiological position confirmation, including nose-ear-xiphysternum (NEX) measurement and pH testing, and formal teaching of chest x-ray (CXR) interpretation. This includes a structured approach to assessing anatomical landmarks: “the 2Cs and 2Ds” (clavicle, carina, diaphragm and deviation) consistent with NPSA 2016–006 alert. Multiple choice questions allow participants to check their level of understanding. The e-learning tool has been evaluated in training sessions with 39 trainee doctors of different levels of experience. Pre- and post-training questionnaires were completed, assessing trainees’ perceived competence in correctly confirming NGT position.

90% of those who attended the training sessions had never experienced using a similar tool in the context of teaching NGT position confirmation. After completing the training package, there was a statistically significant increase in the participants’ confidence in correctly confirming NGT position using CXRs (pre-training median 7, post-training 9, p <0.01), describing the anatomical landmarks on CXRs (pre-training median 7, post-training 9, p <0.01), and training a colleague in CXR interpretation (pre-training median 6, post-training 9, p <0.01). Attendees were satisfied that the tool addressed the issues regarding NGT insertion and the importance of correctly confirming position.

Following the successful pilots, completion of the e-learning tool, which has been endorsed by the National Nutrition Nurse Group, is now mandatory for all medical staff who may care for patients with NGTs. Further evaluation of the tool is necessary but it is expected that improved confidence and competence will translate into fewer patient safety incidents related to the use of NGTs. The e-learning tool has scope for use beyond LTHTr, and it has been adopted by five trusts nationally.

References
Association between feeding difficulties and malnutrition in nursing home residents.

by K. Hall¹, S.J. Illingworth¹ and A. Gilson², ¹London Metropolitan University, 166-220 Holloway Road, London, N7 8DB, United Kingdom. ²Barts Health NHS Trust, Newham University Hospital, Glen Road, E13 8SL, United Kingdom.

With an ageing population, the prevalence of dementia is increasing¹,². As this disease progresses, cognition declines which commonly leads to difficulties with eating and drinking. Due to this, the risk of malnutrition and the subsequent consequences are increased¹. A concrete evidence base of interventions to combat feeding difficulties is lacking¹,².

The aims of this study were to assess risk of malnutrition and rate of feeding difficulties in nursing home residents and to observe interventions currently in place.

Ethical approval was granted from London Metropolitan University Ethics Committee. Subjects were recruited from two houses within a named nursing home based on having the highest prevalence of dementia and feeding difficulties. A single trained researcher assessed malnutrition risk and feeding difficulties using the Malnutrition Universal Screening Tool (MUST) and the Edinburgh Feeding Evaluation in Dementia tool (EdFED³). The unvalidated Dementia Mealtime Assessment Tool (DMAT4) was also used to assess feeding difficulties. Current interventions used to mitigate for feeding difficulties were observed. A MUST audit was carried out and Cohen’s kappa test was used to assess validity and reliability of the tool. To identify the most common feeding difficulties the mode, median and quartiles were calculated for both tools. Spearman’s rank correlation was used to assess for association between feeding difficulties (EdFED) and both MUST and BMI.

The results included 55 nursing home residents. Seventy-two percent of subjects had cognitive impairments with dementia and Alzheimer’s disease being the most common. The risk of malnutrition (26%) was lower than the UK average (35%). The malnutrition screening tool used proved to be valid and reliable with substantial inter-rater agreement (K = 0.72). Moderate to high rates of feeding difficulties were observed in 53% of subjects. The most common difficulties included the physical aspects of eating and drinking and leaving food on the plate. There was a significant association between both BMI and MUST score when correlated with feeding difficulties (total EdFED score) (rₛ = 0.31, p <0.05; rₛ = -0.46, p <0.01 respectively).

Table 1. Demographic and clinical characteristics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Conditions affecting cognition</th>
<th>N</th>
<th>%</th>
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<tr>
<td>Age (years)</td>
<td>55</td>
<td>69</td>
<td>104</td>
<td>85.0</td>
<td>7.5</td>
<td></td>
<td>40</td>
<td>72</td>
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<td>Weight (kg)</td>
<td>55</td>
<td>35.7</td>
<td>118.6</td>
<td>62.8</td>
<td>15.4</td>
<td>Feeding difficulties</td>
<td>29</td>
<td>53</td>
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<tr>
<td>BMI (kg/m²)</td>
<td>55</td>
<td>13.6</td>
<td>45.3</td>
<td>23.3</td>
<td>5.1</td>
<td>Risk of malnutrition</td>
<td>14</td>
<td>26</td>
</tr>
</tbody>
</table>

Lower than average rates of malnutrition in this group may be associated with the competence of the staff in the management of malnutrition risk and support for feeding difficulties. This is as a result of on-going auditing and training.

Despite lower than average risk of malnutrition, residents still had moderate to high rates of feeding difficulties indicating that regular monitoring of both risk of malnutrition and feeding difficulties is essential. This research supports the efficacy of caregiver training to ensure good practice when assessing nutritional risk¹,². The validation of DMAT as a management tool for feeding difficulties would enable its wider use and support the further development of an evidence base for interventions.

References

The cost saving effect of advanced dietetic practice in an acute setting.
by A. Gorham¹, S. Brady ¹, O. Seery ², N. McEniff ², L.A. Healy¹ and N. Flanagan ¹,
¹ Department of Clinical Nutrition, ²Department of Interventional Radiology, St. James's Hospital, Dublin, Ireland

Radiological Inserted Gastrostomy (RIG) tubes are frequently used to provide enteral access for patients who require long-term enteral nutrition. A pigtail-retained RIG was the standard RIG tube used in this acute hospital. Post-insertion, routine tube replacement was scheduled in Interventional Radiology (IR) department every 6 months; tubes may require premature, non-routine replacement because of complications. In 2014, 140 loop retained RIGs were routinely replaced in the IR department at an estimated cost of €68,285.

The aims of this project were to: 1. Examine the number of, and waiting time for, routine and non-routine RIG replacements. 2. Examine the suitability of a replacement licensed balloon-retained gastrostomy, amenable to bedside placement by an appropriately trained Clinical Specialist Dietitian. 3. To identify and quantify any cost savings delivered by changing current practice.

An review of all pigtail-retained RIG tube replacements was conducted over a 3 month period (April - June 2014). Data captured included the rationale for RIG replacement, whether replaced as an inpatient/outpatient, if admission was required solely for RIG replacement, length of stay (LOS), waiting times for appointments, staffing and equipment resources required for the procedure. Each patient was assessed for suitability for a replacement balloon-retained gastrostomy. The cost of tube replacement with a pigtail-retained gastrostomy was compared to a balloon-retained gastrostomy. Total cost was estimated using the cost of the tubes, ancillary products, location of replacement, staff involved and patient admission if required.

A total of 45 patients with a pigtail-retained RIG presented to IR for a tube replacement in this period, 15 (33%) for routine replacement and 30 (67%) for non-routine replacement as a result of tube complications. Four (27%) of the routine scheduled RIG replacements were delayed by a median of 7 days (7-60). Outpatients who required non-routine RIG replacement waited a median of 12 hours (3-168 hours) and inpatients requiring non-routine RIG replacement waited a median of 40 hours (24-144 hours). In total, 5 outpatients required hospital admission for RIG tube replacement with a median length of stay of 4 days (1-10). All patients were deemed suitable for balloon-retained gastrostomy replacement. The total cost of completing pigtail-retained RIG tube replacements in IR was estimated at €34,153 during this 3 month project. The total predicted cost of replacement with a balloon-retained gastrostomy by a Clinical Specialist Dietitian at bedside was estimated at €1,996, identifying potential for cost savings of €32,157 over this 3 month period. In 2014, this would have resulted in an annual estimated cost saving of €62,076 for routine replacements alone. Following this project, a 12 month pilot with a 0.5 Clinical Specialist Dietitian, competent to replace RIGs with balloon gastrostomies at the bedside, was approved. To date 64 patients have been identified as suitable and referred to the 0.5wte Clinical Specialist Dietitian for routine gastrostomy replacement. 80 routine tube replacements were performed during the initial 12 months of this pilot. 21 of these were inpatients and had tube replacement at ward level. This pilot demonstrated an actual saving of €25,412 in its first 12 month period.

This project highlighted opportunities to address costs and delays in our practice regarding RIG replacement. Using the expertise of a Clinical Specialist Dietitian, competent to replace RIGs with balloon gastrostomies at the bedside, clearly demonstrates potential benefits to both patients and the hospital, with an opportunity for significant cost savings per annum. The dedicated specialist role potentially reduces delays for both routine and non-routine RIG replacements by reducing or eliminating waiting times for appointments. This will be particularly beneficial for more urgent non-routine RIG replacements which accounted for two thirds of the total RIG replacements. A 0.5 WTE Clinical Specialist Dietitian post was subsequently funded in this hospital to develop this service.
Measuring dietetic outcomes in oncology

by C Shaw¹ and S Lewis² on behalf of British Dietetic Association Oncology Specialist Group working party.

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A health outcome is ‘a change in the health of an individual, group of people or a population which is attributable to an intervention, or series of interventions. Measuring health outcomes in clinical practice can present challenges. However, they are vital as they influence the care of the person and demonstrate the value of a dietetic service to commissioners and to the wider health community (1, 2).

The British Dietetic Association (BDA) Oncology Specialist Group was tasked by its members to produce an outcome tool that was easy and practical for clinical dietetics.

A task and finish group of 12 Registered Dietitians was set up. Expertise within the group covered all tumour groups. Baseline data on outcome tool usage was collected via an online survey. A tool was developed by consensus and piloted by members of the group (3). Further revisions were made following two pilots, feedback and group discussions. A user and quick start guide were developed to be used in conjunction with the tool. The oncology outcome tool was launched at the group’s national meeting in Autumn 2016.

An outcome tool, based on a Microsoft Excel spreadsheet, was developed to capture both patient and dietitian generated goals of the dietetic intervention. The tool supports the use of objective data from validated sources in addition to patient related outcome and experience measures. Outcomes can be graded as achieved, partially achieved or not achieved. Non-achievement of goals can be categorised in domains with appropriate reasons.

A practical outcome tool has been disseminated to members. Feedback from members is being collected with the aim of reviewing the tool in 2018. Videos of how to use the outcome tool are being made available on YouTube.

References

Compliance of Intravenous Fluid Therapy to NICE Guidelines in General Surgery Emergency Admissions
by S Robinson, C L Gelder and Mr A McMahon
University of Glasgow G12 8QQ Scotland and Glasgow Royal Infirmary G4 0SF Scotland

Intravenous (IV) fluid therapy requires regular monitoring and is indicated for patients' whose needs cannot be met by oral or enteral routes. NICE guidelines recommend that patients requiring maintenance fluids for more than 3 days are started on nasogastric or enteral feeding. Here we present an audit to determine if IV therapy in general surgical emergency admissions adheres to NICE guidelines.

Data for 76 patients (30 male and 46 female) was obtained from a single general surgeons' emergency admission list. Of the 76 patients 48 (63%) received IV fluids. Data was collected over the patients' first three days in hospital. We assessed their fluid requirement by correlation of clinical data with NICE IV fluid therapy guidelines.

Over the three days 16.8% of fluid prescriptions adhered to NICE guidelines with 60% non-compliance. We were unable to assess compliance in a further 23.2% as no oral intake was documented. Incomplete fluid balance charts were noted for 45% of patients, with an additional 39% having no fluid balance charts. The main reasons patients' received IV fluids was due to fasting whilst awaiting scans (35.4%) or admission with nausea and vomiting (41.7%). Biochemical complications relating to IV fluids included hyperchloraemia (38%), hypouraemia (27%) and hypokalaemia (19%).

Patients are at risk of metabolic complications such as hyperchloraemic acidosis due to non-compliance with NICE IV fluid therapy guidelines. The large percentage of non-compliance and inaccurate fluid intake recording could lead patients to be unnecessarily considered for nasogastric or enteral feeding, thus over-treating or causing harm to patients. These findings indicate that further education on IV fluid prescription and fluid complications is needed alongside improvement in chart adherence.

References
Adherence to NICE Intravenous Fluid Therapy Guidelines in General Surgery Emergency Admissions, when accounting for Administration of Intravenous Antibiotic in Fluid

by S Robinson¹, C L Gelder² and A McMa hon² University of Glasgow¹ G12 8QQ Scotland, Glasgow Royal Infirmary² G4 0SF Scotland

Audit to determine if adherence to NICE guidelines¹ for intravenous (IV) fluid therapy is altered when taking into account additional fluid given if IV antibiotics are diluted for administration. Our hypothesis was that the additional fluid would worsen adherence to NICE guidelines¹. Antibiotics should be given as per manufacturers guidelines; this is usually as a bolus, in 100mls of 0.9% sodium chloride (NaCl) or in 5% dextrose.

We analysed 76 patients' data for the first three days of their admission; this was obtained from a single general surgeons' emergency admissions list. From this 28 (37%) patients received antibiotics, with 22 (29%) receiving both IV antibiotics and IV fluids. During this audit the majority of antibiotics were given within 100mls of 0.9% NaCl which corresponds to literature found for other hospitals². Over the three days the mean additional fluid from IV antibiotic therapy ranged from 382 to 582mls. We found that 36% had biochemical complications, including hyperchloraemia (5%) and hypouraemia (3%).

The overall adherence to NICE IV fluid therapy guidelines¹ was 16.8%; for the proportion receiving IV antibiotics this was 9%. Compliance to NICE guidelines changed for 2 patients; their fluid therapy became compliant which goes against our hypothesis. This was due to the additional electrolytes and fluid volume correcting fluid regimes.

Fluid balance recording was noted to be poor. Of the patients receiving IV antibiotics 23 patients' (30%) fluid regimes could not be determined as oral intake was inaccurately recorded and only 5% of all patients had correct documentation of the additional fluid given with IV antibiotic therapy on their fluid balance charts.

The additional fluid given with IV antibiotics and the poor documentation of this can have a significant impact upon patient health; patients on fluid restrictions may be at risk of becoming overloaded, those receiving tailored parenteral nutrition with specific electrolyte requirements may receive excess electrolytes that could cause a hyperchloraemic metabolic acidosis and those requiring strict fluid balance monitoring may appear to be having additional losses which could unnecessarily alter management. These findings demonstrate the need for doctors to be aware of the additional fluid given with antibiotics when prescribing IV fluid therapy regimes, training on IV antibiotic bolus administration and correct documentation of the additional fluid volume that is given with IV antibiotics. Since this audit we have transitioned towards the use of 5% dextrose rather than 0.9% NaCl in antibiotic administration to prevent excess Na and Cl administration².

References
Reducing home enteral feed wastage and associated cost saving by an established adult home enteral nutrition team

by R Robinson, H Rhodes and A Fairweather. Derby Hospitals NHS Foundation Trust, Royal Derby Hospital, Uttoxeter Road, DE22 3NE, United Kingdom.

Studies in the UK in recent years have demonstrated that targeted dietetic time can improve oral nutritional supplement wastage and costs to community NHS services¹. It is usual that these projects exclude home enteral nutrition (HEN) prescriptions from audit, yet these also present potential for wasted product. As well as feed waste being a significant cost², if entire volumes of containers are not used this could present complications in terms of ease of use, storage and safety (notably if changing feed bags to complete regimens).

There is evidence that the development of a dedicated HEN team can bring about reduction of waste of feed which in turn can realise cost savings in the community³. The aim of this audit was to identify daily waste of feed product in an established adult (>18yrs) HEN service with a view to adjust these regimens, if possible, to make them more efficient. It was also to identify procedures within the service to minimise the wastage of feed product going forward. The audit was planned to integrate with routine patient reviews over a six month period (August 2016 – February 2017).

From a total of 200 patients managed by the HEN team, 33 (16.5%) were identified as having daily waste of feed product, with an accumulated total of 7225ml per day; ranging between 50-350ml per day. The cost of the wasted feed product (£/ml) was calculated to be £81.12 per day. The actual cost of prescriptions with wasted feed product was calculated as £367.53 per day. It was identified that the majority (27%) of regimens leading to wasted product were initiated by the acute dietetic team on discharge.

Following a routine review (either telephone or face to face) 21 prescriptions were altered. Of those not changed 58% went off scheme during audit period, 25% had either a clinical indication or unsuitable alternative to change and 17% involved a patient/carer declining the change suggested. The result in a total feed waste reduction was 77% (accumulated total feed wastage post audit was 1330ml per day). Changes to prescription resulted in the same prescription cost (24%) or an increased cost (9%); however the majority (67%) resulted in a reduced prescription cost. The actual prescription costs post changes was £305.15 per day which is a saving of 17%.

During the audit period training to the acute dietetic team was delivered to promote avoiding wasted feed product. A HEN tool was developed and designed to insert into a dietetic reference companion to prompt consideration of triggers for wasted feed product on discharge. A total of 5 new regimens with wasted feed product occurred during the audit period, 3 of which were altered on initial HEN team assessment to avoid ongoing wastage.

The audit demonstrated that targeting HEN feed waste directly through patient contact and indirectly via education resulted in a reduction of feed waste and a cost saving. The audit did not measure patient experience of new regimens; however anecdotally some patients/caregivers reported satisfaction with the changes made citing ease of new regimens and happiness to not be “wasting food”. Dietetic time required to facilitate the audit was not measured directly; however as the changes were made in accordance with routine reviews it was not felt that it generated significant additional workload.

References
Reducing nutritional deficits accumulated through prolonged pre-operative starvation

By R. Ball¹, V. Patel² and A. Kelly³, Major Trauma Service¹, Dietetic Department² and Anaesthetic Department³, UHCW NHS Trust, Clifford Bridge Road, Coventry CV2 2DX United Kingdom

Pre-operative starvation reduces the risk of pulmonary aspiration on regurgitated gastric fluid, a risk otherwise increased by general anaesthetic¹. There has been consensus regarding pre-operative practise since 2001²; the minimum fasting period for adults should be 6 hours for solid food and milk, and 2 hours for clear fluids.

The nature of emergency theatre makes it difficult to schedule a definitive daily operative plan, however prolonged starvation time and nutritional deficits accumulated following operative cancellations will not optimise a patient’s nutritional status.

A snapshot audit was completed to assess the pre-operative starvation practise of 22 major trauma patients. The sample was identified from the emergency list organised at 8am each morning and only those who were taken to theatre were included in the results. Starvation times found on medical and nursing documentation were compared with the time the patient entered the theatre suite to assess how long they were starved for diet and fluids.

Results highlighted previous assumptions that the starvation practises of patients scheduled for theatre on the emergency list far exceed those recommended. In particular, an average of 9.5 hours and a maximum of 22 hours nil fluids will likely cause greater discomfort to the patient, and unless replaced intravenously, will cause sub optimal hydration.

Table 1: Preoperative starvation results of 22 UHCW Major Trauma patients

<table>
<thead>
<tr>
<th>Time</th>
<th>Starved from diet (incl. milk products)</th>
<th>Starved from clear fluids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>15.5 hours</td>
<td>9.5 hours</td>
</tr>
<tr>
<td>Range</td>
<td>1-25 hours</td>
<td>1-22 hours</td>
</tr>
<tr>
<td>Standard</td>
<td>6 hours</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

Results were presented to the Major Trauma multi-disciplinary team and areas for improvement were discussed. The following actions have since been implemented:

- The anaesthetist department have commenced a pilot of 2hourly 200ml clear fluid intake prior to collection for theatre.
- Nursing documentation highlighted training needs which have been addressed.
- Pre-Operative carbohydrate loading drinks are to be implemented in the fractured neck of femur population initially.

Pre-operative starvation shall be re audited and further action taken as appropriate.

References
**Description of nutritional characteristics in patients identified at risk of refeeding syndrome.**

By B. Gillman, N. Drew, S. Murphy, and M. McKiernan, Department of Clinical Nutrition and Dietetics, Mater University Misericordiae Hospital, Eccles Street, Dublin, Ireland.

Refeeding Syndrome (RFS) can be defined as the severe fluid and electrolyte shifts associated with recommencement of feeding, both oral and artificial nutrition via the enteral and parenteral route, in malnourished patients and the resulting metabolic complications. A hospital guideline for the prevention and treatment of RFS was launched in March 2016.

The aim of this audit was (1) To assess degree of RFS risk in patients referred to the dietitian using guideline criteria (2) To describe characteristics of patients identified at RFS risk. Institutional approval was granted for this audit. Data was collected on all referrals to the dietetic department over 4 weeks. Admission speciality, age, sex and length of time to dietitian referral was collected. In addition, kcal/kg intake including source of kcals in 48 hrs pre dietitian review and nutritional care plans post assessment were recorded.

Two hundred and thirteen referrals were received. Fifty eight patients (27%) were identified as been at risk of RFS. Details of the nutritional profile of patients are summarised in Table 1.

**Table 1: Nutritional Profile of Patients identified at risk of RFS**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Values</th>
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</thead>
<tbody>
<tr>
<td>Mean weight (n=57)</td>
<td>66kg</td>
</tr>
<tr>
<td>Number of estimated weights</td>
<td>11 (19%)</td>
</tr>
<tr>
<td>Mean BMI (n=54)</td>
<td>23kg/m²</td>
</tr>
<tr>
<td>History of alcohol abuse or drug abuse (n= 54)</td>
<td>21 patients (39%)</td>
</tr>
<tr>
<td>Average kcal/kg in 48hrs pre dietitian review</td>
<td>10kcal/kg</td>
</tr>
</tbody>
</table>

ICU admissions had the highest incidence of RFS risk (21%). There were 37 males and 21 females. The average age was 60yrs. Twenty-six patients (45%) had > 1 predisposing factor for RFS, of which malnutrition was the most predominant. Forty four patients (76%) were classified at extreme risk or high risk of RFS (6 and 38 patients respectively). Of the high risk patients, 29 patients (76%) were classified as having one high major risk factor. Electrolyte abnormalities are highlighted in Table 2, which accounted for 22% of patients having a high major risk for RFS.

**Table 2: Summary of Electrolyte Levels**

| Electrolyte Level not available | K⁺=3/58(5%) | Mg²⁺=21/58 (36%) | Po₄³⁻=8/58 (14%) |
| Electrolyte level not available | K⁺=3/58(5%) | Mg²⁺=21/58 (36%) | Po₄³⁻=8/58 (14%) |

Approximately one third had weight loss of > 10% in the last 3-6 months and 26% had little or no kcal intake for > 10days. Sources of kcals pre dietitian review were as follows; 60% oral, 22% tube feed, 5% IV dextrose, 2% PN and 10% were NPO. Figure 1 demonstrates sources of kcal post dietitian review. The majority of patients (57%) were prescribed oral diet post review.

The incidence of risk of RFS was 27%. Magnesium was the electrolyte that was checked least often (36%), however when checked Mg was the electrolyte most likely to be low (32%). Poor nutritional intake and baseline low Mg have been shown to be independent risk factors for RFS. Therefore the refeeding protocol will be adjusted to include the routine assessment of Mg. Further work will be done to ascertain if the energy prescription was followed and dosage of electrolytes given to patients.

**References**

Has the percutaneous endoscopic gastrostomy (PEG) multidisciplinary team meeting improved quality and safety outcomes of percutaneous endoscopic gastrostomies?
Authors: C. Rasanayagam, J. O'Rourke and T. Haldane. Worcestershire Royal Hospital, Charles Hastings Way, Worcester, WR5 1DD.

Percutaneous endoscopic gastrostomy (PEG) insertions are frequently carried out for a variety of indications. There are clear national guidelines regarding appropriate peg placement. In 2015 a PEG MDT was developed in our hospital to ensure appropriate peg placement. The aim of this audit was to evaluate the usefulness of the PEG MDT by comparing practice before and after the introduction of the peg MDT. Head and neck cancer patients are not routinely discussed at the PEG MDT as they have an established treatment pathway. PEG audit data was collected including and excluding these patients.

A retrospective audit was carried out looking at all PEG insertions carried out in 2016 in our hospital. Data was collected using the endoscopy reporting system as well as electronic patient records. This data was compared to audit data collected in 2014. We evaluated the indications for a PEG insertion, whether the patient was discussed at the MDT, complications of insertions and also the mortality (30 day and 6 months).

Majority of the indications for a PEG insertion was for CVA (54%) and the second most common indication was dysphagia for other neurological causes (12%). Out of those inserted at our hospital, 35/41 patients were discussed at the PEG MDT prior to insertion (85%). Below compares this with a previous study in 2014 (however the 2014 study was only for 6 months).

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of PEG procedures</th>
<th>Age range (median)</th>
<th>Complications</th>
<th>Inappropriate indication</th>
<th>30 day mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 (total over 6 months)</td>
<td>76</td>
<td>20 - 93 (70)</td>
<td>13</td>
<td>6</td>
<td>6 (8)</td>
</tr>
<tr>
<td>2014 (excluding head and neck)</td>
<td>47</td>
<td>20 - 93 (74)</td>
<td>9</td>
<td>6</td>
<td>6 (13)</td>
</tr>
<tr>
<td>2016 (total over 12 months)</td>
<td>132</td>
<td>23 - 96 (68)</td>
<td>10</td>
<td>0</td>
<td>7 (5)</td>
</tr>
<tr>
<td>2016 (excluding head and neck)</td>
<td>33</td>
<td>27 - 96 (78)</td>
<td>5</td>
<td>0</td>
<td>2 (6)</td>
</tr>
</tbody>
</table>

This study showed that discussing PEG insertions at the PEG MDT prior to insertion reduces number of PEGs placed by around half. The 30 day mortality has improved and no PEGs were placed for inappropriate indications, for example in advanced dementia.

References:
Catheter related line sepsis rate reduced with establishing Nutrition Support Team
by CL. Peplow, Z. Shah and T. Haldane
Worcester Royal Hospital, Worcester WR5 1DD

Parenteral nutrition (PN) is known to have potentially serious complications, in
particular from catheter related sepsis. Studies have demonstrated that a Nutrition Support
Team can reduce catheter related sepsis rates (1, 2). An audit of PN use in our hospital,
completed prior to the instigation of a Nutrition Support Team, calculated our catheter related
sepsis rate at 19.5%. Following the provision of a dedicated nutrition team, we investigated
the rate of catheter related sepsis by reviewing microbiological samples and case notes.

Over a 12 month period from October 2015 to September 2016, 184 patients received
PN. Of that cohort 60 (32.6%) patients received peripheral PN and 124 (67.4%) central PN.
Central line tip cultures were sent for 109 patients. Of the patients receiving central PN,
12.1% did not have their catheter tip sent. Catheter tip cultures were positive in 47 (43.1%)
patients and 62 (56.9%) had no significant growth. Confirmed catheter related sepsis was
found in 9 (4.9%) patients - this was defined as positive tip culture and the same organism
found in a blood culture. The most common organisms to cause catheter related sepsis were
coaagulase negative staph 45.5% and candida 18.2%. Central line care plans were complete in
6 out of the 9 patients diagnosed with sepsis. Mean length of time central lines were in situ
for was 10.8 days.

Our results show a significant decrease in the rates of catheter related sepsis within
the trust from 19.5% to 4.9%, and this is considerably lower than the 23.3% rate in the
NCEPOD report of 2010 (3). This study reiterates the importance of a dedicated team in the
administration and monitoring of parenteral nutrition within a district general hospital.
Further improvement in this area will involve the publishing of a parenteral nutrition clinical
guideline including a focus on catheter care.

References
1. Kennedy JF, Nightingale JM. Cost savings of an adult hospital nutrition support team. Nutrition (2005) Nov-Dec;21(11-
   12):1127-33
Improved mortality with the implementation of an MDT to determine patient selection for Percutaneous Endoscopic Gastrostomy (PEG) insertion–A retrospective audit; single centre experience
By A Dhaliwal¹; S Smith¹, T Haldane³, ¹Worcesthire Royal Hospital, Charles Hasting Way, Worcester, WR51DD

The National Institute for Health and Care Excellence (NICE) guidelines suggest that the use of a PEG or nutrition team MDT is beneficial in determining appropriate patient selection. We had implemented a multidisciplinary PEG MDT to ascertain the impact on our patients. The aim was to review the outcome of inpatient PEG placements referred through our MDT including suitability for PEG insertion, 30 day mortality and overall mortality. We collected data from all patients referred from June 2015 to July 2016. We used the referrals and the PEG MDT database in addition to our clinical portals to obtain patient outcomes including indication/ reason for referral, initial outcome of PEG MDT and mortality outcome (30 day vs overall). We excluded head and neck malignancy patients who were referred. Outcomes options following the initial MDT discussion were; suitable, unsuitable or further review.

There were 93 new patients excluding re discussions (211 patients). There was a male dominance (61 patients), which an average age of 77 years (range 37-95 years). The average patient per MDT was 15 total patients’ vs 7 new patients per month. A Gastroenterology consultant was present for 56/95 new patient discussions (59%).

Our results show that only 38% of all patients referred underwent PEG insertion, however of those that were deemed suitable on their initial discussion, 47% did not undergo PEG insertion. This highlights the need for continued medical review of patients and consideration of appropriate referrals and possible present of gastroenterology input during MDT.

We have seen a reduction in 30 day mortality in patients who underwent PEG from 13% (from previous data July 2014 to December 2015) to 6% in our current cohort which fall below current averages of 20-25% reported in current data.

We observed a high 30 day mortality rate in those patients referred (31%), including a large age range, which is consistent with the multiple co morbidities, current diagnosis and ageing population, and highlights the need for an MDT decision to avoid inappropriate PEG placement. The decision to for further review or information during MDT, highlights that 65% of these patients do not require PEG insertion owing to decline, improvement in own swallow or appropriate alternative methods of nutrition.

Overall we have identified that implementing a PEG MDT improves the decision making process involved in consideration of PEG insertion, reduced mortality and improves patient care. We propose that use of a multidisciplinary approach in PEG assessment should and will become a standardised requirement.

**Outcome of initial MDT (new patients) n =93**

<table>
<thead>
<tr>
<th>Suitable for PEG</th>
<th>Unsuitable</th>
<th>Further review</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underwent PEG insertion</td>
<td>8</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>Did not undergo PEG insertion</td>
<td>7</td>
<td>11</td>
<td>41</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15 (16%)</strong></td>
<td><strong>15</strong></td>
<td><strong>63</strong></td>
</tr>
</tbody>
</table>

**Mortality**

<table>
<thead>
<tr>
<th>30 day mortality</th>
<th>PEG cohort (n=34)</th>
<th>%</th>
<th>Non PEG cohort (n=59)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6%</td>
<td>18</td>
<td>8%</td>
<td>18</td>
</tr>
<tr>
<td>Over 30 days</td>
<td>6</td>
<td>18%</td>
<td>5</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>24%</strong></td>
<td><strong>23</strong></td>
<td><strong>39%</strong></td>
</tr>
<tr>
<td>Overall</td>
<td>9%</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References:
Nutrition support for adults; oral nutrition support enteral tube feeding and parenteral nutrition; clinical guidelines; February 2006
Prevalence of malnutrition in critically ill adults within University Hospital Southampton NHS Trust.

by E. Stiles, B. Jenkins, L. Marino. Department of Dietetics and Speech and Language Therapy, University of Southampton NHS Foundation Trust, Tremona Road, Southampton, England, SO16 6YD.

There is wide ranging research into the incidence of malnutrition in the critically ill patient. One study describes prevalence as high as 50%\(^1\), whilst others describe prevalence between 38-78%\(^2\). Critical illness is associated with an inflammatory state, leading to catabolism and muscle wasting\(^3\). In patients who are critically ill, there is undoubtedly a link between nutritional status and clinical outcome\(^4\).

In order to describe the prevalence of malnutrition in critically ill patients within our Trust, a concurrent clinical audit was conducted between the 1\(^{st}\) of November and the 8\(^{th}\) of November on all patients admitted to the intensive care units (ICU), n= 88. Information was collected from patient’s medical and nursing notes and observation charts. Old notes and clinic letters records were checked to determine previous weights and weight history. Data was collected on weight, height, body mass index (BMI), length of mechanical ventilation (MV), length of ICU stay (ICULOS) and length of hospital stay (HLOS).

Of the 88 patients included the highest proportion of patients (39.8%) were classified as overweight (BMI 25-29.9kg/m\(^2\)). 29.6% of patients had a normal BMI (18.5-24.9kg/m\(^2\)), 23.8% of patients were obese (BMI > 30kg/m\(^2\)) and 6.8% of patients were undernourished (BMI <18.5kg/m\(^2\)).

Patients with a BMI of below 18.5kg/m\(^2\) had a longer duration of mechanical ventilation with a trend towards statistical significance (p=0.07). Patients with a lower BMI also had longer length of stay in ICU and increased length of stay in hospital.

This audit found that the majority of patients admitted to our ICUs are overweight, with only 6.8% classed as undernourished as categorised by BMI. Low BMI was associated with increased duration of mechanical ventilation and increased length of ICU and hospital stay. It is therefore important to target nutritional support and dietetic intervention at underweight patients in order to improve outcomes.

References
A ‘Mixed Bag’ of Nutrition in Lincoln County Hospital
by A Eastwood¹, C Lam², R Grinham³, H Gupta³.
Nottingham City Hospital, Nottingham University Hospitals NHS Trust, Hucknall Road, NG5 1PB, UK
Sheffield Teaching Hospitals NHS Foundation Trust, Herries Road, Sheffield S57AU, UK
Lincoln County Hospital, United Lincolnshire Hospitals NHS Trust, Greetwell Road, LN2 5QY, UK

Parental nutrition (PN) is an established and ‘accessible’ method for providing nutritional support to patients with intestinal failure. A national report in 2010 had highlighted the pitfalls of PN use on a national basis¹.

We aim to assess and compare the standards of care against the themes addressed within the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report¹, identifying pitfalls within the current service and make improvements that could create a safer pathway for patients.

This is a retrospective study looking at all patients who were started on PN from 1st September 2014 to 31st July 2015. Data was collected using the available proforma provided by the NCEPOD². Data were collected and analysed by all multidisciplinary members involved in PN. The data was compared to the national data provided by NCEPOD¹.

(Median, Interquartile range) 45 cases (26 male, 19 female) were identified. The average age of patients was 68 (59.5-79) years old. Majority of the PN was started in the intensive care unit (78%) followed by surgical ward (18%) and the remaining PN was started in the medical ward (4%). Documentation of PN use was good with 93% of the cases were documented in medical notes. Lincoln County Hospital (LCH) performed better in a majority of the fields with 7% (NCEPOD 54%) of cases considered to be deficient in assessment and monitoring of PN and 26% (40%) considered to have had a metabolic complication. Key pitfalls identified in LCH include 33% cases having inadequate documentation of catheter line insertion with total complication rate of 56%. See Table 1.

In conclusion, whilst the practice seen is favourably comparable with the NCEPOD review, development of PN service still needs further improvement with better documentation on the start of PN in medical notes, optimise catheter care and stringent monitoring to reduce metabolic complications. Since the audit, all PN patients outside of intensive care settings have been cohort into a ward whereby there is dedicated staffs to care for catheters and the use of PN in patients.

Reference:
Table 1: Comparing the outcome of PN service in LCH with the available data by NCEPOD

<table>
<thead>
<tr>
<th>Issue</th>
<th>LCH</th>
<th>NCEPOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate consideration of enteral methods</td>
<td>9%</td>
<td>33%</td>
</tr>
<tr>
<td>Inappropriate Indication</td>
<td>9%</td>
<td>29%</td>
</tr>
<tr>
<td>Delay in recognising TPN requirement</td>
<td>2%</td>
<td>16%</td>
</tr>
<tr>
<td>Deficiencies in assessment and monitoring</td>
<td>7%</td>
<td>54%</td>
</tr>
<tr>
<td>Rate of ‘avoidable’ metabolic complications</td>
<td>26%</td>
<td>40%</td>
</tr>
<tr>
<td>Inappropriate use of additional fluids</td>
<td>2%</td>
<td>28%</td>
</tr>
<tr>
<td>Unreasonable delay between decision to the start of PN</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Lack of adequate documentation of insertion</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Lack of documentation of catheter tip</td>
<td>47%</td>
<td>55%</td>
</tr>
<tr>
<td>Rate of catheter complication</td>
<td>29%</td>
<td>26%</td>
</tr>
<tr>
<td>Rate of avoidable catheter complications</td>
<td>15%</td>
<td>54%</td>
</tr>
<tr>
<td>Total complication rate (including line and metabolic</td>
<td>56%</td>
<td>58%</td>
</tr>
<tr>
<td>complications)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An audit of the adherence to blood-glucose monitoring and overall glycaemic management in patients requiring parenteral nutrition.


Parenteral Nutrition (PN) delivers artificial nutrients intravenously. National Confidential Enquiry into Patient Outcomes and Death (NCEPOD) reported deficiencies in care of hospital patients. Recommendations were made which are backed by NICE and BAPEN; highlighting clinical parameters such as glucose measurements taken ≥1/day until stable then weekly. Weekly measures are employed in home PN patients who are considered stable. It is important hyperglycaemia is avoided in hospitalised patients as it is associated with a higher mortality risk. Hyperglycaemia is associated with poorer outcomes with increased rate of infections and sepsis, cardiac associated complications, acute kidney injury and greater mortality. Literature draws upon blood glucose ranges of 8-10mmol/L is acceptable for critically ill hospitalised patients and PN-patients. PN use was audited from November 15th 2016 - March 31st 2017; initiated indications; anastomotic leak post- GI or Liver surgery, prolonged paralytic ileus, short bowel syndrome, high stoma output, enter-cutaneous fistula, graft versus host disease, severe mucositis, bowel obstruction and post-op bowel rest following GI surgery. The audit aimed to assess frequency of patient blood-glucose monitoring (venous and/or capillary) for the duration of their PN, and in those who had consistently hyperglycaemic levels underwent diabetic team review. The audit showed that 61.53% patients had daily blood-glucose measurements taken whilst on PN as inpatients, 43.58% had the desired blood-glucose ≤10mmol/L whilst 17.94% of patients experience blood-glucose measures >10mmol/L on three consecutive days. 57.14% of consistently hyperglycaemic patients were referred to the diabetes teams for reviews. The audited population consisted of 25.65% diabetics and 12.82% of these individuals needing referrals.

Summary of Results

Audit findings showed below-par performance. Suggestions were made to improve trust standards on optimal glycaemic monitoring; all nurses should receive re-training on the importance of glycaemic monitoring in patients on PN, highlighting the need for daily blood-glucose measures. The practice should be re-audited over a longer period of time to obtain larger patient population to better conclude how PN-patients are being managed on other wards where the PN-patient number is smaller.

References
Home parenteral nutrition and advanced ovarian cancer: a qualitative study of artificial feeding in terminally ill cancer patients in bowel obstruction.

By A.M. Sowerbutts¹, S. Lal², A. Clamp³, G.C. Jayson³, C. Todd⁴, A.M. Raftery³, L. Hardy³, E. Sutton⁴, J. Sremanakova¹ and S. Burden¹, ¹School of Health Sciences and Manchester Academic Health Science Centre, University of Manchester, M13 9PL, UK, ²Salford Royal NHS Foundation Trust, Manchester, M6 8HD, UK, ³The Christie NHS Foundation Trust, Manchester, M20 4BX, UK, ⁴Department of Social Medicine, University of Bristol, Bristol, BS8 2PS, UK,

Bowel obstruction is a frequent occurrence in advanced ovarian cancer affecting between 20-50% patients¹. Parenteral nutrition (PN) can maintain adequate nutrition and hydration in these patients. Patients start on PN as inpatients and may go home on the treatment. Currently, there is uncertainty as to the role of PN in women with ovarian cancer and inoperable bowel obstruction receiving palliative care. This research addresses the decision making process around home PN, and the experiences of patients and their lay-carers of PN.

Longitudinal in-depth interviews were conducted with women with ovarian cancer and inoperable bowel obstruction receiving PN, their lay-carers and healthcare professionals. This report describes the outcome of 21 interviews. Four patients were interviewed three times, once in hospital and twice at home. Relatives of two of the women also took part in interviews. In addition, the health care professionals of these women were interviewed about involvement in the decision making processes for PN. Interviews were transcribed verbatim and analysed thematically using NVivo 10.

The decision to start PN was consultant oncologist driven with the women and other healthcare professionals having minimal input. Consultants based their decision on patients’ expected length and quality of life.

The women and their relatives discussed advantages and disadvantages of treatment. The main reported benefit for patients was increased length of survival and they expressed appreciation of having this time. PN at home allowed patients to be out of the hospital environment and be with friends and family. They also expressed the emotional comfort of knowing that they were receiving nutrition even if they could not eat. For these patients having PN was believed to be the only option as it was keeping them alive.

However, the treatment came at a cost for patients. They reported physical problems related to the PN including difficulty moving around with tubes and bags, the weight of the feed and disturbed sleep due to frequent urination. Two of the patients commented that they had not fully understood how challenging it would be for them to have PN at home. Patients also faced the significant loss of the ability to eat.

PN for patients in bowel obstruction is a controversial issue with question marks over how beneficial it is for patients. The patients in this study recognised the treatment as a life line and were grateful to receive it. However, to derive this benefit patients had to contend with problems and losses. It is important that healthcare professionals give a realistic and practical picture about the difficulties that patients will face. Also, as could be expected, not being able to eat is a major loss in patients’ lives. Nevertheless, patients are prepared to suffer these losses in order to continue living.

References

We are grateful to Marie Curie for funding this research project.
The impact of service improvement strategies in a well-established radiologically inserted gastrostomies (RIGs) service: a retrospective audit
by F. Carvalho, The Royal Marsden Hospital, Colorectal Surgery Department, M H, Floor 4, Room 10, Fulham Road, SW3 6J J, London, U K.

The aim of this clinical audit was to assess and quantify the rate of complications post RIG insertion at a specialised tertiary cancer centre, and evaluate if implemented service improvement strategies affected the occurrence of these.

Using data extracted from the patient's case notes, cancer patients, who had a RIG procedure between April 2015 and May 2017, were considered and retrospectively audited.

82 RIG insertions were retrospectively audited; 42 in 2015-16 and 40 in 2016-17. 70% (57/82) had head and neck (H&N) malignancy, 24% (20/82) gastrointestinal (GI) cancer, and 6% (5/82) a variety of other malignancies, including sarcoma, breast, lung and gynaecology. Tube displacements were the most common type of complication and occurred in the first 30 days post insertion in 13 patients (16%) over a two year period, 6 of these as an inpatient. Immediate, immediate & late, and late complications rates were 0%, 2% and 24% in the first year versus 2%, 0% and 15% in the second year. Complications in H&N speciality were higher than in other tumour groups in both years. There were one reported incident in 2015-16 of misplacement of the tube in the peritoneal cavity and another case, in the same year, of a GI haemorrhage due to blood vessel injury. The 30 day mortality rate was 5% (4/82), but none of the recorded deaths were attributed to the RIG procedure itself.

Following the implementation of service improvement strategies, the overall incidence of complications decreased, specifically late complications, as a fall from 24% to 15%, was recorded. Post procedural tube displacement was the most recorded type of complication. The reason for displacement is difficult to ascertain, but regardless, a drop from 8 to 5 cases was noted. This audit offers persuasive evidence that the service improvement strategies implemented, improved and benefited the patient care and pathway as the percentage of patients who had a RIG inserted without any type of complications up to 30 days post insertion, increased from 74% to 83%.
Investigation of nutritional status, body composition and functional status of heart failure patients in the outpatient setting
by C. Monahan, Department of Nutrition and Dietetics, St. Vincent’s University Hospital, Elm Park, Dublin, Ireland.

Undernutrition is common in heart failure, prevalence varies from 16%-62% in stable heart failure patients and can rise up to 90% in advanced heart failure.\(^1\) Causes of malnutrition in heart failure include malabsorption due to gut oedema, metabolic disturbances associated with cardiac cachexia and limitations in eating and meal preparation due to fatigue, low mood and breathlessness.\(^2\) Detection of malnutrition is complicated by fluid retention, high body mass index or weight gain may reflect excess fluid despite a reduction in lean muscle and/or fat mass.\(^3\)

This is a service evaluation investigating the nutritional status of heart failure patients attending the dietitian, in an outpatient setting. Data was collected prospectively as part of routine dietetic care at initial appointments on consecutive patients, between November 2016 and March 2017. Patients were nutritionally screened using Mini Nutrition Assessment – Short Form and further assessed using body mass index, mid upper arm circumference, mid arm muscle circumference, triceps skinfold thickness and hand grip strength. In total, 27 patients were included, 10 males and 17 females.

Nutrition screening, using the Mini Nutrition Assessment – Short Form, indicates 18.5% (N=5) of participants were malnourished, 48% (N=13) were at risk of malnutrition and 33.3% (N=9) had normal nutritional status. The mean body mass index was 25.9kg/m\(^2\); however there was considerable variation from 16.3 kg/m\(^2\) to 50 kg/m\(^2\). One quarter of participants were classified as overweight or obese but also malnourished or at risk of malnutrition as identified by the Mini Nutrition Assessment – Short Form.

Mid arm anthropometrics reveal over 50% of participants are in the lowest percentiles (<25\(^{th}\) percentile) for mid upper arm circumference, mid arm muscle circumference and triceps skinfold thickness. Furthermore, hand grip strength is <85% of normal for 78.2% of participants, compared to reference populations. Results indicate loss of lean muscle and fat mass prior to dietetic assessment, signifying reduced nutritional status.

Thorough nutritional assessment, considering a wide range of parameters including weight, mid arm anthropometrics and hand grip strength is recommended to provide a broader understanding of nutritional status in heart failure. Findings highlight that earlier intervention is required to prevent the onset of nutritional losses. Changes to current practices are required to ensure earlier identification of nutrition risk, routine nutritional screening of all heart failure patients in outpatient settings, during hospitalisation or at discharge, is recommended.

References
Older malnourished individuals registered with their GP use greater healthcare resources than non-malnourished individuals
by G. L. Fry¹, F. Brown¹, A. L. Cawood², J. Cotton³ and R. J. Stratton², ¹Gloucestershire Hospitals NHS Foundation Trust, GL53 7AN, UK, ²Medical Affairs, Nutricia Ltd, Wiltshire, BA14 0XQ, UK, ³Jacqui.R.Cotton Ltd. Wiltshire, SN13 8JZ, UK.

Disease-related malnutrition continues to be a significant, common and costly problem in England. Malnourished individuals have higher hospital admissions and re-admission rates, a longer length of stay and greater healthcare needs in the community¹. Despite the importance of malnutrition, it often remains under-detected and under-treated especially in general practice.

The aim of this project was to gain insights into current nutritional practice across GP practices in Gloucestershire, including understanding the prevalence of malnutrition in older people (according to ‘MUST’), and to assess the impact that malnutrition has on healthcare use locally, including admissions, length of stay, health care professional contacts and use of antibiotics.

Across 5 GP practices in Gloucestershire (450,000 registered patients; n10628 ≥ 65 years), the Dietitian reviewed 84% of GP records for patients ≥65 years (n8871) to assess recording of malnutrition screening information (weight, height) and where possible assessed malnutrition risk using ‘MUST’ in the local population. Healthcare use for a period of 6 months was reviewed by retrospective audit in a subset of individuals (n163; 58% female; 80±9years). Data was analysed by IBM SPSS version 23 and differences between groups assessed by 1-way ANOVA.

Overall <1% of older patients registered with their GP had a ‘MUST’ score documented in their records and 53.3% did not have enough information recorded in their records (weights and height) to allow the Dietitian to assign a malnutrition risk category. The other half (46.6%; n4140) had information available in their records to assign a malnutrition risk category and of these 92.7% were low risk, 3.5% medium risk and 3.8% high risk. Overall, healthcare use increased significantly with increasing risk of malnutrition (Table). Compared to individuals at low risk of malnutrition, patients at medium risk had more than twice as many hospital admissions and total healthcare professional contacts and 2.5 times longer length of hospital stay, whilst patients at high risk of malnutrition had more than seven times more hospital admissions, three times more total healthcare professional contacts and fifteen times longer length of hospital stay.

Table: Summary of healthcare use over a 6 month period, linked to malnutrition risk

<table>
<thead>
<tr>
<th></th>
<th>Whole group</th>
<th>High Risk</th>
<th>Medium Risk</th>
<th>Low Risk</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=163</td>
<td>n=72</td>
<td>n=41</td>
<td>n=50</td>
<td></td>
</tr>
<tr>
<td>Hospital admissions (n)</td>
<td>0.32±0.74</td>
<td>0.58±0.95</td>
<td>0.17±0.5</td>
<td>0.08±0.34</td>
<td>0.00</td>
</tr>
<tr>
<td>Length of hospital stay (days)</td>
<td>3.26±8.98</td>
<td>6.46±12.23</td>
<td>1.1±4.7</td>
<td>0.44±2.08</td>
<td>0.00</td>
</tr>
<tr>
<td>GP contacts (n)</td>
<td>5.29±5.11</td>
<td>7.39±5.6</td>
<td>5.1±4.86</td>
<td>2.42±2.63</td>
<td>0.00</td>
</tr>
<tr>
<td>Nurse contacts (n)</td>
<td>3.04±5.77</td>
<td>4.44±7.8</td>
<td>2.83±3.9</td>
<td>1.18±1.4</td>
<td>0.008</td>
</tr>
<tr>
<td>Hospital doctor contacts (n)</td>
<td>0.53±1.09</td>
<td>0.76±1.26</td>
<td>0.46±0.93</td>
<td>0.26±0.85</td>
<td>0.036</td>
</tr>
<tr>
<td>Total healthcare contacts (n)</td>
<td>9.18±8.97</td>
<td>13.2±10.9</td>
<td>8.56±6.35</td>
<td>3.92±3.18</td>
<td>0.00</td>
</tr>
<tr>
<td>Prescribed antibiotics (n)</td>
<td>0.67±1.22</td>
<td>0.92±1.35</td>
<td>0.76±1.32</td>
<td>0.26±0.78</td>
<td>0.012</td>
</tr>
</tbody>
</table>

This project has confirmed that malnutrition is often undetected in GP practice and that older malnourished people use significantly more healthcare resources (and therefore cost more), so managing them appropriately is paramount. Further work is required to raise awareness of the importance of identifying and managing malnutrition by the implementation of national guidance in general practice.

References
Appropriate management of disease related malnutrition in GP practices improves nutritional status & reduces healthcare use, with potential cost savings

by G. L. Fry\textsuperscript{1}, F. Brown\textsuperscript{1}, A. L. Cawood\textsuperscript{2}, J. Cotton\textsuperscript{3} and R. J. Stratton\textsuperscript{2}, \textsuperscript{1}Gloucestershire Hospitals NHS Foundation Trust, GL53 7AN, UK, \textsuperscript{2}Medical Affairs, Nutricia Ltd, Wiltshire, BA14 0XQ, UK, \textsuperscript{3}Jacqui.R.Cotton Ltd. Wiltshire, SN13 8JZ, UK.

Disease related malnutrition is a major public health problem with overall costs amounting to ~15% of the total public expenditure of health & social care\textsuperscript{1}. NICE\textsuperscript{2,3} highlights the need for screening & management of malnutrition, & implementing these guidelines has been assessed as high impact for producing savings (estimated savings of £324,800-£432,300 per 100,000\textsuperscript{1}.) The multi-professionally endorsed ‘M alnutrition Pathway’\textsuperscript{4} supports community healthcare professionals (HCP) to implement appropriate management in accordance with NICE, but research showing the benefits in practice is required.

This project aimed to assess the effectiveness of a Dietitian implementing the ‘M alnutrition Pathway’ in older adults (≥65 years) in the community, on nutritional outcomes & healthcare use including admissions, length of stay, GP contacts and use of antibiotics.

In 5 GP practices in Gloucestershire, 163 patients (80±9 years; 58% female) with a range of primary diagnoses (24% respiratory; 16% cardiovascular; 14% musculoskeletal; 12% endocrine) were screened (‘MUST’) by a Dietitian over the telephone. All patients were commenced on the appropriate malnutrition risk pathway (low risk group (n50): no further management; nutrition support group (n113): included medium risk (n41) (dietary advice (DA) based on local ‘food first’ diet sheet); & high risk (n72) (DA plus two energy dense high protein oral nutritional supplements (ONS) (1 serve: 300kcal; 18g protein, 125ml). At each dietetic review (6wks, 3mths & 6 mths), weight, ‘MUST’, compliance & patient satisfaction were recorded. Nutrition support was stopped when patients were no longer at risk. Healthcare use was collected from patient records for the 6 mths before & 6 mths after implementation of the pathway. Statistical analysis was undertaken using SPSS, and a simple cost analysis completed (cost of nutrition support, dietetic & GP time & reductions in health care use) using unit & prescribing costs\textsuperscript{5,6}.

Significant improvements in weight were seen in the nutrition support group over time (at 6wks +0.97±1.95kg, 3 mths +1.36±2.50kg & 6 mths +2.22±2.88kg) & the proportion of individuals at risk of malnutrition reduced, with a 30% reduction in patients at risk remaining on the pathway at 3 mths (maintained at 6 mths). Patients reported being satisfied with the DA (97%) & ONS (96%) & compliance to ONS prescription was 90%. Significant reductions in healthcare use were seen following nutrition support; hospital admissions reduced by 49% (p=0.028); length of stay by 48% (p=0.05), GP visits by 21% (p=0.007) & antibiotic prescriptions by 30% (p=0.05). Over 6 mths the associated reduction in health care costs (-£744.72 per patient) were more than offset by the costs to implement the pathway (ONS, DA & HCP time; +£349.08 per patient), with an overall cost saving of -£395.64 per patient for 6 mths. No differences were seen in the low risk group.

This pragmatic project implementing appropriate nutrition support in older malnourished patients in the community led to significant improvements in nutritional status, reductions in malnutrition risk & reductions in healthcare use, with an overall cost saving in a 6 month period. Managing malnutrition effectively in the community represents an opportunity not only for improvements in patient care but also cost savings.

References
Managing acute adult inpatient Dietetic referrals
by J. Yarrow and E. Ryan’, NHS Fife Department of Nutrition & Dietetics, Victoria Hospital, Hayfield Road, Kirkcaldy, KY2 5AH.

NHS Health Improvement Scotland’s Standards on Food Fluid and Nutritional Care in Hospitals, state ‘When a person is admitted to hospital, or to a community caseload, a nutritional care assessment is carried out. Screening for the risk of malnutrition is also carried out, both initially and on an ongoing basis; a person–centered care plan is developed, implemented and evaluated’ (1). Within NHS Fife hospitals the Malnutrition Universal Screening Tool (MUST) is completed for all patients within 24 hours of admission and at regular intervals throughout their stay depending on clinical need (2).

In order to improve and monitor compliance with this standard an electronic version of MUST was introduced into NHS Fife acute hospital wards in February 2016. Inpatient referral rates within the Acute Adult Dietetic team had increased by 40% between 2012 and 2015, however since the introduction of an electronic MUST in Feb 2016 referrals have increased by a further 34%; averaging 410 new referrals per month. There has been no increase in Dietetic staff resource to meet this need.

The aim of this project was to review the current adult acute nutritional care pathway in order to ensure acute dietitians workloads were within the BDA (British Dietetic Association) safe staffing workload guidance (3) (see table 1).

Table 1 Dietetic Workload based on New Referrals

<table>
<thead>
<tr>
<th>Year</th>
<th>New Inpatient Referrals</th>
<th>New Inpatient referrals per W.T.E per year</th>
<th>New Inpatient referrals per W.T.E per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>2714</td>
<td>437</td>
<td>8.4</td>
</tr>
<tr>
<td>2013</td>
<td>2969</td>
<td>479</td>
<td>9.2</td>
</tr>
<tr>
<td>2014</td>
<td>3376</td>
<td>544</td>
<td>10.4</td>
</tr>
<tr>
<td>2015</td>
<td>3378</td>
<td>545</td>
<td>10.4</td>
</tr>
<tr>
<td>2016</td>
<td>4370</td>
<td>704</td>
<td>13.5</td>
</tr>
</tbody>
</table>

AUDIT PERIOD
 SAFE 2579 415 8-9

Table 2 Audit Results

<table>
<thead>
<tr>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 Patients audited</td>
</tr>
<tr>
<td>• 21 (43%) - BMI &lt; 18.5kg/m2</td>
</tr>
<tr>
<td>• 26 (53%) - Unintentional Weight Loss</td>
</tr>
<tr>
<td>• 8 (16%) - Poor Oral Intake</td>
</tr>
<tr>
<td>• 28 (57%) - Had an energy deficit recorded - Ranging for 60 -1700kcals average 870kcals per day.</td>
</tr>
</tbody>
</table>

All new inpatient referrals are recorded on a database this recorded data on their MUST scores and length of stay. It was identified that 40% of all inpatient referrals had a MUST score of 2 and 50% of these were discharged within 5 days. An initial audit into this group of patients identified the range of patients (see table 2).

A new referral pathway and management plan was introduced in June 2016 and evaluated over the following year. The results have shown that although the implementation of the new pathway has significantly reduced the number of referrals assessed by the acute dietetic team this is still above recommended safe workload guidance (see table 1).

References
1. Health Care Improvement Scotland, NHS Scotland, Food Fluid and Nutritional Care Standards, 2014
Changes in aetiology of type 3 intestinal failure over 37 years: a single centre experience
By S.M.Oke¹, D.A.Lloyd², Small M¹, Naghibi M¹, Donnelly S.C¹, J. M.Nightingale¹ and S.M.Gabe³
¹Lennard Jones Intestinal Failure Unit, St Mark's Hospital, Harrow HA13UJ, ²Hampshire Hospitals NHS Foundation Trust, Winchester, United Kingdom SO22 5DG

Intestinal failure (IF) occurs when there is reduced intestinal absorption causing malnutrition or dehydration. The management of this condition has changed since the very first patients were started on long-term parenteral support in the form of parenteral nutrition in the 1960s. At our unit our first patient was started on long-term parenteral support in the 1970’s. We now care for the largest number of HPN patients in the UK. We describe changes in aetiology as seen in our unit over the last 36 years.

Clinical records of 978 adult patients receiving home parenteral support for IF at our tertiary referral centre were analysed from a period from January 1979 until October 2016. Demographic data including age, sex, underlying aetiology, complication rates and survival was recorded. Difference between groups were analysed by with chi-squared tests, and the Cox’s regression model was used to assess survival.

The mean age of patients treated at our unit has increased from 31±16.5 to 52±17.6 years from pre 1989 to 2010-2016. During the same period there has been a change in the underlying aetiology, with a greater percentage of patients with IF due to surgical complications (3.4% to 28.8% (p<0.001)), fewer with IBD as an underlying cause (37.9% to 22.6%) (p<0.001) and malignancy now forming a proportion of our patient cohort (0% to 8.4%). IF related complications have reduced with significant change in percentage of patients with catheter related blood-stream infections (71.4% to 42.2%) (p<0.005) and central venous catheter associated thrombosis (36% to 5.3%) (p<0.001).

Associated with these findings overall survival was better in the pre 1995 era HR 0.2-0.4 (p=0.02).

At our institution there has been a significant change in the underlying aetiology and demographics of patients with IF. The age of initiation of home parenteral support is increasing, and there has been a reduction in the proportion of patients with IBD as the underlying cause of IF with an increase in surgical complications and malignancy. Our data also shows that there has been a reduction in the rates of complications related to IF including catheter related blood stream infection rates and rates of central venous thrombosis. Notably survival outcomes were significantly better in the period pre 1995, which is likely explained by the fact that we now are treating older patients with complex underlying conditions associated with poorer outcomes.

References